

THE APPLICATION OF EDUCATIONAL ACCOUNTING IN FACING WORK CHALLENGES AT INDUSTRY 4.0 FOR MODERN ACCOUNTANT

Novita Aprilia¹, Evelyn Febrina Ret Herdyane²

Universitas Negeri Surabaya^{1,2}

Jalan Ketintang, 60231, Surabaya, Indonesia

Email: novita.22002@mhs.unesa.ac.id¹, evelyn.22001@mhs.unesa.ac.id²

Correspondence Author Email: novita.22002@mhs.unesa.ac.id

ABSTRACT

This study aims to examine the application of educational accounting in facing work challenges in Industry 4.0 for modern accountants. The research used by researchers is a Systematic Literature Review with data obtained from journals and research articles from 2020-2023. The data source platform used in this study is Google Scholar. The results of this study indicate that business development is currently in the Industrial Revolution 4.0 stage focusing on developing digital-based business processes and products. So that in the process higher education is not just a place, where students gain knowledge and skills but also a provision for students to complete the industrial era, especially the role of accounting education in it. Based on the study it was found that technological developments, such as AI, will have a significant impact on professional accounting services in the future. There is a need for new skills and knowledge required to deal with this change. The conclusions from the analysis carried out are; the strength that can be developed is that human analytical skills are still very much needed even though some of the accountant jobs will be replaced automatically. The opportunities that exist are several accounting professions that still exist despite technological changes.

Keywords: *Accountant, Accounting, Industrial Revolution*

A. INTRODUCTION

Among the most important revolutions in human history, two of them were first the agricultural revolution and then the industrial revolution. To date, three important industrial revolutions have been experienced, and we are currently transitioning to a new industrial revolution consisting mostly of digital innovations, known as the 4.0 industrial revolution, which gave birth to many innovations and developments, especially in the field of industrial technology (Onyshchenko, Shevchuk, & Shara, 2022). Various applied technological displays, such as advanced robots, artificial intelligence, internet of things, virtual and augmented reality, additive manufacturing, and distributed manufacturing are characteristics of the Industrial Revolution 4.0. For example, nowadays since the arrival of smartphones that have various functions such as Google search, it is very easy for people to find various things needed in daily life (Kruskopf et al., 2020; Zaman, Setyowati, & Pratama, 2024).

The introduction of digital technologies is a major trend in developing industries and economies today. Today, the economic working blocks of companies are largely based on digital technologies, and businesses must incorporate digital technologies in order not to lose the competition (Vărzaru, 2022). The emergence of the COVID-19 pandemic has forced businesses to accelerate digital transformation to survive and thrive by creating, delivering and capturing value for their customers. Professional accountants at all stages of their careers need to adapt quickly to the changing business world under digital transformation, and the role of accountants has changed since

digital technology presents threats and opportunities for the accounting profession (Srinath & Swathi, 2022). Digital technological innovations represented by big data analytics and robotic process automation are drastically changing what accounting professionals can do and how they do it (Aguar, Gouveia, & Rodrigues, 2021). Therefore, accounting employers and clients are demanding accountants to use new technologies and techniques to develop new insights, create efficiencies, and add value. To meet market needs, accountants need digital skills that are essential to use modern digital technologies effectively and safely in professional and personal development (Damayanti, 2019; Pratama & Sakti, 2020).

The development of companies in the industrial world 4.0 can increase the potential of companies to see business opportunities on a large scale. Companies that can see great opportunities can consider the process of investing heavily in the investment market, so as to increase company profits and development (Mujiono, 2021; Zaman & Pratama, 2023). Universities or colleges need to find and use learning methods that improve the most crucial aspect, namely human literacy where the main focus is to develop students' cognitive capacity. Thus, they will be able to think critically and systematically. Regulators or governments and educational activists are required to be able to create curriculum related to changes in digital connectivity, such as coding training, information management between several programmes, and the basis or unbalanced implementation of real-time accounting aimed at all departments and companies (Ismail, Ahmad, & Ahmi, 2020). This is aimed at increasing the capacity of modern accountants in this industrial revolution era. Accountants are required to have optimal control over the data created, where physical data or information is generally obtained under the responsibility of several engineers so that the work between accountants and engineers must go hand in hand so that accounting data and information are well maintained. Therefore, in this study the authors will examine the application of educational accounting in facing work challenges in industry 4.0 for modern accountants (Meraghni, Bekkouche, & Demdoun, 2021).

