Digital policy to disability employment? An ecosystem perspective on China and Australia

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Abstract

Globally, labour markets are encountering profound changes because of the digital revolution. Middle income countries such as China, are leapfrogging high-income countries to take advantage of the digital economy. The growing use of digital technologies is also reshaping the labour market in high-income countries such as Australia. Potentially, new technologies may facilitate both employers and employees to overcome some of the barriers to disability employment. However, it seems that the opportunities and hopes have not yet translated into improved employment rate for people with disability.

This paper uses an ecosystem framework to examine the state's role in improving the critical elements of disability employment: developing a national strategy, creating employment opportunities, building capacity and enhancing accessibility. This paper compares the historical development of disability employment and the policies introduced to take advantage of digital technologies across China and Australia. It studies the national policies, funded activities and the governing structure in China and Australia. The findings revealed distinctive approaches that have played to the strengths of each country. However, both countries need to address the weaker links to deliver a real paradigm shift.

Introduction

Globally, labour markets are encountering profound changes because of the digital revolution. Many jobs are disappearing, but new ones are arising. Low-middle income countries are leapfrogging high-income countries to take advantage of the digital economy as a new growth engine (Garcia-Herrero and Xu, 2018). The labour market in high-income countries is also being reshaped by the growing use of digital technologies (Berg, et al. 2018). Potentially, new technologies may facilitate both employers and employees to overcome some barriers to disability employment (Roulstone, 2016). However, the opportunities and hopes may not be translated into improved employment outcomes (Ross & Taylor, 2017).

This paper contributes to the on-going search for policy interventions to improve disability employment in the digital age by comparing China and Australia. These two countries are selected because they share many similarities in their past approach towards disability employment. The disability employment rate in China was 49.5 per cent in 2017 (China Statistical Yearbook on the Work for Persons with Disabilities, 2018). Australia was at 51.1 per cent in 2015 (Australian Institute of Health and Welfare, 2019). Part-time work amongst people with disability[1] in China was stable or declining: 27 per cent in 2017, from 29 per cent in 2015 (Chinese Disabled Persons' Federation 2018). In Australia, about 32 per cent of employed people with disability work part-time, due to a shift since 2003 away from full-time work (Australian Institute of Health and Welfare, 2019). A question then arises as to why the disability employment rates remain low in both countries even as the digital economies reshape the labour markets, irrespective of the differences in welfare and employment support systems.

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[1] 'People with disability' is the preferred policy and advocacy term in Australia

To answer this question, it is necessary to examine how digital policies are applied on top of conventional disability support and employment programs. An ecosystem framework is introduced to examine the state's role in facilitating people with disability to take advantage of emerging digital technology. The following section compares the national policies, government-funded activities and the governing structures of Australia and China. The findings identify two distinctive relations between disability employment policy and digital policy, and each country played towards their strength. However, as suggested in the concluding section, for both countries to deliver solid outcomes, they need to focus on their system weaknesses. Improving disability employment will not only reduce welfare dependency, but also enable people with disability to actively contribute in their communities. Digital technology has great potential to boost disability employment. However, the fulfilment of such potential may require a suitable combination of digital policy, employment policy and social policy. This research establishes the relationship between these three sets of policies.

Theoretical approaches to disability employment

From system centred approaches to person centred approaches

Person centred approaches are a response to an older system centred approach in which people with disability were supported to better fit into the socio-economic system (Ratti et al., 2016; Lim & Sim, 2000). The older system approach is criticised for its stress on charitable support or "care", without sufficient focus on human agency (Falkenberg, 2006). One form of a person centred approach, informed by human rights, is the capability approach, which puts people with disability at the centre and examines the lack of resources or barriers that prevent them from participating in society. It stimulates the research on social inclusion in which employment is a key element of social participation. It helps people with disability

to develop a sense of entitlement that is essential for the pursuit of their life aspirations (Ward & Stewart, 2008; Valassa, 2017).

