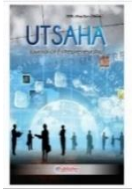

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The Challenge Identification of Government Accountant in Virtual Era

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ABSTRACT

This research aim to identify the problems and challenges of their accountants working in virtual technology era. The author believes that identifying the challenges government accountants face in this technological era will make it easier for them to work to serve the public. This study depends on the results of scientific studies as evidence of the kingdom of the field and analyzed under a phenomenological approach then we can present a valid and convincing finding in answering the problems of this research. The review processes conducted by researchers are data coding, evaluation, and in-depth interpretation to get valid findings. The data obtained from several literature sources through an electronic search system by installing keywords. From the study results and discussion, it concludes that the challenges faced by public accountants include the importance of them mastering technology and understanding how the public desires services. In other words, the challenge of the public accounting profession in globalization era is the liberalization of accounting services. These obstacles will result in the importance of education and qualifications that necessary for public accounting services. It is hoped that these findings will become an essential part of future policymaking.

Keywords: *Identification, Public Accountant, Technology Era Accountant Challenge*

INTRODUCTION

Lately, various technological media have been processing data through automated systems, making work more efficiently handled by machines. As a result, the role of humans in several industries has diminished (Guthrie & Parker, 2014). This trend is driven by innovations in data processing, robotics, automation, and artificial intelligence, leading to a shift in job demand. While traditional roles such as clerks, bank employees, and manufacturing workers are declining, the demand for professionals in programming, nutrition, business, finance, mathematics, and computer-based agriculture is increasing (Bonsón & Bednárová, 2019).

A study by Business Insider predicts that in the next 20 years, accounting and auditing roles will be increasingly taken over by automated systems, with a 94% probability of automation—second only to telemarketing jobs (Jeacle, 2021). This shift poses challenges to the accounting profession, including the demand for non-financial information, advanced IT skills, business complexity management, valuation of intangible assets, and ethical considerations in financial reporting. However, U.S. News & World Report confirms that the accounting profession remains essential, ranking it 13th among the best business careers in 2021 (Afrianto, 2018). The integration of technology allows accountants to focus on analytical and strategic aspects rather than manual bookkeeping.

Some argue that technological advancements justify the reduction of traditional accounting jobs, while others contend that jobs are evolving rather than disappearing. Barclays asserts that roles are transforming rather than being eradicated (Gulin, Hladika, & Valenta, 2019). This perspective suggests two key implications: first, a shift within the accounting profession from administrative tasks to more strategic decision-making roles, and second, a reduction in traditional accounting tasks, compelling professionals to diversify into other fields or industries. This article explores the long-term changes and challenges faced by accountants in the digital era, emphasizing the transition from routine bookkeeping to more complex, analytical, and decision-making roles (Fettry, Anindita, Wikansari, & Sunaryo, 2019).

Various reports from organizations such as the World Economic Forum (WEF), McKinsey Global Institute (MGI), Barclays, and Money highlight evolving workforce needs. These studies reveal an increasing demand for professionals skilled in data analysis, cybersecurity, networking, and financial modeling (Aceto, Persico, & Pescapé, 2018). In contrast, jobs in traditional office administration, sales, and clerical work are declining due to automation and digitalization. The banking sector, for instance, experienced a significant shift as EU banks closed 9,200 branches and eliminated 50,000 jobs in 2016, largely due to the rise of online banking (Ghobakhloo & Fathi, 2019).

MGI predicts that by 2030, automation will require 75–375 million workers

worldwide to transition into new roles or upgrade their skills (Manyika et al., 2017). Although Business Insider forecasts a decline in accounting jobs, MGI projects continued demand for accountants, analysts, and technology professionals. Healthcare providers, scientists, financial experts, and engineers are also expected to experience job growth. Professions requiring human judgment, interpersonal relationships, and creativity—such as healthcare workers, artists, and strategic decision-makers—will likely see increased demand (Cichosz, Wallenburg, & Knemeyer, 2020).

The rapid advancement of technology is reshaping the way people work. Machines are now capable of performing complex tasks through artificial intelligence, but human capabilities remain superior in areas requiring judgment, creativity, and emotional intelligence (Sánchez-Matamoros, 2013). Future job opportunities will primarily focus on roles that involve unpredictable environments, interpersonal trust, and creative problem-solving—areas where human skills are irreplaceable (Aeshah, Al-Obaidi, & Mirdan, 2021). By 2040, six emerging job roles are expected to dominate employment demand: 1) Virtual Store Manager, 2) Robot Mediator, 3) Robot Trainer, 4) Drone Traffic Controller, 5) Augmented Reality Designer, and 6) Micro Gig Agents (Shuen, Feiler, & Teece, 2014).

Automation, online platforms, and digital transformation have significantly increased business efficiency. However, without skilled professionals to oversee and manage these systems, technological advancements could negatively impact company performance. Powell (2018) reports that 24 industries are facing decline due to technological disruption, with the most affected being the video rental industry, which saw an 89.8% drop in employment between 2007 and 2016. Other industries such as bookstores, printing, and banking have also experienced significant workforce reductions (Sondka et al., 2018).

