



Accountant Skill Gen Z Fresh Graduates in Digital Era: A Systematic Literature Review

Mohammad Iqbal Firdaus^{1*}, Rizka Furqorina²

¹Department of Accounting, State University of Malang, Jl. Semarang No 5, Malang, Indonesia

²Department of Accounting, Universitas Terbuka, Pondok Cabe, Kota Tangerang Selatan, Indonesia

Received: 8 July 2024

Revised: 15 Agustus 2024

Accepted: 18 Agustus 2024

Correspondence:

*mohammad.iqbal.fe@um.ac.id

DOI: <http://dx.doi.org/10.17977/um004v11i22024p160>

Abstract

Purpose: The purpose of this study is to investigate the impact of emerging technologies on the skills required for accountants in the digital era, particularly focusing on the skills needed by Gen Z fresh graduates.

Method: The present study builds on a systematic literature review of 41 academic articles published in Scopus Database between 2017 and 2024. It is based on the “preferred reporting items for systematic reviews and meta-analyses” (PRISMA) method. Synthesising research through a transparent, rigorous and replicable process makes it possible to explore and identify accountant skill in digital era.

Findings: The findings highlighted the need for accountants to possess digital literacy skills, data analytics skills, and the ability to work collaboratively with professionals from other fields. The study also emphasized the importance of continuous professional development to keep pace with the rapid technological advancements in accounting.

Originality/Value: This paper offers a comprehensive literature review on impact of emerging technologies on the skills required for accountants in the digital era, particularly focusing on the skills needed by Gen Z fresh graduates. It could provide a insight and guidance for accounting fresh graduate to possess digital literacy skills, data analytics skills, and soft skills to adapt to technological changes and meet the needs of the dynamic accounting industry.

Keywords: Skill in Digital Era, Accountant Skill, Data Analytics Skill, Accounting Graduates, Digital Accounting

Paper Type: Research Paper

1. Introduction

Technological changes in accounting have had a significant impact on the way accountants work with data (Jackson et al., 2023; Kroon et al., 2021). In the past, digital technology was only optional, but now digital technology has become commonplace and important (Allmann & Blank, 2021). The demands of modern industry and new technologies, which have grown significantly in the past 10 years, have changed the role of accountants to perform more complex and strategic tasks, such as analysis, consulting, and strategy formulation, not only focused and limited to high-volume and repetitive record-keeping, bookkeeping, work (Asabeh et al., 2023; Jackson et al., 2022; Kokina & Blanchette, 2019; Zayed & Othman, 2023). Thus, the role of accountants in an organization has changed as well as the skills needed (Kokina et al., 2021; Senan & Sulphrey, 2022).

In the digital age, accountants must have a broader and more diverse range of skills, including critical thinking skills, teamwork skills, and quick adaptation skills. These skills

To cite this document: Firdaus, M. I., & Furqorina, R. (2024). Accountant Skill Gen Z Fresh Graduates in Digital Era: A Systematic Literature Review. *Jurnal Akuntansi Aktual*, 11(2), 160-177. <http://dx.doi.org/10.17977/um004v11i22024p160>.

are essential for ensuring accountants can adapt to technological changes and remain relevant in the accounting industry (Coady et al., 2018). This shift in role creates a gap between the skills possessed by college accounting graduates and the skills of graduates desired by the world of work and business, in line with dynamic industry changes (Parsons et al., 2020; Roy, 2023; Tsiligiris & Bowyer, 2021).

This research uses systematic literature review to explore and identify accountant skills in digital era. Asabeh et al. (2023) stated that non-technical skills, soft skills, are important indicators for academic achievement, personal growth, and improvement of employability in all fields, including the accounting profession. Research Kwarteng and Mensah (2022) producing conclusions consistent with previous findings, that there is a significant and positive relationship between graduates' employability skills and job performance. However, the current accounting curriculum focuses more on technical abilities and has not fully developed non-technical skills in students, so accounting graduates are not fully prepared to adapt to technological changes and meet the needs of the dynamic accounting industry (Asabeh et al., 2023; Parsons et al., 2020; Roy, 2023). The absence of research that systematically compares the skills of accountants in the digital era with the skills of previous accountants in the digital era has become a void of systematic research review. Therefore, this study can fill this void by researching and analyzing the skills of generation Z accountants in the digital era. This research is guided by a research questions (RQ):

RQ: What are the non-technical skills that need to be prepared by generation Z in preparation for entering the business world in the field of accounting?

This research makes a theoretical contribution by providing a systematic analysis of the digital skills required by accountants in the digital era, especially focusing on the skills needed by Gen Z graduates. This contribution is relevant to articles on reference lists, such as (Allmann & Blank, 2021), which describes digital and data analytics capabilities as important aspects in the digital age, and Kroon et al. (2021), which emphasizes the importance of data analytical capabilities in large-scale financial analysis.

2. Literature Review

2.1 Soft Skills

Soft skills are interpersonal skills, communication skills, and personality traits that help individuals interact effectively with others and complete tasks successfully (Asabeh et al., 2023). Research shows that technological advances, such as process automation, data analytics, and blockchain, have changed the roles and competencies required by accountants (Kokina & Blanchette, 2019; Vijai et al., 2019; Zayed & Othman, 2023). Accountants are not only required to master technical skills, but must also be able to adapt to change, innovate, and collaborate effectively..

Arquero et al. (2022) emphasizing that in the context of accounting education, soft skills are considered crucial for students' success in entering the world of work. Soft skills such as communication, problem-solving, critical thinking, and interpersonal skills are becoming increasingly important for accountants to make optimal use of digital technologies and add value to the organization (Franke & Hiebl, 2023; Imjai et al., 2023; Jackson et al., 2022, 2023). Meanwhile, in the accounting profession, Asonitou and Hassall (2019) and Coady et al. (2018) stating soft skills is becoming increasingly important because accountants are not only required to have technical expertise in the field of accounting, but also must be able to interact with clients, colleagues, and other stakeholders.

Communication skills, problem-solving, critical thinking, and interpersonal skills are considered key competencies that accountants must possess in the future (CPA Australia, 2019). Accountants who only rely on hard skills without having adequate soft skills will find it difficult to develop and provide added value to the organization.

