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Breaking Barriers: Empowering Special Needs Accountants in Malaysia through Artificial Intelligence and Assistive Technology

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Abstract: Accountants with disabilities face persistent barriers in the profession, such as limited educational access, inadequate workplace accommodations, inaccessible technologies, and prevailing social and institutional biases. These limitations restrict their participation and deprive the profession of diverse talents and perspectives. Thus, this study explores how artificial intelligence (AI) and assistive technologies can empower accountants with disabilities in Malaysia by reducing obstacles, fostering inclusivity, and promoting workforce diversity. Using content analysis of existing literature, the study identifies the challenges encountered by workers with disabilities, examines current technological applications, and reviews international practices to highlight lessons that may be adapted to the Malaysian and regional context. The findings indicate that AI-driven solutions and assistive tools such as screen readers, real-time captioning, smart prosthetics, and cognitive support systems can improve accessibility, communication, productivity, and independence for these professionals. Consequently, such empowerment fosters greater workforce inclusion, enhanced productivity, strengthened equity and independence, and expanded opportunities for lifelong learning. Although specific evidence in Malaysia is limited, increasing institutional support and local innovations demonstrate strong potential for integration. The study contributes to the literature on diversity and inclusion in accounting. Practically, it calls for firms, educators, and stakeholders to adopt inclusive technologies, and from a policy perspective, it highlights the importance of government support in promoting equal opportunities. The study addresses this issue in Malaysia, offering fresh insights for a more inclusive accounting profession. It addresses the research gap in inclusivity and highlights how technology can foster a more equitable professional environment.

Keywords: *Orang Kurang Upaya (OKU), Malaysia, Accountants, Artificial Intelligence, Assistive Technologies*

1. Introduction

The accounting profession has historically been defined by its emphasis on accuracy, analytical precision, and adherence to professional standards. Nevertheless, people with special needs have frequently encountered systemic barriers to participation in the field. It includes challenges in retrieving educational, workplace accommodations, and the use of traditional technologies that do not adequately address their needs (Faiella et al, 2023; Shahbudin & Jamil, 2024). These barriers not only limit career opportunities for these individuals but also prevent the profession from fully benefiting from diverse perspectives and talents.

In today's digital era, technology and innovation are transforming every industry, and the accounting field is no exception. As technology unlocks efficiency and growth in our profession, it also creates a tremendous opportunity, such as the ability to create a more inclusive profession. The intersection of AI and assistive technology can be life-changing for OKU (Orang Kurang Upaya) here in Malaysia. Recent innovations in AI and assistive technologies provide a great opportunity to tackle these problems. AI-assisted technologies such as speech recognition software, automatic data analysis, intelligent screen reading, or predictive text can now give benefits to accountants with visual, auditory, physical impairments, or cognitive disabilities (Hussin et al., 2024; Naayini et al., 2025). These technologies have the potential to transform the work of the special needs accountant into a functional accountant.

In addressing the challenges faced by persons with disabilities in the accounting field, this study investigates the role of AI and assistive technologies in enhancing their empowerment, with particular attention to the

Malaysian context. It underscores the potential of these technologies to break down barriers, improve accessibility, and foster a more diverse and inclusive workforce. This discussion adds to the growing research on diversity and inclusion in the accounting profession by emphasizing the transformative role of technology in fostering more equitable and inclusive professional environments.

2. Literature Review

Contextualizing Disability in Malaysia

In Malaysia, the label OKU is used to describe persons with persistent physical, sensory, intellectual, or mental impairment. These factors, together with environmental or social barriers, do not allow people to realize their full potential in their daily lives. This is consistent with the understanding of disability as an interaction between an individual's ability and their environment, rather than a mere medical condition as enshrined in the Persons with Disabilities Act 2008. This act defines disability as an inhibition that is not the result of a mere medical diagnosis but is based on the interaction among the person's physical, including sensory, functioning with targets in the environment.