When applied to the right to employment, however, these personal centred approaches highlight many attitudinal and structural challenges. For example, even if employers are willing to hire people with disability, the goodwill may not be translated effectively into employment outcomes (Zhong, 2018). A growing body of research examines the roles, perceptions, and capacities of other stakeholders, such as employers, employment support agencies and co-workers in disability employment (Erickson et al., 2014; Von Schrader et al., 2014). For example, employers and co-workers may not have had contact with people with disability in the past (Fisher & Purcal, 2016). In addition to stereotypical attitudes, the concerns of employers are multiple-layered: financial costs, knowledge gaps, awareness, human resources and access to support, litigation, co-workers, and customer relations (Heera & Devi 2016).

Another strand of literature examines the relationship between disability employment and "environmental factors," including physical or digital infrastructure (Hall, 2009; Ellcessor, 2010), socio-cultural settings (Moore et al., 2017), politics and trust of professionals (Strindlund et al., 2019). The social welfare system also generates incentives or disincentives for disability employment. There is also research into the process of disability employment, such as recruitment (Ameri et al., 2018; Vandelannoote & Verbist, 2020) and employee relations (Hsu et al., 2019). These newer studies reveal the relevance of the many actors who influence disability employment. Putting people with disability at the centre of policy attention is a strong lever to ignite system change. However, change needs to be backed by policy drivers also focused on the capabilities of other actors and the environment.

An ecosystem approach

Some disability employment researchers have recently adopted an ecosystem approach to understand how to improve disability employment (Khayatzadeh-Mahani, 2019). The term "ecosystem" is used metaphorically to understand social and economic systems. It can be understood as a practical application of the complex ecological socio-economic model initially developed by Bronfenbrenner (1989), and modified since. Researchers have used to the ecosystem approach to study how individual actors and specific processes function in the broader ecosystem in which people with disability are employed or not. For example, Darcy et al. (2020) studied the ecosystem for disability entrepreneurs and examined how self-employment or entrepreneurship worked and stressed the role of enablers. Nicholas et al. (2018) analyse the employment of people with autism which treats employment as an ecosystem with broader community resources, family support, workplace capacity building (e.g., employer, co-workers) and policy. An ecosystem approach to understanding disability employment policy is consistent with the capability approach discussed earlier because it conceptualises the interactions between the resources and barriers faced by the person within the ecosystem.

The ecosystem approach to disability employment has several key elements: (1) A range of possibilities, such as private employment, supported employment, public sector, supporting agencies, self-employment can be available to people with disability (Khayatzadeh-Mahani, 2019); (2) People with disability need an accessible "environment", including physical environments (workspace, commuting, technology, education) and a supportive social environment (employees, families, co-workers, customers); and (3) All stakeholders need to adapt as the ecosystem faces changes.

Research methodology

This analysis was conducted to see how the Chinese and Australian governments respond to opportunities in the digital age to improve disability employment. The sub-questions are: 1) whether and how digital technology is used by national and local governments to improve disability employment? 2) what actions are funded by the governments in the digital technology policy strategy? 3) what is the role of governments intervening in the employment ecosystem and governments' relationships with other stakeholders, and what is the governing structure to deliver the change in the ecosystem? The analyses are centred around the state intervention in the three aspects of the ecosystem for disability employment: employment opportunities, stakeholder supports and access to environments.

As a methodological choice, an ecosystem approach can be used to analyse ecological and social dynamisms (Grimm, et al. 2003). The comparative ecosystem analysis is not only useful to develop an analytical framework, but also as a methodological approach to diverse systems. China and Australia are very different in many ways. Comparing policies in the two countries will unavoidably raise the issue of comparability. The comparative ecosystems analysis embraces diversity and helps to elucidate fundamental processes underlying the different systems (Morgan, 2012). To avoid making comparisons out of context, it is important to provide contextual analyses of system and policy history (Likens, 1992). The cases of the two countries are presented with these considerations.