2.2 Digital Skills

Digital skills are defined as the ability of a person/group to use digital technology effectively and efficiently in various life contexts. Includes not only technical knowledge, but also the cognitive, social, and emotional abilities necessary to make optimal use of technology (Allmann & Blank, 2021). Recent research shows that companies are increasingly demanding accounting graduates who have adequate digital skills (Daff, 2021; de Lange et al., 2023; Jackson et al., 2022, 2023). This is driven by technological developments such as big data, analytics and process automation that are increasingly influencing accounting practices (Franke & Hiebl, 2023; Kokina et al., 2021; Kokina & Blanchette, 2019). Companies need accountants who can utilize digital technologies to improve efficiency, decision-making, and innovation (Imjai et al., 2023; Kroon et al., 2021; Vijai et al., 2019; Zhao, 2024).

2.3 Impact on the World of Accounting

The Fourth Industrial Revolution (4IR) era refers to the digital transformation that is taking place in various sectors, including accounting. Technologies such as artificial intelligence (AI), Internet of Things (IoT), data analytics, and business process automation have changed the way accountants work (Tsiligiris & Bowyer, 2021). Research conducted by de Lange et al. (2023), shows that the skills and attributes expected of accounting graduates now include higher digital competencies. The Industrial Revolution has driven the use of technology in accounting, ranging from accounting software to sophisticated management information systems. Research by Crawford et al. (2024) also confirmed that work-integrated learning can improve the employability of international accounting graduates, demonstrating the importance of practical experience in mastering modern accounting technology.

In addition, technological developments such as Big Data and data analysis have become important aspects of modern accounting. Research by Franke and Hiebl (2023) shows that data analysis skills are crucial in improving the quality of management decision making. This emphasizes the role of accountants as data analysts who can provide strategic insights for companies. In this context, accountants no longer only act as financial recorders and reporters, but also as information managers who can interpret data to support business decisions.

3. Research Method

The study develops the Systematic Literature Review approach based on *Preferred Reporting Items for Systematic review and Meta-Analysis* (PRISMA) updated in 2020 by Page et al. (2021) to identify relevant papers and themes on accounting graduate softskills. The aim uses the Systematic Literature Review approach to collect, analyze, and integrate information from various relevant sources related to a specific topic, provide a comprehensive and accurate picture, and find conclusions and recommendations based on the analysis of the data obtained. (Manetti et al., 2021; Page et al., 2021; Snyder, 2019). The steps of the procedure are illustrated in the flow chart diagram Figure 1.

Data searches in the Scopus database use the Boolean operator "AND" or "OR" to guarantee that at least one part or all of the parts are obtained. The strings used in data mining are "skill AND in AND digital&era" OR "accountant AND skill" OR "accounting AND graduates" OR "accounting AND in &digital" OR "data AND analytics AND data AND skill" in the title, abstract, and keywords.

For the final database build, the parameters used to select the document:

- (1). **Language:** Selection only includes documents in English. Indeed, because due to language limitations, only contributions in English can be adequately analyzed by the author.
- (2). **Timeframe:** The review included articles published from the beginning of 2017 to the end of 2024. The year 2017 was selected as starting point for the creation of a new ecosystem in various sectors of life involving industry and the internet.
- (3). **Source:** The review considered only articles published in high-ranking peer-reviewed academic journals in the field of accounting. To guarantee a high-quality assessment of the articles, the author selected only the journal was published in Q1, Q2, and Q3 Scopus database.
- (4). **Research domain:** We select documents related to the field of social sciences, with specific references to graduates, skills, technology and accounting.