Malaysia has implemented several policies to support persons with disabilities, notably in employment, over the past decade. However, there is little available research on the representation of these groups in individual professions, such as accountancy. In 2018, records indicated that only about 4,500 people with disabilities were employed in the public and private sectors out of a total of 320,870 registered individuals with disabilities, reflecting an employment rate of just 1.4% (OKU Rights Matter, 2025). This figure highlights the critical underrepresentation of people with disabilities in the labor market and underscores systemic challenges in achieving workforce inclusivity. Ahmad Rofe and Syed Marzuki (2022) argue that such outcomes are driven by persistent barriers, including societal stigma, limited employer readiness to provide reasonable accommodations, and weak enforcement of inclusive employment policies. Section 29 of the Disabilities Act contains a provision that the principle of equal employment opportunity is not to apply, but the actual practice has not caught up. By July 2024, more than 724,000 people had registered as OKU with the Department of Social Welfare, and these figures are indicative of the growing level of societal recognition as well as the immensity of the task.

Coping with Disability

Disability takes many shapes physical and sensory impairments and cognitive and emotional struggles. Such disabilities, whether congenital, caused by medical conditions, or acquired with age, affect the capability of a person to perform routine activities in life. In Malaysia, disabilities are commonly grouped into several categories, with physical, vision, speech, hearing, psychiatric, and multiple disabilities (Nasir et al., 2024). These include physical, sensorial, and auditory disabilities most frequently. Physical disabilities such as reduced mobility from arthritis, spinal cord injuries, or limb loss can create barriers to routine tasks like walking, dressing, or driving, often requiring the use of assistive devices such as prostheses or wheelchairs. Likewise, individuals with visual or auditory impairments face distinct challenges in their daily lives. For example, reading or navigating public spaces can be difficult for the visually impaired, while those with hearing loss may struggle with conversations even when using hearing aids, sign language, or a combination of both. These sensory limitations often reduce opportunities for social interaction and can contribute to feelings of exclusion or alienation from society.

The impact of disability extends beyond physical limitations, encompassing significant social and emotional costs. Families and communities often bear the weight of restricted access and societal barriers, while structural challenges such as the absence of universal design, limited accessibility of facilities, and persistent discriminatory practices continue to hinder the quality of life for people with disabilities. These barriers create long-lasting obstacles, contributing to intergenerational cycles of marginalization in education and employment (Mitra, 2017).

In Malaysia, the enactment of the Persons with Disabilities Act 2008 marked a step toward greater inclusion by promoting accessibility in education, employment, and public facilities, as well as fostering awareness of disability rights. While the law has been in the right direction, it has been poorly enforced, and there are still a lot of loopholes. Much more work must be done to make sure that people with disabilities have equal

opportunity, independence, and dignity of full participation in society (Yaacob & Hasan, 2019; Mustapha & Abdullah, 2021). Despite its progressive framework, much remains to be done to ensure genuine equality of opportunity, independence, and dignity for people with disabilities in Malaysian society.

Overcoming Challenges

AI and software are reshaping the accounting profession. They make simple tasks of regular accounting, but they also enable accountants to report on huge, complicated data sets. This is transforming the work and capability of accountants. The new technology is also opening the industry and giving opportunities to people with disabilities who have never been able to get in and move along in their lives. It also makes it more productive and efficient.

For decades, people with impairments have fought to become accountants. The story is playing out differently, however, as progressively advanced assistive technology becomes possible to support and enrich the lives of people with physical, sensory, or cognitive disabilities. Automation lets robots do simple jobs, which frees up professionals to work on more important things like analysis, interpretation, and strategic decision-making, where they may use their expertise in a better way.

This shift toward inclusivity is also beginning to be recognized within schools and professional institutions. For example, the Association of Chartered Certified Accountants (ACCA) has incorporated accommodations into its examination framework to ensure that students with disabilities can undertake their assessments on equal terms. Similarly, the UK Equality Act 2010 emphasizes that individuals should not be disadvantaged in assessment or evaluation due to their personal circumstances, mandating reasonable adjustments in education and employment contexts. These measures align with broader international commitments to disability inclusion in professional qualifications and lifelong learning (Waterfield & West, 2005).

Recent studies continue to claim that AI's effect on making a more sustainable accounting family will be both very disruptive and very positive. AI-powered solutions make it easier to manage complex data and rely less on manual data processing. This opens new opportunities for those who may have been left out in the past. This move will transform the lives of disabled people and help the profession by bringing in more talented people and making the practice more distinct. By integrating these technologies, accounting can not only leverage diverse talents but also strengthen inclusivity and innovation within the field (Kokina & Davenport, 2017).