Data and analyses

The analyses involved desktop and web-based searches of the history, policies, institutional setups, and actions for intervention in disability employment. Given that disability employment is a complex system and policies can be from many different government

departments, the researchers adopted a snowballing method for the policy search. They first accessed the websites of major government departments[2] and service provider websites[3] to search for and follow the policies and links for people with disability to seek employment support and for employers to seek information on their obligations and how to support employees with disability.

The disability employment policy includes policies regarding employment incentives (quota, tax reduction, etc), capacity building for employers and employees, the social welfare system and various environmental factors (such as infrastructures) (Darcy, et al. 2020). The digital policy has two parts, the national level strategies and guidelines and the policy instruments that support the national strategies. The policy instruments in the two fields (disability employment policy and digital policy) are categorised into subfields that may affect access to the labour market and employment: job creation, information system, training, employment support, internet access, entrepreneurial support and job searching services.

The policies were analysed in two steps. First, the content of the policies was sorted for comparison. Second, the access and utility of the information sources were assessed. The stakeholders were identified by examining the published policies, as their roles are often discussed in the policy documents. A further search was carried out by examining the websites of the stakeholders to assess the relationships they imply with government, the activities they are pursuing, and the overall governing structure used to facilitate change.

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[2] China Disabled Persons' Federation (CDPF) (http://www.cdpf.org.cn)；Ministry of Civil Affairs PRC (http://english.www.gov.cn/state_council/2014/09/09/content_281474986284128.htm) and their corresponding local departments
Department of Social Services (https://www.dss.gov.au) and Australian Government Department of Home Affairs (https://www.homeaffairs.gov.au), National Disability Insurance Scheme (https://www.ndis.gov.au)
[3] Job Access in Australia https://www.jobaccess.gov.au/people-with-disability/applying-australian-government-jobs; Disability Employment Promotion Network in China http://www.cjrjob.cn

Policy analysis does not examine the extent to which the policies are implemented or the impact of the policies in terms of the intended outcomes. It also does not analyse the cultural factors that may affect the ecosystem. Nonetheless, the analysis demonstrates the stated policy intention and commitment or not to change.

Disability Employment Systems of China and Australia—changes in the past

Both China and Australia have decades of policies to enhance disability employment. The policies began with promoting segregated employment opportunities and shifted towards the open labour market by supporting the capacity of people with disability and employers and regulating and investing in the environment.

Shifting employment models

Both countries' disability employment started with disability employment for wounded soldiers, which extended to segregated employment programs for other people with disability. Employment policies for people with disability in China started in the 1950s. The state used disability policy to showcase the benevolence of the Chinese Communist Party and the government (Cheng and Chen, 2011). The predominant model of employment was welfare employment funded by the local governments. In March 1988, the China Disabled Persons' Federation (CDPF) was established. In 1990, the Law of the People's Republic of China on the Protection of Disabled Persons (Zhonghua Renmin Gongheguo Canjiren Baozhang Fa) identified three channels of employment: government arranged concentrated employment (Jizhong Anzhi Jiuye), proportional employment and self-employment. In 2007, the Regulations on Employment of Disabled Persons (Canjiren Jiuye Tiaoli, 2007) clarified the responsibilities of the government and employers. Education and rehabilitation policies

were also introduced to support these employment policies. Since 2008, disability employment shifted to a human development approach. The focus of employment policy shifted from allocating jobs directly to improving employability. Supports include providing training, fighting against discrimination in the employment process, creating an equal employment environment, and providing information.

Australia first started vocational training for people with disability in 1919, targeting ex-servicemen with disability. After World War II, the Commonwealth Rehabilitation Service (CRS) in 1948 provided vocational rehabilitation to ex-servicemen and others. In the 1950s, 'Sheltered Workshops' were established by nongovernment organisations with funding primarily via redirected pension payments. The objective was to provide 'gainful employment' for people unable to compete in the open labour market. The government-funded enterprises provided supported employment from 1967. Since the Disability Services Act of 1986, employment for people with disability emerged as a national priority for the Australian government. In 1996 further reform improved service quality, to match service funding to the support needs of people with disability receiving assistance, and to link funding of employment service providers to employment outcomes (Lindsay, 1997). Most recently, a wage determination for supported employees in Australian Disability Enterprises (ADEs) uses wage supplementation to provide financial assistance to ADEs (Department of Social Services, the Australian government, 2018). The National Disability Agreement, signed by Commonwealth, State and Territory governments in 2008, committed governments to a shift away from ADEs by developing employment opportunities through labour market that enhance independence and open employment readiness at life transition points (The Council of Australian Governments, 2008). In response to the UN Convention on the Rights of Persons with Disabilities, the National Disability Strategy (2010-2020) extended that