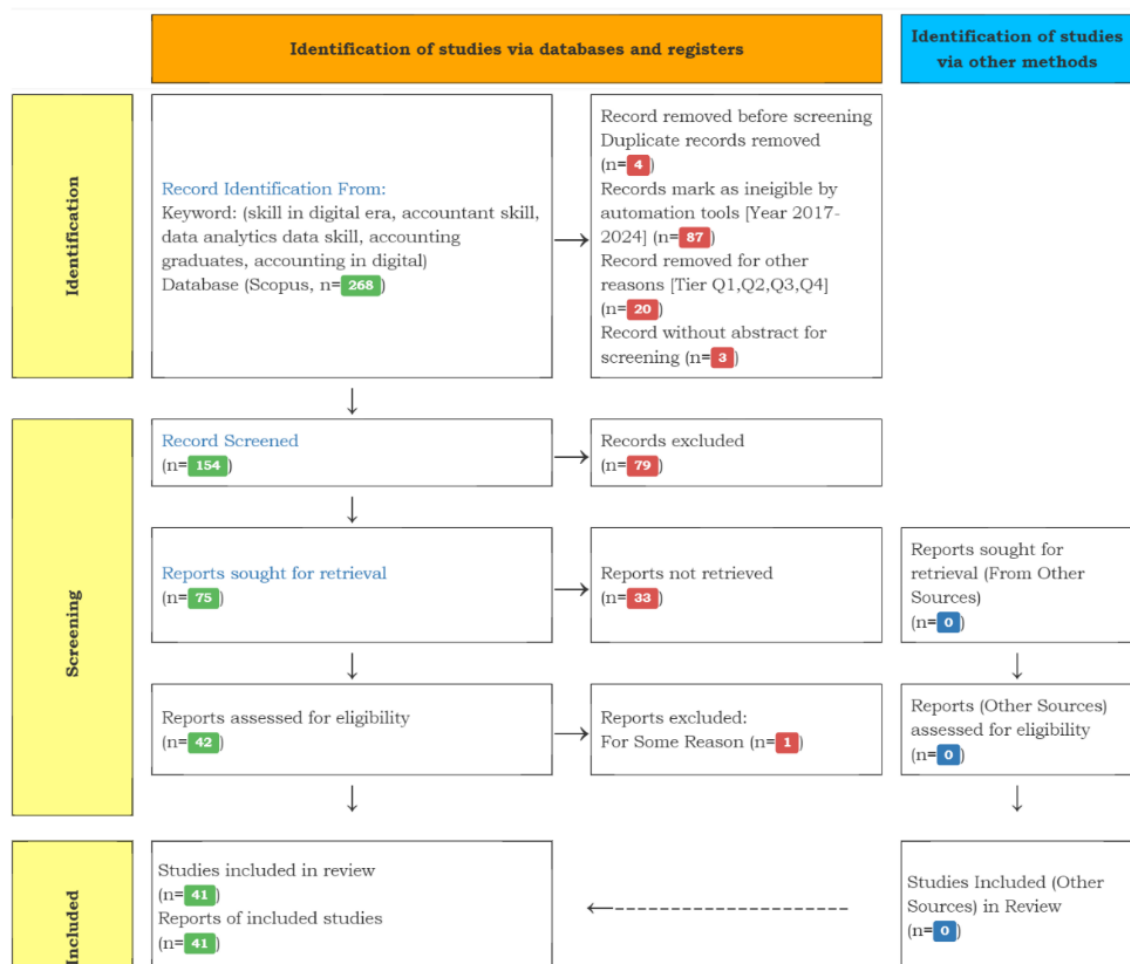


Figure 1. PRISMA Protocol for Literature Review

- (5). **Topics:** At least one of the following keywords was required to be in the article's title, abstract or keywords: "accounting graduates"; "data analytics data" or 'accountant' combined with "skill"; "accounting in digital"; or "skill in digital era". These words conformed to the research topic in an extended view. The choice of titles and abstracts as an analysis sample was made because their concise nature requires authors to select words more carefully to capture their readers' interest. Thus, it is assumed that the words in titles and abstracts are a representative image of the studies in their entirety.
- (6). **Relevance:** All articles' titles and abstracts were read to remove irrelevant articles. For an article to be retained, its title or abstract had to indicate a theoretical or empirical study on accounting graduate skills in era digital. This criterion was applied conservatively; when in doubt, the article was kept and read in full.

The final database used in this study is 41 article titles, presented in table 1.

Table 1. Distribution of articles used

| Year Publication | Q1 | Q2 | Q3 |
|------------------|----|----|----|
| 2017 | 1 | 2 | |
| 2018 | 2 | 1 | |
| 2019 | 2 | 1 | |
| 2020 | 1 | 4 | 1 |
| 2021 | 5 | 1 | |
| 2022 | 1 | 6 | 1 |
| 2023 | 8 | 2 | 1 |
| 2024 | 1 | | |

There are 34 articles were not used in this study because the complete article text was not obtained either using private users or institutional users and this is a limitation in this study. This information is presented in appendix A.

4. Results and Discussion

4.1 Descriptive Analysis

The descriptive analysis of the selected studies is presented in the following sub-sections. A research protocol was used to codify the characteristics of each study. Specifically, the following aspects were considered: year of publication, research method, and research setting. Similar types of categorisation have been used in other reviews (such as [Bonollo \(2023\)](#); [Kroon et al. \(2021\)](#)), thus highlighting the classification of academic knowledge accounting to particular viewpoints.

4.1.1 Evolution Over Time

Articles published between 2017 and 2024 were included in the data set to determine a comprehensive and up-to-date picture of the review topic. Based on Figure 2, the studies that mentioned about accounting skills being a prerequisite that accounting graduates must have to enter the business world in the digital era. In the following years, the number of studies on the ability of accountant graduates in the digital era experienced an increasing trend and reached 11 studies in 2023. The publication of articles has stabilized, even increased, signaling emerging or persisting issues related to accountants' abilities in the digital era.

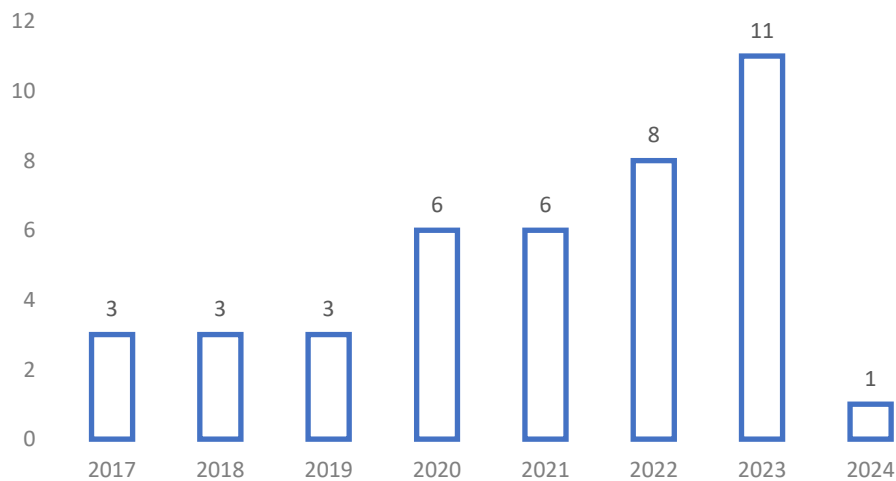


Figure 2. Articles Distribution per Year

4.1.2 Research Method

Figure 3 presents a categorisation according to the methodological approaches used. Based on previous studies with small adaptations (Bonollo, 2023), a list of five research methods were compiled: the qualitative research methods of “case/ field study/ interviews” and “content analysis/ documentary analysis”; the quantitative research method of “survey/ official data-based analysis”; and “literature review”. The list also includes “mixed methods” when authors combine more than one method. The research methods adopted were classified according to the statements of the author(s).

Previous researchers tended to use survey/official data-based analysis (56%), followed by case/field study/interviews (22%). This tendency is likely due to the many different types of accounting capabilities generated from previous studies, which were segmented by geography, business type, resources, and technology. Another 15% of studies used content analysis/documentary analysis. Finally, 5% of studies used mixed methods and 2% used literature review methods.