B. METHODOLOGY

The literature review in this study according Arifin, Pratama, & Utomo, (2023) was systematically selected from international databases. The author searched for data sources from various databases including Google Scholar. The literature search technique uses keywords that match the research questions. The list of keywords that will be used as the basis for the literature search are Accountant, Accounting and Industrial Revolution. The article search uses English and Indonesian with the publication year limited to the last 3 years (2020-2023).

C. RESULT AND DISCUSSION

Research Results Scheme or Diagram (PRISMA)

Chart 1. illustrates the article selection process using guidelines from Preferred Reporting Systematic Reviews and Meta-analyses (PRISMA). The initial search obtained the number of articles from 2020-2023 was 565 articles. Next, the article was screened. A total of 8 articles were included in the next stage. Articles were reviewed for quality so that a total of 8 articles were synthesised in the final report of the literature review.

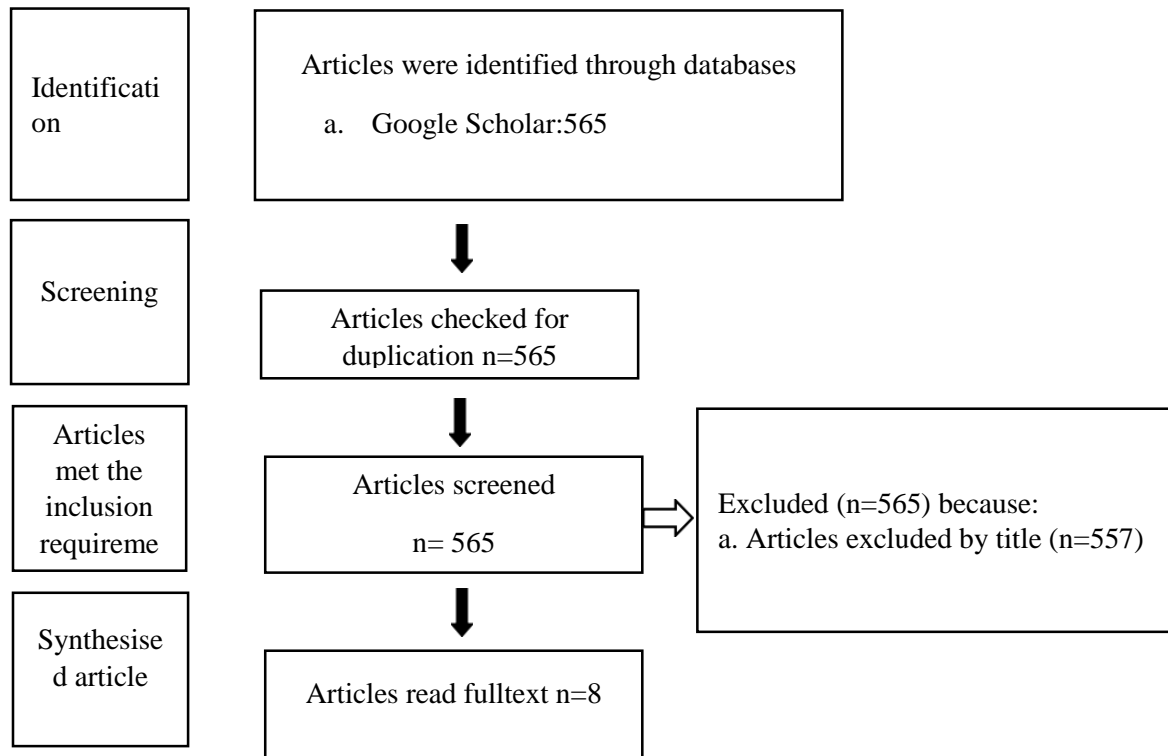


Chart 1. Prisma Diagram

Researchers selected the articles obtained and extracted data on each article obtained from each database. The results of the article were reviewed regarding the application of educational accounting in facing work challenges in industry 4.0 for modern accountants.