commitment to providing leadership for a community-wide shift in attitudes (The Council of Australian Governments, 2011).

Physical accessibility

In China, legislation for an accessible environment was introduced in 1992. However, it stressed the need to match local capacity, accepting a gradualist approach. These policies had not been well implemented even in the wealthiest cities. There was no systematic planning in the system (Zhang, 2012). Up to the end of 2017, only 40 per cent of consumer service outlets in 102 cities had accessible services (China Daily, 30-12-2019). Considering that China has more than 600 cities, it has a long way to go to meet basic accessibility standards.

In Australia, the Disability Discrimination Act 1992 (DDA) makes it illegal for public places to be inaccessible to people with disability. Similarly, requirements for accessible infrastructure, including digital access (discussed later), education and training systems, and employment. Enforcement of disability standards and accessibility is difficult, often reverting to minimum disability access (Rai, 2016). Challenges to noncompliance generally relies on individual complaints, supplemented with occasional systematic inquiries from the Australian Human Rights Commission.

Digital Policy and Disability Employment

Against the backdrop of the evolution of disability employment in the two countries, we examine the policy responses to digital technology. The first question is whether there is a national strategy to use digital technology to enhance disability employment. Table 1 compares the policies and practices specifically related to using digital technology to enhance labour market participation by people with disability.

(Table 1 about here)

Chinese policy

The Chinese government and China Disabled Persons' Federation[4] have promoted the opportunities from digital technology and e-commerce to developing new strategies for the employment of people with disability. The policies range from internet-based job matching to digital employment and entrepreneurship.

The government considered disability employment to be an integral part of its digital policy according to the Development Plan for the Construction of Information Internet Employment for Persons with Disabilities in 2000 (Canjiren jiuye xinxi wangjian jianshe fazhan guihua). As early as the 1990s, the government planned to use websites to support job matching to enhance the efficiency in implementing the long-standing disability employment quota policy (National People's Congress PRC, 1990). The websites also publicised policies, training and employment information and employment services. The goal was to develop a comprehensive network by 2010.

The 13th Five Year Plan (2016-20) addressed the issue of inadequate access to digital technology by people with disability. More resources are devoted to R&D of barrier-free products and technologies. The intention was to "vigorously promote the accessibility of the Internet and mobile Internet information services and encourage the development and application of electronic products and mobile application software (APP) that would support

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[4] The governing body for disability employment, China Disabled Persons' Federations (CDPF), is a semi-official organisation, registered with the government. It is not a government agency but is funded by the government through ear-marked tax, and the State Council guides its work at the national level and the local governments at local levels. The CDPF is an important voice in the policy formation process. CDPF collaborates with other government agencies to implement the policies. Each of the five levels of government has a DPF responsible for implementation.

the disability access". In December 2017, the Guidance on Supporting Information Consumption of Vision, Hearing and Speech Disabilities (guanyu zhichi shili, tingli, yuyan canjiren xinxi xiaofei de zhidao yijian) required platforms and ICT service providers to reduce the costs for people with disability, and develop software to remove barriers to access websites and services.

Overall, the Chinese government intend to use digital policy to enhance disability employment. The policy combination also shows the intention to develop a ***digital ecosystem*** for disability employment.