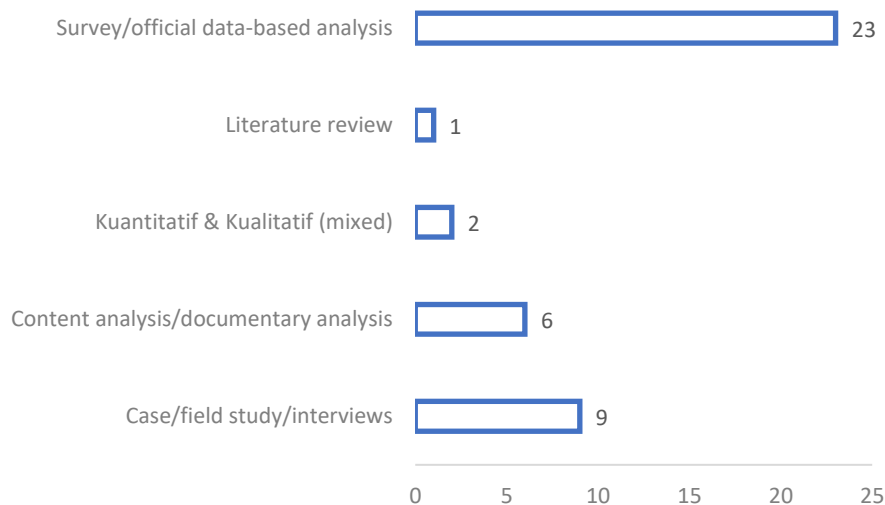


Figure 3. Articles by the Research Method

4.2 Data Literacy Skills and the Use of Digital Technology

Entering the era of the industrial revolution 4.0, or it can be said that the era of compulsory computing, requires the digitization of many basic human services and activities. Employers expect accounting graduates not only to have technical knowledge, but also to be able to integrate digital technology into their work practices (Daff, 2021). Professional accountants state that businesses that use robotic process automation can significantly improve the efficiency of accounting processes and improve data quality (Kokina & Blanchette, 2019). But, in reality, Daff (2021) discovered that there is a gap between the expectations of employers and accounting graduates. Many employers feel that accounting graduates are still inadequate in terms of software use and information and communication of technology (ICT) skills

Digital skills, part of ICT skills, includes the ability of individuals to use digital technology effectively in their daily lives. Allmann and Blank (2021) claim that digital skills consist of three main dimensions: technical ability, evaluative ability, and ethical ability to use technology in a responsible manner. Jackson et al. (2023) emphasized that new technologies, such as artificial intelligence, artificial intelligence, data analytics, data analytics, and automation, automation, will increasingly play an important role in accounting practices. An accountant is expected to have the ability to adopt, adapt, and utilize new technologies as the key to building an organization's future success.

Empirical evidence reveals that entry-level accountants feel the impact of technology more than mid- or upper-level accountants. In the context of management accounting, the Institute of Management Accountants, IMA, publishes an accounting competency framework. The framework identifies six core competency domains that accountants and finance professionals need to effectively perform their current and future roles, one of which is technology and analytics (IMA, 2023). In terms of contemporary digital, the proficient use of digital technology and tools has emerged as a necessity, which exerts a great influence on various aspects of business management, including the field of management accounting (Injai et al., 2023).

Although new technologies raise concerns about job losses, they are also considered to be catalysts for innovation that empowers the accounting profession (Jackson et al., 2022). The accounting profession recognizes the importance of technological advancements for success, especially in creating a flexible work environment, improving communication and engagement with clients, and improving efficiency and quality (CPA Australia, 2019), excel, spreadsheets, Big data and blockchain for example.

Spreadsheets are a very useful tool in various aspects of accounting work. Employers emphasize that the ability to use spreadsheets, such as Microsoft Excel, Google Sheets, is a very important technology utilization skill for accounting graduates (Daff, 2021). Spreadsheet capabilities range from data input to complex analysis.

Analytical skills are considered to be the most important prerequisite skills to have by beginner accountants and the current trend of analytical skills refers to big data analysis which allows accountants to collect, process, and analyze financial data on a large and complex scale, thus making it possible to make more precise and effective decisions (Chaplin, 2017; Kroon et al., 2021). By using big data technology, accountants can understand financial patterns and trends more clearly, as well as predict a company's financial performance more accurately. Big data analysis also allows accountants to identify errors and inefficiencies in financial processes, making it possible to optimize processes and improve efficiency. Research by Franke and Hiebl (2023) concluded that the quality of big data sources and the data analytics skills of accountants play an important role in

improving the quality of decisions. Research [Daff \(2021\)](#) In conclusion, accounting graduates are expected to have the skills to interpret the results of data analysis and present them in a form that is easy for stakeholders to understand in order to ensure decisions made based on accurate and relevant data.

Blockchain is defined as a series of blocks that store information securely in a peer-to-peer network ([Vijai et al., 2019](#)). Main findings of the study conducted [Zayed and Othman \(2023\)](#) One of the main advantages of the application of blockchain technology is improving the skills of accountants. Accountants, auditors, and financial managers have confidence and hope in the future that with the impact of the implementation of blockchain technology, accountants will innovate by developing more dynamic and business solution-oriented skills. The transition to a financial system integrated with blockchain elements offers many opportunities for the accounting profession to act as planners, coordinators, or administrators ([Kroon et al., 2021](#)).

4.3 Communication Skills

[de Lange et al. \(2023\)](#) exploring the employer's perspective on the skills and attributes required by international accounting graduates. Employers prefer accounting graduates who have good communication skills, both verbal and written. In Fiji, [Roy \(2023\)](#) employers identify one of the few skills that graduates lack is communication skills. This gap causes difficulties for employers in recruiting and retaining employees who fit the company's needs.

Research [Crawford et al. \(2024\)](#) and [Osmani et al. \(2017\)](#) with the object of student research in Australia and the Middle East concluding that the most important graduate skills are communication skills, followed by analytical and self-management skills. Without good communication skills, many academic graduates find it difficult to get a job in the accounting field with the appropriate industry. In line with [Crawford et al. \(2024\)](#) and [Osmani's et al. \(2017\)](#) research, in Oman, communication skills play an important role and are one of the key factors that determine the success of graduates in entering and facing competition in the labor market ([Senan & Sulphey, 2022](#)).

Communication skills are not only the ability to convey messages/ideas/ideas orally or in writing, but also the skill of reading written works critically so that they are able to make judgments about relevance and value as well as the ability to listen effectively to obtain information and understand opposing points of view ([Arquero et al., 2022](#); [Asonitou & Hassall, 2019](#)). This is also in line with the results of the study [Coady et al. \(2018\)](#) which places oral communication skills and communication skills as the first and fourth non-accounting skills that are very important for an accountant to have in the increasingly dynamic world of business professionals.

Another communication skill is giving and receiving feedback. Accountants are able to seek, give, and receive feedback in a clear, specific, precise, and constructive manner. Accountants must also be open to feedback and willing to change. Coupled with participation in meeting activities. Accountants must participate by giving opinions, as well as listening to other opinions ([Jackson et al., 2022](#); [Phan et al., 2020](#)).