Table 1. Accounting Education in Facing Job Challenges in Industry 4.0 for Modern Accountants

| Researcher | Destination | Results |
|---|---|---|
| (Zhu, 2023) | To explore the strategies that local accounting firm leaders use to help employees improve digital skills | One of the key recommendations is to offer intergenerational training and mentorship opportunities to accounting employees. Implications for positive social change include potential improvements in employees' employability, work-life balance, job satisfaction, and client satisfaction, which can enhance the stability and economic growth of local communities. |
| (Lutfiati Rohmah, Arisudhana, & Septa Nurhantoro, 2022) | To find out the future use of AI in Accounting. | In the process, accounting professionals must have the ability to monitor and control that AI is running in accordance with development goals. In output, accountancy professionals need the skills to translate AI outputs to be more easily understood by stakeholders. AI should be well designed to provide benefits that outweigh the costs and risks. |

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|--|---|---|
| (Riadi, 2022) | To find out whether the accounting profession will still exist or will disappear in the future. | Accountants need to be prepared for the digital age. Some accounting jobs will be replaced by machines and robotics. However, there are accountant professions that will remain. In addition, accountants must learn about changes in information technology that are increasingly complex. |
| (Jabin, 2021) | To determine the impact of COVID-19 on the accounting profession in Bangladesh | Many changes were faced due to the pandemic. Most accountants are working remotely during the pandemic than before the pandemic. They have adapted to new technologies. Meetings and trainings are held virtually. They are also facing cybersecurity issues due to lack of data security. Job insecurity has increased. The changes brought about by the pandemic will move the accounting profession forward. These revolutionary changes will be the new normal of the world |
| (Aguiar et al., 2021) | To evaluate studies on digital technology and its impact on accounting. | The analysis revealed that, despite their impact, accounting professionals are still very much unaware or have limited knowledge of these technologies and the consequent reflexes on their profession. |
| (Malau, 2021) | To evaluate the things that have been done and need to be done in learning accounting in the context of Society 5.0 | The accounting profession has partially anticipated the Industrial Revolution 4.0 and the arrival of the Society 5.0 era, but there are still many opportunities for improvement by taking into account all the challenges and threats that have been identified. There needs to be a commitment from every student in learning |
| (Melnyk, Trachova, Kolesnikova, Demchuk, & Golub, 2020) | To determine the current direction and future trends in accounting developments | Modern accounting professionals are shifting from performing technical accounting functions or hard skills to supporting corporate management and playing an important role in enhancing the development of society. It is determined that the main thing in the progress strategy of accounting companies |
| (Khalid Khan, Mohammad Faisal, & Abdulrahman Ageeli Assistant Professor, 2021) | To find out the convenience that accountants will get through the use of Artificial Intelligence tools | Universities have a good role in influencing AI qualifications and expertise. However, based on the information obtained, more seminars should be held to educate students, more teachers should be assisted in acquiring AI knowledge, and textbooks integrating AI and management accounting should be improved. |

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| (Riadi, 2020) | To find out the challenges and opportunities of Chartered Accountant, ASEAN Economic Comunnity (AEC), Industry 4.0 | The upcoming changes in both accounting science and accountants are; cloud accounting data, accounting is influenced by the power of big data, integration of traditional financial information into modern systems, accounting will be efficient and mobile and the role of accountants is changing radically and rapidly. The ASEAN Economic Community and the industrial era 4.0 can be both an opportunity and a threat for Indonesia, so Indonesian Accountants must be ready to face it. |
|---------------|--|--|

Application of Accounting Education in Facing Job Challenges in Industry 4.0 for Modern Accountants