Australian policy

Australia's Tech Future is the national strategy for the digital economy (Australian government, 2018). Of relevance to disability employment, it recognises inclusion as a priority. However, the only direct link it makes between digital inclusivity and disability employment is promoting start-ups to develop technologies for accessibility. The policy is consistent with the National Disability Strategy (2010-2020), in which it was stated that "the National Broadband Network will provide the enabling technology platform to underpin all of the outcome areas. It will facilitate innovation in government service delivery and provide people with disability with dramatically improved access to a wide range of life-enhancing opportunities." More specifically related to employment, the National Broadband Network (NBN) aimed to provide high-speed broadband access to all Australian premises and enable interactive learning opportunities, employment opportunities, increased connectedness within the community, and improved access to communication services. Neither Australia's Tech Future nor the NBN policy directly refers to disability employment.

Other policies about access to digital platforms, equipment and skills are similar to China's but again do not explicitly link to the possibility of leveraging improved disability employment. The absence of a disability strand to Australia's Tech Future policy reinforces the lack of a national disability employment strategy or a strategy to use digital technology to focus on disability employment intentionally.

From the ecosystem perspective, the lack of a national digital strategy per se for disability employment does not mean a lack of policy intention to take advantage of digital technology. The stress on digital and physical access for people with disability can be interpreted as an attempt to update the ***disability accessible environment*** to improve access to digital technology as well as to the physical infrastructure.

Government-funded activities in disability employment in a digital context

National level strategies are important, but it is equally important to examine whether they have been translated into actions – the second question we address. The actions funded by the Chinese and Australian governments are summarised in Table 2.

(Table 2 about here)

Chinese government-funded activities

The Chinese government has taken a proactive approach in recent years to promoting new disability employment outcomes. This initiative supplements the historic disability employment quota (and penalty levy) and investigation of fraudulent practices. The following initiatives can be observed in state-community interactions and state-business relations.

Public finance of disability employment. Local CDPFs receive, manage and spend the levy from employers that do not fulfil the disability employment quota. Some of the levy funds are

used to promote disability employment, including incubator hubs to support small start-up businesses run by people with disability. Other government agencies also coordinate and fund aspects of disability employment, such as vocational training.

Capacity building. Digital employment training is increasingly available to both employees and employers. The government began offering subsidised training of ICT skills to people with disability from the early 2000s. The breadth of the training was not sufficient for the diverse market demand, so training and self-learning also emerged through using digital social media and private only courses. The government also offers training to some employers who want to know the practicalities for employing people with disability. Entrepreneurship incubators are set up alongside or within ordinary business incubators to support new businesses that want to start businesses that hire people with disability or develop new technologies to benefit people with disability. Or NGOs that want to provide services to people with disability. The official target was to set up at least one incubator in each province during the 13th Five Year Plan period (2016-2020), and some local governments had higher ambitions than others.

Employment. Some local governments enter PPP with enterprises to deliver disability employment outcomes. For example, Zhejiang CDPF contracted Alibaba for three years to create 30-50,000 jobs for people with disability (Zhejiang Online, 2016). Alibaba hires people with disability to work in its online customer services, coding, logo design and translation. Employees with disability receive equal pay. Another form of PPP is where private enterprise contracts a local CDPF to provide employees to fill enterprise positions. In this case, the CDPF is the subcontractor and hires people with disability to do the work. The third form is where a CDPF works closely with Alibaba to promote disability Taobao

(online) stores in which online shops run by people with disability will receive a badge. Some local governments provide training to teach people how to set up online stores and market products. Some local governments also provide initial funding for people with disability to open online stores. The 171,400 online stores on the Ali e-commerce platform generated sales of CNY29.84 billion in the three years to May 2019.

Information system. In 2020, the National Service Platform for the Employment and Entrepreneurship of People with Disability provides information on policy changes, guidance for companies, product promotion and recruitment. Internet services include employment training and online home employment. Local governments also have disability employment portals. However, most local government job matching websites have few activities. In contrast, private online platforms are very active.

Subsidised social insurance contribution. People working for online businesses are generally excluded from an employee-based social insurance system. Some local governments, such as Hangzhou, provide social insurance access for employees with disability and entrepreneurs with online businesses. However, these provisions are only available in limited locations.