4.4 Business Skills

4.4.1 *Accountants as Business Partners and Internal Consultants*

Accountants are seen as business partners and in-house consultants. The role of accountants is increasingly important in supporting data-driven decision-making within companies. Future accountants should be able to act as facilitators of internal business

partnerships, allowing cross-division collaboration to reach informed decisions (Senan & Sulphrey, 2022; Tsiligiris & Bowyer, 2021). The skills of in-house consultants (business advisors) emerged as a result of the automation of manual tasks. This has led to a shift in the role of accountants towards tasks that add value to the company. One example is the disclosure of sustainability reports.

In the future, automation will play a major role in compliance and regular labor-intensive work. Meanwhile, accountants will be more involved in business mentoring work and reviewing the company's partner businesses. The role of accountants as internal consultants is increasingly important in helping companies make the right and strategic decisions.

4.4.2 The Shift in the Role of Accountants: From Manual Tasks to Value-Added Tasks

The automation of manual tasks has led to a shift in the role of accountants. Accountants are no longer focused on routine and labor-intensive work, but instead turn to tasks that add value to the company. This requires the skills of an in-house consultant or business advisor who can help with data-driven decision-making (Senan & Sulphrey, 2022; Tsiligiris & Bowyer, 2021). One example of a value-added task that accountants focus on is the disclosure of sustainability reports. Accountants play a role in providing relevant and reliable information related to the environmental, social, and governance performance of the company. This helps the company in demonstrating its commitment to sustainable development.

With automation, compliance tasks and routine labor-intensive work will become the primary responsibility of systems and technology. Meanwhile, accountants will be more involved in business mentoring work and reviewing the company's partner businesses. The role of in-house consultants is becoming increasingly important in helping companies make strategic decisions that are data-driven.

4.4.3 Accountant as Internal Business Partnership Facilitator

Future accountants should be able to act as facilitators of internal business partnerships. This role allows accountants to facilitate cross-division collaboration within the company, resulting in informed and data-driven decisions. Accountants play an important role in bridging communication and coordination between departments to achieve common goals. As an internal business partnership facilitator, accountants must have the ability to understand the needs and challenges faced by the various divisions within the company. Accountants need to develop effective communication skills, in order to be able to convey financial and non-financial information clearly and understandably to all stakeholders (Senan & Sulphrey, 2022; Tsiligiris & Bowyer, 2021).

By acting as an internal business partnership facilitator, accountants can assist companies in making better, data-driven decisions. Accountants can integrate information from various sources, analyze data, and present it in a form that is easy for decision-makers to understand. This supports a more strategic and integrated decision-making process within the company

4.5 Critical Thinking and Problem-Solving Skills

Accountants have an important role in the dynamic world of business. In an era of rapid change, accountants must have critical thinking skills to understand and anticipate changes that occur in the business (Asabeh et al., 2023; Tsiligiris & Bowyer, 2021). These changes can be technological changes, market changes, or policy changes. Critical thinking

and problem-solving skills are important competencies needed by accounting graduates in the world of work. According to [Chaplin \(2017\)](#), critical thinking and problem-solving skills are one of the skills that companies expect from accounting graduates. Research conducted by [Asonitou and Hassall \(2019\)](#) It also shows that critical thinking and problem-solving skills are becoming increasingly important for professional accountants, especially in facing challenges in a country that is experiencing an economic crisis.

Critical thinking skills include the ability to analyze information objectively, evaluate arguments and evidence, and make logical conclusions ([Daff, 2021](#)). In the context of accounting, these skills are needed to identify and solve complex financial problems, make informed decisions, and provide valuable advice and recommendations to the client or organization ([Kwarteng & Mensah, 2022](#)).

In addition, problem-solving is also an important skill for accounting graduates. The ability to identify problems, gather relevant information, develop alternative solutions, and evaluate the effectiveness of selected solutions is indispensable in accounting practice ([de Lange et al., 2023](#)) Professional accountants must be able to face various challenges and problems that arise in their work, as well as make the right and responsible decisions.

Research conducted by [CPA Australia \(2019\)](#) shows that employers in the field of accounting value critical thinking and problem-solving skills as very important competencies for accounting graduates. This ability is considered a prerequisite to be able to adapt quickly to changes and challenges in the world of work. [Zhao \(2024\)](#) it also emphasizes the importance of critical thinking and problem-solving skills in the context of digital transformation of accounting, where accountants must be able to take advantage of new technologies and develop innovative solutions.

In an effort to improve critical thinking and problem-solving skills, accounting education programs should emphasize the development of analytical, decision-making, and complex problem-solving abilities ([Dolce et al., 2020](#)). In addition, close cooperation between educational institutions and employers is also needed to ensure that accounting graduates have competencies that are in accordance with industry needs ([Daff, 2021](#)).

5 Conclusion

Over the past five years, many studies have been conducted on the skills of accounting graduates needed by the business world that influenced by the rapid development of information technology. Most employers feel there is a gap between the expectations of employers and accounting graduates. Employers reveal that accounting graduates often do not have adequate technical skills, especially when it comes to the use of accounting technology and software. They are also less skilled in analyzing data to communicate effectively, both verbally and in writing, and working in teams ([Daff, 2021](#); [Phan et al., 2020](#); [Roy, 2023](#)). For fresh graduates, they tend to focus more on theory and are less exposed to actual accounting practices.

Regarding the areas studied, special attention is paid to the abilities that fresh graduates must prepare in preparation for entering the world of work. The Institute of Management Accountants' competency framework highlights the importance of technology and analytics in management accounting ([IMA, 2023](#)). Despite concerns about job losses, new technologies are seen as catalysts for innovation, empowering the accounting profession by creating flexible work environments, improving communication, and enhancing efficiency and quality. The accounting profession recognizes the importance of technological advancements for success, especially in creating a flexible work environment, improving communication and engagement with clients, and improving efficiency and

quality (CPA Australia, 2019). Spreadsheets, big data analysis, and blockchain are essential tools in accounting work, with spreadsheet capabilities ranging from data input to complex analysis. Big data analysis allows accountants to collect, process, and analyze financial data on a large scale, making precise decisions possible. Blockchain technology improves accounting skills by enhancing confidence and innovation in the profession. In conclusion, accounting graduates must possess the skills to interpret data analysis results and present them in a clear manner to ensure accurate decision-making.