Professional accounting departments offer a wide range of various services, both for legal firms and people in the field of accounting and finance today. These can include bookkeeping, compilation of financial statements, tax services, payroll services, support services for labour and insurance, planning and reporting, and consulting services (Rohmah et al., 2022). Therefore, it is clear that the work of an accountant is no longer limited to accounting i.e. reporting. With all this in mind, the importance of the accounting business is undoubtedly significant. With all this in mind, both companies and people and the country and its economy have a real relevance in the accounting profession (Solikhatus, Sari, & Nurfatmawati, 2020). The field of accounting, as a fundamental part of organisational management, has experienced the impact of these technological innovations in their activities and requires that professionals immerse themselves in a rich process of adaptation and keep up to date with the use of digital tools. However, it is important to realise that the process of digital maturity caused by technology is a dynamic and continuous process (Rosi & Mahyuni, 2021; Harti, Sakti, Sudarwanto, Pratama, & Habibah, 2022).

In this era of industrial revolution 4.0, modern accountants and accounting firms are required to develop mobile applications in order to access data directly from mobile and tablet devices. Financial statement audits are conducted in real time. Regulators and auditors will automatically pull the required data directly from systems and sensors installed in operational activities (Gonçalves, da Silva, & Ferreira, 2022). Through this stage, data accuracy will be more accountable and transparent. If the accounting profession does not have sufficient expertise in the field of information technology, then other professions will take over the accountant's function. The accountant profession in the perspective of the industrial revolution is no longer a 'book keeper' but is developing and expanding into a profession that is more than financial aspects (Khalid Khan et al., 2021). The exploration of new things also naturally leads to specialisations that do not exist today. These specialisations will increase into new areas of work that demand different abilities and capacities of each resource. The accounting profession is required to be able to see the potential for change in the short and long term. The gap between the real world of work and the academic world must be connected and given constructive and informative solutions (Razali, Jusoh, Abu Talib, & Awang, 2022; Utomo & Pratama, 2024).

In this era of the Industrial Revolution 4.0, technological developments, such as AI, will have a significant impact on professional accounting services in the future. There is a need for new skills and knowledge required to deal with these changes. Professional service performers are required to face the challenges ahead and capture the opportunities that may be obtained (Persulesy & Kusumawati, 2022). They need a new set of skills related to AI systems in input, process, and output. In the input, the required skill set is related to how to train or provide input so that AI can develop in accordance with the direction needed in the accounting field. In the

process, accounting professionals must have the ability to monitor and control so that AI runs in accordance with development goals. In the output, accountants need skills to translate AI outputs to be more easily understood by stakeholders (Makarenko & Plastun, 2017).

The replacement of physical human activities with machines, accounting practitioners see the need for accounting graduates to focus on continuous learning and education, particularly in acquiring knowledge and skills in IT. Modern accounting professionals are increasingly moving away from purely technical functions to support corporate management and play an important strategic role for effective management at the microeconomic level and a prominent social role, working to enhance the development of society at the macroeconomic level (Riadi, 2022; Nuryadi et al., 2023). At the same time, accounting professionals are forced to adjust their previously static functions in light of the development of the world economy, globalisation, recent technological and technological developments, innovations and trends in the business environment. As further changes are inevitable, and accounting is a profession highly sensitive to the above changes, a major place in accounting firms' strategies and personal professional development will focus on the development of new technologies, soft skills, and professional flexibility. Such a change in priorities will turn the challenges facing the accounting industry and the accounting profession to its advantage, as modern technological developments combined with soft skills can significantly increase the value and career prospects of accountants (Chigbu, Ngwevu, & Jojo, 2023; Pratama, Sakti, & Listiadi, 2022).

D. CONCLUSION

Industry 4.0 changes the role of accounting and accountants, namely; cloud accounting data, accounting is influenced by the power of big data, integration of traditional financial information into modern systems, accounting will be efficient and mobile and the role of accountants is changing radically and rapidly. Accountants must have a strategy, including mastery of soft skills consisting of interpersonal skills, intra personal skills, Technical Skills, and Business Understanding Skills in order to survive in the digital era. Accounting learning and curriculum need to be continuously revised to follow the changing times by adding information technology to accounting courses in the Industrial Revolution 4.0 era. Through Accounting Education, Universities must revise the curriculum, link and match with industry, prioritizing skills for students so that they are ready to work after graduation.

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