In addition to the paternalistic quota and fines, the Chinese government is now taking a proactive role in partnership with private enterprises. The funding is not sufficient to meet all the needs for training and support. The community-level governing bodies, however, are making active use of social media and internet portals to facilitate mutual support.

Australian government-funded activities

Australia's disability employment policy takes a different approach to China's, using indirect rather than direct strategic integration between disability employment and digital labour markets. The Australian government has a range of programs and incentives to help people with disability find, keep and change jobs.

The national government contracts disability employment support services to non-profit and private providers. People with disability can receive support through Disability Employment Services (DES), to prepare for work, find a job or be supported in a job in the open labour market. Eligibility for DES is linked to income support. When a person with disability finds a job, DES can also support the employer to make reasonable adjustments to the workplace, job and conditions, including funding adjustments, such as purchasing IT and other assistive equipment and support, funded to the employer for a specific employee via Job Access.

Some people with disability also work in Australian Disability Enterprises (ADEs), which are segregated disability workplaces. The ADEs are a historical legacy, gradually decreasing in total providers and the number of people with disability in each one.

The support needs of most people with significant disability, including employment-related support, are now covered by the National Disability Insurance Scheme (NDIS), a tax-funded public insurance scheme managed by the Commonwealth government. The NDIS has been phased in over the last decade and nationwide by the end of 2019-20. It provides support to people aged under 65 years with a permanent and significant disability (about 500,000, 10% of people with disability). Other people with disability may receive support through State governments or mainstream employment programs. The NDIS aims to provide support for people with disability to be independent, including employment where relevant to the person.

Employment-related support through the NDIS can include personal assistance, personal care, transport, equipment, mobility and communication support (NDIA, 2020). Support is provided based on individual plans that respond to the preferences and needs of the person.

Some programs available to all job seekers also apply to people with disability wanting entrepreneurial support or job experience. The New Enterprise Incentive Scheme supports people, including people with disability, to start and run a new small business. The National Work Experience Programme (NWEP) supports people doing paid or unpaid work experience to help them gain on-the-job skills and confidence.

None of these services is specifically related to digital technologies or attempt to leverage off new digital market opportunities. Some services, such as ICT skills training are covered by inclusive training. The disability employment policies rely on people with disability experiencing inclusion throughout their school education so that they have the capacity and assertiveness to participate in vocational and other tertiary education. Although the Australian disability employment does not highlight its connections with the digital age, it assumes some integrated support already built into the ecosystem, including education, infrastructure and economic opportunities.

Australia's information sites are relatively easy to access. The online information system includes the government and the relevant services' digital platforms offering detailed instructions to both employers and employees. Nongovernment information portals also link to the support from DES. The digital networks about disability employment are integrated, with one source of information often linked to other sources, even though they are not always listed in one portal. The local governments use websites to publicise the benefit of hiring

people with disability—the government contracts NGOs to provide services. The services provided to both employers and employees are emphasised in all the official portals. The government uses ICT technologies to provide more accessible information, and funding is also more available both to employers and employees.

To some extent, Australia's digital policies are absorbed into the open labour market policies, which aim to be accessible to people with disability. The government is less coercive, even in the public sector, by focusing on encouragement and facilitation. Enforcement of disability discrimination in the workplace relies on individual complaints to the Australian Human Rights Commission.

Governance response to improving disability employment

The final question is about the adaptation of governance structures to improve rates of disability employment in the digital age.

Chinese governance

The Chinese government is mostly a mobiliser and coordinator. At the top of its unitary system, the Chinese central government has taken the role of an active leader and partner pursuing new digital-related disability employment opportunities. Local governments mimic the policy framework set at the top and produce localised performance targets. The digital jobs strategy is built on top of the disability employment quota policy structure, which incentivises businesses to employ people with disability.