Moreover, related to communication skills, de Lange et al. (2023) studied employers' views on the skills needed for international accounting graduates, stressing the importance of good communication skills. Employers see a gap in graduates' communication skills, making it hard to hire and keep suitable employees. Communication skills are essential for graduates' success in the labor market (Senan & Sulphrey, 2022). Effective communication involves conveying messages, critically reading, listening effectively, and giving/receiving feedback clearly and constructively (Arquero et al., 2022; Asonitou & Hassall, 2019; Coady et al., 2018; Jackson et al., 2022; Phan et al., 2020). These findings highlight the importance of communication skills in the accounting profession, especially in today's dynamic business environment.

Last, in the evolving landscape of business, accountants will be transforming from routine tasks to value-added roles, such as internal consultants and facilitators of internal business partnerships. This shift is driven by automation, which is taking over compliance and labor-intensive work, allowing accountants to focus on strategic decision-making and business mentoring. Future accountants must possess critical thinking and problem-solving skills to navigate technological, market, and policy changes. These skills enable them to analyze data objectively, evaluate arguments, and make informed decisions. Effective communication and the ability to integrate information from various sources are also crucial for accountants to facilitate cross-division collaboration and support data-driven decision-making. As a result, accountants are becoming essential partners in helping companies achieve strategic and sustainable goals.

References

- Allmann, K., & Blank, G. (2021). Rethinking Digital Skills in the Era of Compulsory Computing: Methods, Measurement, Policy and Theory. *Information, Communication & Society*, 24(5), 633-648. <https://doi.org/10.1080/1369118X.2021.1874475>.
- Arquero, J. L., Fernandez-Polvillo, C., & Hassall, T. (2022). Non-Technical Skills and Students' Overconfidence in Accounting. *Education + Training*, 64(5), 716-733. <https://doi.org/10.1108/ET-08-2021-0309>.
- Asabeh, S. A., Alzboon, R., Alkhalaileh, R., Alshurafat, H., Amosh, H. A. (2023). Soft Skills and Knowledge Required for a Professional Accountant: Evidence from Jordan. *Cogent Education*, 10(2), 1-20. <https://doi.org/10.1080/2331186X.2023.2254157>.
- Asonitou, S., & Hassall, T. (2019). Which Skills and Competences to Develop in Accountants in a Country in Crisis?. *The International Journal of Management Education*, 17(3), 1-19. <https://doi.org/10.1016/j.ijme.2019.100308>.
- Bonollo, E. (2023). Negative Effects of the Adoption of Accrual Accounting in the Public Sector: A Systematic Literature Review and Future Prospects. *Journal of Public Budgeting, Accounting & Financial Management*, 35(6), 1-27. <https://doi.org/10.1108/JPBAFM-06-2022-0097>.

- Chaplin, S. (2017). Accounting Education and the Prerequisite Skills of Accounting Graduates: Are Accounting Firms' Moving the Boundaries?. *Australian Accounting Review*, 27(1), 61–70. <https://doi.org/10.1111/auar.12146>.
- Coady, P., Byrne, S., & Casey, J. (2018). Positioning of Emotional Intelligence Skills within the Overall Skillset of Practice-Based Accountants: Employer and Graduate Requirements. *Accounting Education*, 27(1), 94–120. <https://doi.org/10.1080/09639284.2017.1384741>.
- CPA Australia. (2019). *CPA Australia's My Firm. My Future. Report*. <https://www.cpaaustralia.com.au/public-practice/public-practice-research/my-firm-my-future-report>.
- Crawford, V., Brimble, M., & Freudenberg, B. (2024). Can Work Integrated Learning Deliver Employability? International Post-Graduate Accounting Students. *Accounting & Finance*, 64(1), 1061–1082. <https://doi.org/10.1111/acfi.13182>.
- Daff, L. (2021). Employers' Perspectives of Accounting Graduates and their World of Work: Software Use and ICT Competencies. *Accounting Education*, 30(5), 495–524. <https://doi.org/10.1080/09639284.2021.1935282>.
- de Lange, P., O'Connell, B. T., Tharapos, M., Beatson, N., & Oosthuizen, H. (2023). Accounting Graduate Employability: Employer Perspectives on Skills and Attributes of International Graduates. *Accounting Education*, 32(3), 249–277. <https://doi.org/10.1080/09639284.2022.2059383>.
- Dolce, V., Emanuel, F., Cisi, M., & Ghislieri, C. (2020). The Soft Skills of Accounting Graduates: Perceptions versus Expectations. *Accounting Education*, 29(1), 57–76. <https://doi.org/10.1080/09639284.2019.1697937>.
- Franke, F., & Hiebl, M. R. W. (2023). Big Data and Decision Quality: The Role of Management Accountants' Data Analytics Skills. *International Journal of Accounting & Information Management*, 31(1), 93–127. <https://doi.org/10.1108/IJAIM-12-2021-0246>.
- IMA. (2023). *IMA Management Accounting Competency Framework*. <https://www.imanet.org/career-resources/management-accounting-competencies>.
- Injai, N., Aujirapongpan, S., & Mahadi, N. (2023). The Interplay of Digital and Management Accounting Competency to Competitive Performance in the Open Innovation Era: A Case of Thai Micropreneurs. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(4), 1–13. <https://doi.org/10.1016/j.joitmc.2023.100167>.
- Jackson, D., Michelson, G., & Munir, R. (2022). New Technology and Desired Skills of Early Career Accountants. *Pacific Accounting Review*, 34(4), 548–568. <https://doi.org/10.1108/PAR-04-2021-0045>.
- Jackson, D., Michelson, G., & Munir, R. (2023). Developing Accountants for the Future: New Technology, Skills, and the Role of Stakeholders. *Accounting Education*, 32(2), 150–177. <https://doi.org/10.1080/09639284.2022.2057195>.
- Kokina, J., & Blanchette, S. (2019). Early Evidence of Digital Labor in Accounting: Innovation with Robotic Process Automation. *International Journal of Accounting Information Systems*, 35, 1–13. <https://doi.org/10.1016/j.accinf.2019.100431>.
- Kokina, J., Gilleran, R., Blanchette, S., & Stoddard, D. (2021). Accountant as Digital Innovator: Roles and Competencies in the Age of Automation. *Accounting Horizons*, 35(1), 153–184. <https://doi.org/10.2308/HORIZONS-19-145>.