3. Methodology

This paper focuses specifically on the role of AI and assistive technology in supporting special needs accountants in Malaysia. The scope contains an exploration of the barriers faced by accountants with disabilities, technological tools, and the best practices in technology adoption. A content analysis of previous literature is employed as the primary technique for data collection. The purpose of this study is to:

- Identify and analyze challenges. It is to understand the barriers and obstacles of impaired workers.
- Examine current technological applications to assess how AI and assistive technologies are currently being utilized in helping disabled workers.
- Explore comparative insights; to review international practices and successful initiatives in leveraging AI and assistive technology for persons with disabilities, highlighting lessons that could be applied in the Malaysian or broader regional context.
- Propose practical solutions; to recommend strategies for enhancing accessibility, improving workplace inclusivity, and guiding policymakers, educators, and industry stakeholders in empowering special needs accountants.

By addressing these objectives, the study aims to bridge the research gap on comprehensiveness within the accounting profession and provide a comprehensive overview of how AI and assistive technology can be harnessed to create an equitable and supportive professional environment.

4. Findings

The findings of this study highlight how advances in assistive technologies, when integrated with accounting practices, are reshaping the professional landscape for accountants with disabilities. As the accounting profession becomes increasingly digital, the availability of inclusive tools has emerged as a critical factor in ensuring equitable participation.

Tools for Special Needs Accountants

The development of current assistive technology has greatly impacted the transformation of the professional situation for accountants with disabilities. These developments in assistive technology have promoted more autonomy, inclusivity, and productivity by responding to a wide range of disabilities, such as visual, auditory, physical, and cognitive. The emergence in the use of assistive technologies being integrated into accounting workflow, such as screen readers, speech-to-text software, and ergonomic input devices, is significant in supporting individuals with specific challenges (Smith and Jones, 2024). Assistive technology facilitates giving equal opportunities to all the accountants regardless of their disabilities.

Visual

For accountants with visual impairments, tools like JAWS (Job Access with Speech) or NVDA (Nonvisual Desktop Access) allow users to work with accounting software and spreadsheets using auditory feedback. These screen readers convert text and numerical data into speech or braille, allowing users to perform tasks such as data entry, auditing, and report generation (Wentz, Jaeger, & Lazar, 2011).

In Malaysia, although the adoption of AI and assistive technologies within the accounting field is increasing (Tan & Lee, 2024), there remains a lack of empirical studies focusing specifically on their integration into the workflows of visually impaired accountants. While research on this area is still limited, current developments suggest that the profession is moving in the right direction toward incorporating such tools to meet the needs of visually impaired professionals. Several technologies available in the Malaysian market cater to this group. For example, AI-based Optical Character Recognition (OCR) and Intelligent Document Processing solutions, such as MataOCR and MetaBot, can identify printed or scanned text and extract data from invoices, receipts, pay slips, and bank statements in multiple languages (MataOCR, n.d., Metabot Sdn. Bhd., n.d.). These tools enable visually impaired accountants to convert hardcopy documents into digital formats, reducing reliance on manual data entry, minimizing errors, and enhancing efficiency. Similarly, QuickScan by QNE Optimum Sdn. Bhd. Allows users to upload documents, such as bills or payment vouchers, which are then processed using OCR technology (QNE, n.d.). The system automatically converts the detected text into accounting transactions, which are then recorded in the general ledger, thereby streamlining the accounting process for visually impaired professionals.

In addition to commercially available products, various support systems have been established to promote the adoption of AI and assistive technologies for individuals with visual impairments. For instance, non-profit organizations such as the National Council for the Blind Malaysia (NCBM) have contributed to the development of text-to-speech engines and assistive tools in Bahasa Melayu (NCBM, n.d.). Complementing these efforts, academicians from the Faculty of Engineering at Universiti Teknologi Malaysia (UTM) have researched assistive mobile applications that employ techniques similar to QuickScan, enabling the conversion of text into audio output. Their studies also extend to wearable, navigational, and physical assistive devices that utilize sonar technology to detect obstacles. These initiatives demonstrate that AI and assistive technologies in Malaysia are moving in the right direction to support accountants with visual impairments. For example, Sin et. al. (2015) introduced a Mobile Text Reader application at UTM that captures images of text, applies OCR, and generates audio output for users with low vision. Additional studies include a sonar-based obstacle detection device for the visually impaired (Kamaludin et al., 2015) and a wearable navigation vest incorporating vibration feedback and ultrasonic sensors (Azam et al., 2024).