As is common across many policy fields, China's policy making is a hybrid system in which top down policy making works together with a quasi-federalist system in which local governments can develop their own interpretations to central policy guidelines (Chŏng, et al

2000; Zhang, 2016). Thus, local pilots, innovations and policy models would emerge to nurture localised ecosystems. For example, in wealthier provinces, Zhejiang and Guangdong's provincial-level governments introduced disability quota performance indicators for county-level governments. Local officials' career paths are linked to their performance in delivering employment outcomes. Sometimes these incentives might have encouraged proactive approaches to digital jobs adopted by local governments and best practices will be learnt by other regions through China Disabled Persons' Federations (CDPF) at all levels.

CDPF is responsible for providing services to people with disability and advice the legislative body as an important arm of consultancy. In the field of disability employment, CDPF is responsible for coordinating multiple government ministries or departments at the corresponding levels on human resources and social security, finance, taxation, civil affairs, education committee, poverty alleviation and other departments to make disability employment policies. The CDPF at the central government level is responsible nationally for encouraging the implementation of the employment policies. It collects and researches good practices and provides guidance on how to improve disability employment to local governments and the local CDPF. The local CDPF did the same at the local level.

The governments and CDPF seek to promote disability employment through multiple channels: proportional employment, concentrated employment, self-employment, public welfare employment, community employment, home employment, and auxiliary employment. The actions of the state and the CDPF since 2016 clearly show a sense of urgency, probably also related to the 2020 milestone for evaluating progress against the Sustainable Development Goals, where poverty reduction and social inclusion, including for people with disability, are measured. In this context, governments and the CDPFs at the central and local levels probably saw the benefits of leveraging the new opportunities from

the expanding digital sector, which aligned with the central government's development agenda.

The government contracts out services for people with disability to NGOs or private enterprises. Employer and employee training, employment assistance to people with disability, workplace modification, job fairs are often contracted to NGOs or enterprises. The NGOs specialising in policy advocacy is limited by the government (Li et al., 2019). However, self-advocacy methods such as telephone hotlines, user satisfaction ratings and independent service reviews are more widely used for evidence-based policy making (Zhang, 2017). Some grassroots officials also started to rely more on social media and digital platforms to organise self-support groups or distribute information, including training, recruitment and services. Enabled by the digital platforms, the government and CDPFs have increasingly become coordinators or monitors of bottom-up initiatives (Wang et al., 2017).

Australian governance

Australia's federal system means that policy responsibility is shared between central and state governments. Most support services are contracted from the government to independent nongovernment and private sector agencies. Disability policy responsibility has increasingly shifted towards the federal government. However, implementation and enforcement remain dispersed between levels of government, contracted services, and the initiatives of employers and people with disability and their advocacy organisations.

The introduction of the NDIS adds to Australia's diffuse governance arrangements as it aims to ensure greater control by people with disability, allocating financial control for disability support to the person to buy support from nongovernment and private sector providers. The NDIS itself is managed by the National Disability Insurance Authority, a statutory authority

with considerable independence led by a board which includes people with disability (NDIS, 2020). In the case of disability employment support, the individual NDIS funded support supplements continuing federal contracted services through DES, ADE and Job Access. A further change to governance arrangements is expected in the future to rationalise these overlaps. Disability groups continue to advocate for a national disability employment strategy within this reform, rather than relying on the vague National Disability Strategy aspirations.

The governance of Australian digital policy innovation has the primary policy responsibility at the federal level, engaging with private sector suppliers for infrastructure and access. Unlike China, the national digital strategy does not explicitly allocate governance responsibility to any government or other actors for the confluence between digital innovation and disability employment.

The elements of disability employment governance in China and Australia are similar, but the way they are applied vary considerably because of the different policy preferences. China favours specific national strategies, including the disability employment and digital strategies, with hierarchical governance mechanisms distributed to the relevant government agencies at each level of government to implement them in the society and market. In contrast, Australia favours general national strategies, such as the general disability strategy and digital strategy, with supporting governance mechanisms to enable the ecosystem conditions that might be conducive to the society and market engaging with the general goals. China enforces specific goals against government officials and employers, such as employment quotas and digital innovation investment. Australia enforces breach of the conditions through law and enforcement agencies, such as anti-discrimination. The divergent governance structures have not yet been sufficient to improve disability employment in either

country, perhaps indicating that a more holistic ecosystem approach remains the only foreseeable path towards change.