- 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), 1-27. <https://doi.org/10.3390/joitmc7030163>.
- Kwarteng, J. T., & Mensah, E. K. (2022). Employability of Accounting Graduates: Analysis of Skills Sets. *Heliyon*, 8(7), 1-9. <https://doi.org/10.1016/j.heliyon.2022.e09937>.
- Manetti, G., Bellucci, M., & Oliva, S. (2021). Unpacking Dialogic Accounting: A Systematic Literature Review and Research Agenda. *Accounting, Auditing & Accountability Journal*, 34(9), 250-283. <https://doi.org/10.1108/AAAJ-08-2020-4736>.
- Osmani, M., Hindi, N., Al-Esmail, R., & Weerakkody, V. (2017). Examining Graduate Skills in Accounting and Finance. *Industry and Higher Education*, 31(5), 318-327. <https://doi.org/10.1177/0950422217721759>.
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *The British Medical Journal*, 372(71), 1-9. <https://doi.org/10.1136/bmj.n71>.
- Parsons, S., Davidowitz, B., & Maughan, P. (2020). Developing Professional Competence in Accounting Graduates: An Action Research Study. *South African Journal of Accounting Research*, 34(2), 161-181. <https://doi.org/10.1080/10291954.2020.1727080>.
- Phan, D., Yapa, P., & Nguyen, H. T. (2020). Accounting Graduate Readiness for Work: A Case Study of South East Asia. *Education + Training*, 63(3), 392-416. <https://doi.org/10.1108/ET-02-2019-0036>.
- Roy, S. (2023). Graduate Readiness for a Professional Career in Accounting - An Investigation of Employers' Perspectives in Fiji. *Pacific Accounting Review*, 35(2), 314-335. <https://doi.org/10.1108/PAR-06-2021-0087>.
- Senan, N. A. M., & Sulphrey, M. M. (2022). Construction and Validation of the Employability Questionnaire for Accounting Graduates. *Education + Training*, 64(1), 141-159. <https://doi.org/10.1108/ET-04-2021-0152>.
- Snyder, H. (2019). Literature Review as a Research Methodology: An Overview and Guidelines. *Journal of Business Research*, 104, 333-339. <https://doi.org/10.1016/j.jbusres.2019.07.039>.
- Tsiligiris, V., & Bowyer, D. (2021). Exploring the Impact of 4IR on Skills and Personal Qualities for Future Accountants: A Proposed Conceptual Framework for University Accounting Education. *Accounting Education*, 30(6), 621-649. <https://doi.org/10.1080/09639284.2021.1938616>.
- Vijai, C., Suriyalakshmi, S. M., & Joyce, D. (2019). The Blockchain Technology and Modern Ledgers through Blockchain Accounting. *Adalya Journal*, 8(12), 545-557. <https://doi.org/10.2139/ssrn.3514501>.
- Zayed, L. M. M., & Othman, O. H. (2023). Effect of Blockchain Technology in Innovating Accountants' Skills: A Multimethodology Study in the Industrial Companies Listed on the Amman Stock Exchange. *Journal of Innovation and Entrepreneurship*, 12(1), 1-15. <https://doi.org/10.1186/s13731-023-00312-0>.
- Zhao, J. (2024). Study on the Role of Big Data Technology in Promoting the

Transformation of Financial Accounting in the Digital Economy Era. *Applied Mathematics and Nonlinear Sciences*, 9(1), 1-13.
<https://doi.org/10.2478/amns.2023.2.01120>.

Appendix A: Journals that do not get full text

| No | Authors | Year | Title | Digital Object Identifier (DOI) |
|----|---|------|--|---------------------------------|
| 1 | Khuraisah, Mn; Fariza, Khalid; Hazrati, Husnin | 2020 | Preparing graduates with digital literacy skills toward fulfilling employability need in 4IR Era: A review | 10.14569/IJACSA.2020.0110641 |
| 2 | Anastasiia, Mazurchenko; Kateřina, Maršíková | 2019 | Digitally-powered human resource management: Skills and roles in the digital era | 10.18267/j.aip.125 |
| 3 | Barbara, Barabaschi; Alessia, Forti; Giovanna, Spagnuolo | 2020 | Policies, training practices and skills for adults' employability in the digital era | 10.3280/SL2020-156003 |
| 4 | Molly Gloria, Harper; Anabel, Quan-Haase; William, Hollingshead | 2022 | Mobilizing social support: New and transferable digital skills in the era of COVID-19 | 10.5210/fm.v27i4.12559 |
| 5 | Karin, Barac; Kato, Plant; Rolien, Kunz; Marina, Kirstein | 2020 | Generic skill profiles of future accountants and auditors – moving beyond attributes, Higher Education | 10.1108/HESWBL-08-2020-0180 |
| 6 | Khaleel, Al-Daoud; Yousef, Abuorabi; Riyad, Darwazeh; Mohammad Yousef, Nawaiseh; Noor Majid, Saifan; Suliman Ibraheem Shelash, Al-Hawary | 2023 | Electronic Financial Crimes: The Required Skills, Education and Qualifications for Forensic Accountants to Predict and Prevent | 10.18576/isl/120315 |
| 7 | Norlaila Md, Zin; Eley Suzana, Kasim; Indra Devi, Kandasamy; Noor Sufiawati, Khairani; Noryati Md, Noor; Nur Insyirah Mohamed, Sufian | 2022 | Big Data Analytics Knowledge and Skills: What You Need as a 21st Century Accounting Graduate | 10.24191/MAR.V21i03-07 |
| 8 | Saravanan, Muthaiyah; Karen, Phang; Sanjaya, Sembakutti | 2021 | Bridging skill gaps and creating future ready accounting and finance graduates: An exploratory study | 10.12688/f1000research.72880.1 |
| 9 | Michelle Anne, O'shea; Dorothea, Bowyer; Gina, Ghalayini | 2022 | Future Proofing Tomorrow's Accounting Graduates: Skills Knowledge and Employability | 10.14453/aabfj.v16i3.05 |
| 10 | Marcielle, Anzilago; Franciele Do Prado, Daciê; | 2022 | Influence of personality traits, self-esteem, and sense of coherence about motivation | 10.14507/EPAA.30.7240 |