Auditory

For deaf and hard-of-hearing employees, Automatic Speech Recognition (ASR) and real-time captioning embedded in productivity platforms like Microsoft Teams and Google Meet have become mainstream (Otter.ai, 2023). Speech-to-text applications such as Otter.ai can live-transcribe spoken conversations, enabling users to

follow meetings or conversations by reading a live transcript. Modern hearing aids and assistive tech also increase clarity and sound direction, which leads to better interaction experiences in team or group settings.

The other study further emphasizes the potential of AI in supporting communication and enhancing work efficiency for professionals with hearing impairments, including those in the accounting profession. AI-powered ASR systems, for instance, facilitate interaction between deaf accountants and their hearing colleagues by converting speech into text in real time (Violeta & Toda, 2023). Similarly, advances in AI-based sign language recognition enable the interpretation of hand gestures and motions into text or speech, thereby bridging interactions with individuals unfamiliar with sign language (Chen et al., 2024). Beyond communication, AI applications can automate routine accounting tasks, supporting deaf accountants in focusing on higher-order responsibilities such as data analysis, workflow management, and strategic decision-making (Tan & Lee, 2024). Collectively, these innovations underscore the role of AI in enhancing inclusivity, productivity, and career progression for accountants with hearing impairments.

Physical impairment

For those with physical impairments like low mobility or limited hand dexterity, technology can be tailored with less reliance on manual input. Professionals with physical impairment would benefit from adaptive hardware such as voice-controlled interfaces, eye-tracking systems, or one-handed keyboards, which make it easier to use accounting systems like QuickBooks or SAP without using the traditional data entry method. An example of eye-tracking technology facilitates human–computer interaction through ocular movements, serving as a substitute for conventional input devices such as the mouse and keyboard. This method is particularly advantageous for individuals with severe mobility impairments. In this context, Meena and Salvi (2025) introduced a gaze-controlled virtual keyboard that integrates deep learning techniques with standard camera hardware, demonstrating its effectiveness in enabling communication for users with both mobility and speech limitations. Similarly, speech recognition tools like Dragon NaturallySpeaking allow accountants with physical limitations to dictate entries, manage emails, and control software applications entirely through voice commands. This cuts down on the old-school typing, giving you a hassle-free flow of hands.

Smart prosthetics are also promising nowadays, which represent assistive technologies for accountants with physical impairments. One of the examples is myoelectric prosthetic hands, such as the *Bebionic Hand* or the *i-LIMB* are equipped with multi-articulating fingers and customizable grip patterns, allowing users to perform delicate office tasks such as typing on a keyboard, handling documents, using a calculator, or writing with a pen (Ottobock, 2023). These smart prosthetics are embedded with sensors, robotics, and AI to enable more precise and adaptive movement

Equally important is the challenge of providing both physical comfort and ergonomic support. Adjustable desks, such as the Fully Jarvis Standing Desk, and chairs intended for lengthy sitting sessions, like the Herman Miller Aeron Chair, can also help prevent strain and improve posture. Innovative solutions of this kind are particularly valuable for individuals who experience persistent fatigue or chronic pain. When conventional tools such as a standard keyboard or mouse cannot be fully utilized, alternative devices provide practical options. For example, one-handed keyboards such as the Maltron Single-Handed Keyboard and adaptive devices like the Logitech Adaptive Mouse are specifically engineered to meet the needs of users with mobility restrictions or limb differences.

Most studies, such as Ali et al (2024), Rusdi et al (2021), and Yunos et al (2022), focus on general professionals with limited abilities. Thus, it can be concluded that there is still a lack of evidence and data on studies focusing on accountants in Malaysia. But there are some AI and assistive technology tools that are available in Malaysia and applicable to accountants with physical impairments, such as TM One Voice AI by TM One (TM One, n.d.). These are AI voice assistance products that permit voice or speech commands instead of using keyboard and mouse as the methods of control of software, such as starting an accounting software program, navigating menus navigation and executing commands. The usage of ergonomic hardware is also available, such as ergonomic keyboard, mouse, chairs, desk and etc., that are available in local markets such as Harvey Norman Malaysia and many more. These ergonomic devices help accountants with limited physical abilities, reduce fatigue and strain, reduce the risk of injury, and provide comfortable workstations that can automatically improve the morale of the employees. Thus, with the current development, it can be assumed that Malaysia is

on the way to breaking the barriers in the adoption of AI and assistive technology to accommodate the accountants with physical impairments.