From multiple studies, it is evident that automation and technological advancements are replacing jobs characterized by repetitive and predictable tasks. However, roles that emphasize interpersonal skills, trust, and creativity will continue to grow (Pfeiffer, 2016). Accountants must adapt to these changes by developing expertise in analytics, IT, and strategic decision-making to remain relevant in the evolving job market.

The shifting job landscape also raises concerns about accounting education. Studies have shown that public sector accounting education remains underdeveloped in countries like Indonesia and Australia. In Indonesia, most universities offer only three credit hours of public sector accounting courses, and there is a shortage of instructors with relevant expertise (Shodiq, 2021). Despite financial management reforms, public sector accounting curricula have not been significantly updated. This study investigates government accounting education in Indonesia, analyzing curriculum content, instructor expertise, teaching resources, and the connection between education and public financial management reforms

(De Bruyckere & Everaert, 2021).

In conclusion, the future of accounting lies in adapting to technological advancements and shifting job demands. While automation will replace some tasks, it will also create new opportunities requiring human expertise. Educational institutions must align curricula with these changes to prepare future accountants for evolving workforce needs.

RESEARCH METHODOLOGY

Next, the researchers outline the methodology used to review scientific publications, aiming to gather scientific evidence on the challenges faced by public accounting in a technology-driven era (Ferri et al., 2020). This study provides insights into the obstacles encountered by the accounting profession in this technological landscape.

The researchers collected a wide range of literature available electronically, including websites, books, scientific articles, and other sources discussing the issues and challenges of public accounting in the era of technological transformation. To support this study, they conducted a series of analyses based on a phenomenological approach, which seeks to understand a problem through existing data. This process involved data coding, thorough evaluation, and in-depth interpretation to obtain valid data that effectively addresses the research problem.

This research primarily relies on secondary data in the form of published studies that help answer the research questions. Given the nature of the data, the researchers analyzed it electronically using a structured system aligned with the research objectives. The study adopts a descriptive qualitative method and follows a scientific reporting model that examines the challenges faced by the accounting profession in the digital era (Dabkienė et al., 2020). Through this approach, the research identifies key issues and obstacles confronting public accounting in the technological era.

RESULT AND DISCUSSION

Challenge of A Public Accountant

One important aspect to consider is the accounting profession, which originates from Greek traditions. The term "profession" implies an action or work carried out with a firm oath or guarantee, signifying a deep commitment to maintaining the integrity of one's calling. According to Biesta (2015), the field of bookkeeping involves recognizing, measuring, and disclosing financial data, reflecting the extent to which bookkeeping work is practiced by professionals.

Another key topic is the Digital Era, a period characterized by rapid advancements and widespread adoption of versatile technology (Snodgrass, 2017). In 2022, society was still dealing with the effects of the Covid-19

pandemic, which accelerated digital adaptation and innovation. Governments encouraged people to avoid crowds and maximize remote work, known as Work From Home (WFH), as well as implement online learning in education. This shift emphasized the importance of technology in daily activities.

In the accounting profession, digital advancements such as the Internet of Things (IoT), Big Data, Cloud Computing, Artificial Intelligence (AI), and cybersecurity have transformed the industry (Samsuri, A. S. B., Arifin, T., & Hussin, 2016). These innovations present both opportunities and challenges for accountants. Those who master and integrate technology into their work will gain a competitive edge over those who do not. Accountants are no longer solely responsible for calculations and report organization but are also expected to incorporate AI-driven processes to enhance financial decision-making (Apostolou, B., Dorminey, J. W., Hassell, J. M., & Hickey, 2019).

However, the rapid development of technology also poses a challenge, as automation could replace certain human roles. The primary challenge for accountants in the digital era is mastering technological advancements to stay relevant in a rapidly evolving industry. Despite these challenges, maintaining the integrity and professionalism of the accounting profession remains crucial. Gonczi (2020) emphasized that accounting is a structured process involving the recognition, assessment, and disclosure of financial information.

As we continue to advance in the digital era, the presence of cutting-edge technology will continue to reshape the accounting field. Mastery of these tools will provide new opportunities for accountants to enhance their role, while failure to adapt may lead to obsolescence. Therefore, developing technological expertise is essential for success in the modern accounting profession (Gulin, D., Hladika, M., & Valenta, 2019).

Accounting and the Industrial Revolution

The Industrial Revolution 4.0 has brought significant changes in the way people work, the role of machines, innovation, and processes across various professional fields, including accounting (Broadberry, 2021). This revolution requires the accounting profession to adapt to advancements in information technology and big data.

In today's digital era, the rapid development of the economy has created new opportunities while also increasing risks. These changes have had a profound impact on the accounting field. Technological advancements have led to the emergence of new markets while transforming or even replacing traditional ones. Intelligent machines and robots are now performing many tasks, fundamentally altering the business landscape.

As the Industrial Revolution 4.0 reshapes various disciplines and professions, accountants must adapt their work practices to enhance service quality and global reach. Online communication and cloud computing are

becoming essential tools for accountants to remain competitive (Slyozko & Zahorodnya, 2016).