| No | Authors | Year | Title | Digital Object Identifier (DOI) |
|----|---|------|---|-------------------------------------|
| 11 | Simone Leticia Raimundini, Sanches Theodore T.Y., Chen | 2018 | for the professional career of graduate students in accounting science Can universities help to satisfy accounting practitioners' responses of accounting academics' to accounting practitioners' perceptions of weaknesses and strengths of accounting graduates in Hong Kong | 10.15640/ijat.v2n4a4 |
| 12 | Julio César, Alonso-Cifuentes; Daniela, Estrada-Nates; Brigitte Vanessa, Mueces-Bedón | 2021 | Level of English in Colombian graduates of public accounting programs: Far away from the goal | 10.18046/j.estger.2021.160.3878 |
| 13 | Erlane K., Ghani; Kamaruzzaman, Muhammad | 2019 | Industry 4.0: Employers' expectations of accounting graduates and its implications on teaching and learning practices | 10.18488/journal.61.2019.71.19.29 |
| 14 | Miyuki, Nishikawa; Trevor, Nesbit; Jeremy, Robertson; Jessica, Gibson | 2024 | The Soft Skills Needed by Accounting Graduates: A New Zealand Context | 10.18848/2327-7955/CGP/v31i01/51-68 |
| 15 | Marcus, Bowles; Samrat, Ghosh; Lisa, Thomas | 2020 | Future-proofing accounting professionals: Ensuring graduate employability and future readiness | 10.21153/JTLGE2020VOL11NO1ART886 |
| 16 | Dimitra, Karagiorgou; Dimitra, Seretidou; Antonios, Stavropoulos | 2019 | The impact of it level of knowledge on work-readiness from the accounting graduate perspective: evidence from greece | 10.22495/jgr_v8_i2_p4 |
| 17 | Thomas J., Frecka; H., Fred Mittelstaedt; Jennifer Sustersic, Stevens | 2022 | Career Paths and Compensation for Accounting Graduates | 10.2308/HORIZON S-2020-034 |
| 18 | D. Scott, Showalter; Kathy, Krawczyk | 2022 | Incorporating Data Analytics into a Graduate Accounting Program | 10.2308/JETA-2020-065 |
| 19 | Cory, Ng | 2023 | Teaching advanced data analytics, robotic process automation, and artificial intelligence in a graduate accounting program | 10.2308/JETA-2022-025 |
| 20 | Erlane K., Ghani; Nur Azrin Mat, Tarmezi; Kamaruzzaman, | 2019 | Accounting graduates: Are they still accountants? | 10.24191/mar.v18i1.769 |

| No | Authors | Year | Title | Digital Object Identifier (DOI) |
|----|--|------|---|--|
| 21 | Muhammad; Mazurina Mohd, Ali; Prophet, Abdullah Adriana, Shamsudin; Siti Nurulhuda, Mamat; Nur Farahah Mohd, Pauzi; Mohd Syazwan, Karim | 2023 | Adapting to Changing Expectations: Accounting Students in the Digital Learning Environment | 10.18178/ijiet.2023.13.1.1792 |
| 22 | Angela, Liew; Daniel E., O'leary; Arif, Perdana; Tawei, Wang | 2022 | Digital Transformation in Accounting and Auditing: 2021 International Conference of the Journal of Information Systems Panel Discussion | 10.2308/ISYS-2022-008 |
| 23 | Azuraidah, Taib; Yunita, Awang; Shazalina Mohamed, Shuhidan; Zaiza Norsuriati Zainal, Zakaria; Sri, Sulistyowati; Luluk Muhiyatul, Ifada | 2023 | Digitalization of the accounting profession: An assessment of digital competencies in a Malaysian comprehensive university | 10.24191/ajue.v19i2.22229 |
| 24 | Gina Raluca, Gușe; Marian Dragoș, Mangiuc | 2022 | Digital Transformation in Romanian Accounting Practice and Education: Impact and Perspectives | 10.24818/EA/2022/59/252 |
| 25 | Raad, Oleiwi | 2023 | The Extent To Which Textbooks Fulfill The Requirements Of Digital Transformation In Accounting And Auditing | 10.26668/businessreview/2023.v8i5.1509 |
| 26 | Liudmyla, Zakharkina; Pavlo, Rubanov; Balsheker, Alibekova; Oleksii, Zakharkin; Luiza, Moldashbayeva | 2022 | The Impact of Digital Transformation in the Accounting System of Fuel and Energy Complex Enterprises (International Experience) | 10.32479/ijeep.13317 |
| 27 | A., Uzhva; S., Belinska; O., Lazarieva | 2022 | Accounting And Analytical Support Of Enterprises In The Digital Economy | 10.33271/nvngu/2022-3/136 |
| 28 | Immas, Nurhayati; Azolla Degita, Azis; Foni Agus, Setiawan; Iis Anisa, Yulia; Desmy, Riani; Endri, Endri | 2023 | Development of the Digital Accounting and Its Impact on Financial Performance in Higher Education | 10.36941/jesr-2023-0031 |

| No | Authors | Year | Title | Digital Object Identifier (DOI) |
|----|--|------|---|---------------------------------|
| 29 | Maria Yolanda, Laverde Guzmán | 2023 | Digital Competencies In Public Accounting Professionals The Need For The New Normal | 10.37467/revhuman.v12.4733 |
| 30 | Ana Luísa, Rodrigues | 2022 | Integrating Digital Technologies in Accounting Preservice Teacher Education: A Case Study in Portugal | 10.4018/IJTHI.293200 |
| 31 | Gisleise, Aguiar; Luis, Gouveia | 2020 | The Digital Transformation in Academic Accounting Research: Literature Review | 10.5171/2020.947901 |
| 32 | Denise, Jackson; Julia, Richardson; Grant, Michelson; Rahat, Munir | 2022 | Attracting accounting and finance graduate talent - beyond the Big Four | 10.1111/acfi.12904 Wiley |
| 33 | Maja, Jandrić; Saša, Randelović | 2018 | Adaptability of the workforce in Europe - Changing skills in the digital era | 10.18045/zbefri.2018.2.757 |