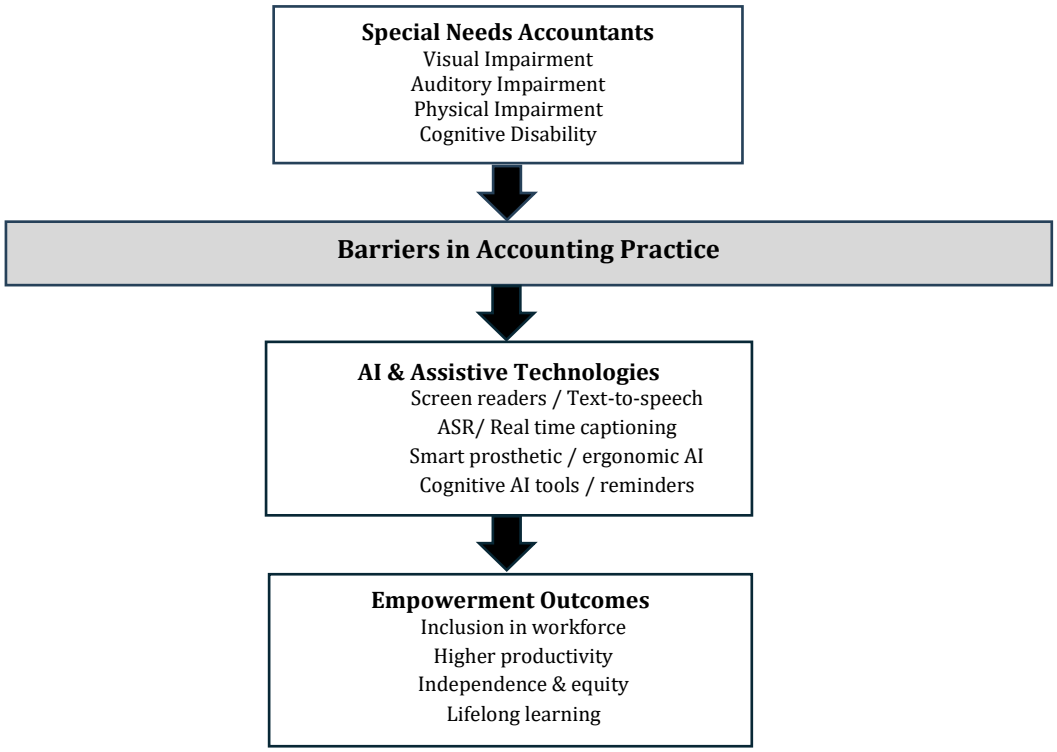
Cognitive disability

The term "cognitive disability" is broad and can encompass conditions such as autism, ADHD, learning disabilities, and intellectual disabilities. Many professionals with these conditions are considered neurodiverse. Nowadays, professional bodies and employers are increasingly working to support neurodiverse individuals and create more inclusive environments, offering resources and accommodations. For example, Universiti Putra Malaysia (UPM) has reported success stories of accounting graduates with dyslexia who leveraged assistive learning tools during their studies (Rahman & Wahab, 2022). This highlights the potential of individuals with special needs to thrive in the profession when support and inclusive practices are in place (UPM News, 2025).

For accountants with cognitive disabilities who face challenges in managing deadlines, remembering multi-step procedures, or processing complex accounting standards, AI-powered tools, such as smart reminders, task management apps, and intelligent note-taking assistants, serve as practical supports to overcome these barriers. Tools like Otter.ai automatically transcribe and summarize audit meetings, enabling accountants to review essential points without relying solely on memory. This will help accountants with short-term memory loss (Qi F., 2025). Similarly, Notion AI and Trello with automation features assist in breaking down complex tasks into smaller, manageable steps, thus reducing cognitive overload (Notion, n.d.).