In this fast-paced digital era, the way people access information, including in the field of business accounting, has transformed. Technological advancements have streamlined business operations, reducing the need for human resources, including accounting personnel. This has led to misconceptions about the role of accountants, as some believe technology will entirely replace them (Fleischman & Parker, 2017).

The rapid progression of automation and digitalization signals a shift in control from humans to technology. While technology may replace certain accounting tasks, the role of accountants remains essential in providing strategic and consultative expertise (Surianti, 2020). To stay competitive, accountants must acquire relevant certifications and develop digital proficiency. Additionally, they must enhance soft skills such as communication, business acumen, and technical expertise to navigate the challenges of the digital age.

Accountants must recognize the opportunities presented by the Industrial Revolution 4.0 and proactively adapt. Change is inevitable, and success depends on how individuals and organizations respond to these transformations. The challenges of the digital era cannot be ignored in the accounting field. Instead, they must be studied carefully to develop the right strategies for overcoming them. Technological literacy is a key factor in addressing these challenges (Funnell & Williams, 2014).

Challenges of the Accountant Profession

In the next five years, as 5G technology becomes fully integrated, Gigabit-speed internet access expands, and connectivity via IoT and IoP grows, the role of accountants will shift significantly. AI and robotics will take over core accounting tasks such as transaction recording, processing, classification, automated financial reporting, and analysis, reducing human intervention (Groșanu et al., 2021). This automation will improve efficiency and accuracy, delivering real-time results.

Many companies have already implemented AI-driven accounting solutions, supported by standardized financial processes and IT system architectures aligned with Industry 4.0 demands. Consequently, future accountants must develop skills in data analytics, IT advancements, and leadership adaptation (Ahinful et al., 2017).

Moreover, accounting professionals and firms will need to develop mobile applications that enable direct data collection from smartphones, tablets, and VR devices. Real-time financial audits will rely on regulators and auditors extracting data directly from systems and operational sensors. Accountants lacking IT expertise risk being replaced by other professionals, emphasizing the necessity of tech proficiency in accounting (Candra et al., 2021).

Industry 4.0 is also creating new business opportunities. In Germany, 80%

of companies are ready to implement these changes, while China has allocated 60% of investments toward data innovation (Khomsiyah, 2017). Governments and educational institutions must adapt curricula to enhance digital literacy, including coding, data management, and real-time accounting for all corporate functions, including investors.

Continuous professional development is crucial for accountants to stay relevant. Online and in-person discussions, training, and impact assessments are necessary to evaluate how accounting expertise evolves. Effective collaboration between accountants and IT specialists is essential to maintaining financial data integrity (Spilnyk & Paluh, 2019).

The rise of Industry 4.0 will inevitably transform traditional accounting roles. AI-driven automation is expected to eliminate 1-1.5 billion jobs globally by 2025, shifting human tasks to machines (Gulin et al., 2019). Accountants must adapt by embracing technology and developing critical thinking, data literacy, and strategic decision-making skills (Leitner-Hanetseder et al., 2021). Additionally, strong soft skills, business acumen, and an understanding of AI functionality will differentiate human accountants from machines. While automation handles routine accounting tasks, human accountants will need to focus on areas requiring complex judgment and innovation (Wadan et al., 2019).

In conclusion, the accounting profession must evolve with technological advancements. To remain relevant, accountants must expand their expertise beyond traditional financial reporting and develop skills in technology, analytics, and strategic management. The future of accounting will depend on human adaptability in an era where automation and AI redefine professional roles.

Applicable Curriculum Development

To prepare HR in the bookkeeping field for Industry 4.0, training professionals must develop an educational curriculum that aligns with digital transformation needs (Nguyen et al., 2020). These curriculum changes include coding, data management across various platforms, and continuous oversight of financial operations, including stakeholder reporting.

Human Resource Development in accounting requires equipping bookkeepers with the necessary knowledge and training to adapt to these changes. Regular discussions can be a useful step, followed by assessing their impact on accounting functions.

Maintaining high standards is a key responsibility of bookkeepers. They must have full control over generated data, which is typically managed under the supervision of system developers. This underscores the importance of a strong collaboration between accountants and technical experts to ensure data integrity and accuracy (Catal & Tekinerdogan, 2019).

CONCLUSION

The challenges of public services, particularly in accounting, require professionals in this field to adapt to technological advancements. This necessity arises due to various challenges in bureaucratic development, especially within the accounting sector. Since Indonesia's digital transformation, data-driven policies have been increasingly supported by government transparency, making information orientation a crucial aspect that public service professionals must understand and implement.

The accounting profession faces significant challenges as it must continuously evolve to meet the demands of the digital era. With information and innovation closely linked, accountants in public services must integrate artificial intelligence through knowledge, skills, and attitudes. Experts highlight the growing need for accountants to be prepared to serve the public, particularly in government sectors, where technological adaptation is essential.

While this study provides insights into these challenges, we acknowledge its limitations. We welcome constructive feedback and suggestions for future improvements. Hopefully, this research will serve as valuable input for professionals in technology and public accounting, both in government and the private sector.

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