Therefore, AI tools and assistive technologies should not be viewed merely as supplementary aids but rather as essential instruments that enable professionals with disabilities to contribute their expertise with independence and confidence. When effectively integrated into professional environments, such tools enhance not only accessibility but also visibility and inclusivity within the accounting community.

Conceptual Framework



The conceptual framework illustrates how special needs accountants, who consist of individuals with visual, auditory, physical, and cognitive disabilities, are likely to be confronted with hurdles that deny them full

participation in the accounting profession. The obstacles could vary from difficulties in reading lengthy numerical data, limited access to auditory signals in meetings, physical challenges in using standard office machinery, and limitations in processing or memorizing technical data.

To address these challenges, AI and assistive technologies are mediating technologies that act as intermediaries between disability and professional ability. Screen readers, text-to-speech and Braille displays for the blind, Automatic Speech Recognition, real-time captioning, AI-speech-to-text technologies, and hearing aids for the deaf, smart prostheses and ergonomic AI software for physically disabled accountants, and cognitive assistance software like digital reminders or adaptive learning software for cognitively disabled individuals are some examples.

The interaction between the type of impairment and appropriate technological support yields empowerment outcomes. These outcomes are greater involvement in the workforce as technology equips disabled accountants to compete on an equal basis, greater productivity as work can be performed better, independence, and fairness as they rely less on others. Lifelong learning as flexible AI will consistently provide opportunities for skill acquisition.

Hence, the framework describes the way AI and assistive technologies have a central role in transforming barriers into opportunities and ultimately promoting equity and professional growth for special needs accountants.

5. Conclusion

The integration of AI and assistive technologies is reshaping the accounting profession by promoting inclusivity, improving efficiency, and creating new opportunities for individuals with disabilities. Technologies such as eye-tracking systems, speech-to-text applications, sign language recognition, and wearable navigation devices address persistent barriers that have historically restricted participation by accountants with special needs. By automating routine processes and facilitating communication, AI enhances professional productivity while enabling individuals with visual, auditory, and mobility impairments to participate more fully in accounting practice.

In Malaysia, initiatives led by academic institutions, non-profit organizations, and technology developers indicate promising progress toward inclusivity. Nevertheless, to fully realize the potential of these innovations, stronger collaboration is required among policymakers, educators, industry practitioners, and disability advocacy groups. Targeted investment in localized solutions, particularly in Bahasa Melayu and within the Malaysian socio-cultural context, is essential to further strengthen accessibility.

The adoption of AI and assistive technologies thus represents more than a technological advance; it embodies a societal commitment to equity and diversity within the accounting profession. By removing systemic barriers and empowering accountants with disabilities, these innovations lay the foundation for a more inclusive, resilient, and future-ready profession.

At the same time, the intersection of AI and assistive technology is redefining the practice of accounting work and expanding avenues of participation. These technologies hold immense potential to dismantle obstacles that have long hindered professionals with disabilities. However, these technologies by themselves are not enough to make a qualitative impact. To reach adaptable, open, and barrier-free solutions, especially considering the many different demands of end users, development must also take place through multi-stakeholder collaboration between educators, employers, policy makers, and technology developers.

It is a critical stage in the digital era to consider how employees are trapped in the workplace systems. A digital infrastructure can be established, rebuilt, or even remodelled to accommodate individuals who possess diverse sensory, motor, and linguistic capacities. When an entire industry takes the initiative to develop and integrate inclusive strategies with universal design and equitable accommodation, the implications benefit not only the profession but society at large. It's not about recruitment targeting, but investing and making it feasible over time, and practicing the walk, and ensuring that structural barriers to human potential are peeled away, so that

the profession in any workplace, and in any community, reflects the spread of talents in the population and an environment in which all people can thrive.

Future Direction/ Limitation

While previous literature provides valuable conceptual insights, it remains limited in accounting-specific evidence, the range of disabilities addressed, and practical integration strategies. Most existing studies concentrate on general education or IT settings, which restricts their applicability to the accounting profession. Key gaps include challenges in integrating assistive technologies with platforms such as SAP and QuickBooks, high implementation costs, and insufficient focus on psychiatric or cognitive disabilities. Future research should address these gaps by conducting empirical studies in accounting firms, advancing AI applications, and aligning policy with inclusive objectives. Greater emphasis on local innovations in Malaysia and comparative international practices will also be essential for designing scalable and inclusive solutions.

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