Discussion and conclusion

China has a clearly articulated national strategy to use digital policy to boost disability employment. The government is working on multiple fronts to develop a digitally-enabled employment ecosystem, including digital platforms, digitally enabled training and support. The government directly created employment opportunities in the digital economy. In this sense, the key elements for a digital employment system are put in place. In contrast, Australia does not rely on national digital policy to address its employment goals. Its digital policies are embedded within the existing disability employment policy framework. As a result, the policy for disability employment in the digital age is more about trying to ensure digital accessibility to people with disability in all aspects of employment. The government is more directive in its employment practice in the public sector. In terms of implementation, Chinese governance to enforce change, particularly accessibility, is less secure. Australian targets and sanctions are not explicit.

At the ecosystem level, China has significant weaknesses in environmental access, such as infrastructure, employee and employer support. Support for employer capacity building is not yet fully developed. Experienced professionals who can provide practical solutions to people with disability, manager and co-worker training is not yet well developed. Inclusive education for people with disability remains unequal, so they are often not well-positioned to take advantage of employment opportunities (Loyalka et al., 2014). In contrast, Australia's more integrated approach has advantages. Should the government decide to take a more strategic approach to exploit new opportunities available through digital technology to boost

employment and address discrimination more directly, the ecosystem is probably more ready, with fewer access barriers to people seeking jobs and employers offering them.

The ecosystem approach is instrumental in establishing the contrasting policy strategies for disability employment in China and Australia. The findings echo existing studies that use an ecosystem approach in that supporting state in one part of the ecosystem is not sufficient as it may have created difficulties in another part (Darcy et al., 2020; Nicholas et al. 2018). In the context of the digital age, despite the transformative power of digital technology, the national digital policy cannot single-handedly change the ecosystem even with strong government support. It needs the backup of the conventional disability employment sector, in terms of addressing discrimination more directly, improving accessibility of the social and physical environment, and improving disability employment support. At the same time, digital technology is not just an add-on to the existing system; it can create a sub-system that goes beyond the conventional employment system. A higher-level national strategy that considers digital innovation within an accessible employment ecosystem could facilitate a coordinated approach to digital innovation as well as new employment opportunities.

Acknowledgement

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Table 1 Digital technology and disability employment policies in China and Australia

	China	Australia

National strategy	1. The Development Plan for the Construction of Information Network for the Employment of Persons with Disabilities (CDPF, 2000)
	2. 13th Five-Year Plan for Accelerating the Process for the Disabled Persons to Become Better Off" (State Council PRC, 2016).
	   a. Establish a disability employment information sharing platform
	   b. Make use of the "Internet+" to help PWD to become self-employed
		Australia's Tech Future (Australian Government, 2018).
		
		Recognised the need to improve disability inclusion through the improvement of digital inclusion, but no deliberate engagement with disability employment

Supporting policies	1. Disability employment information network development plan (2000)
	2. "Regulations on the Construction of Barrier-Free Environment" (2012)
	   • Accessibility policies: construction of an information accessibility standard system
	   • Promoting the accessibility of government information in various government departments
	3. 13th Five Year Plan to Promote Research and Development of Barrier-free Products and Technologies (2016-20)
		1. National Disability Strategy (2010-2020) --Enhance digital access to social services and internet
		
		2. Australia's Tech Future (2018) -- Assistive technology and services to increase accessibility by people with disability

Note: Unless a link is directly provided, the sources of information in Table 1 and 2 are listed in the reference list of this paper.

Table 2 Government digital disability employment policy and practice actions

	China	Australia
Job creation	PPP: Governments below the central level sign agreements with (Goggin et al., 2019): • e-commerce platforms • large scale enterprises to contract ICT jobs • e-commerce platforms to sell products produced by PWD • public-owned online shop network for disability e-businesses	Governments encourage agencies to employ PWD, including working in IT positions or using ICT.
Information system	1. Government websites for employers and employees—each level of government, have official websites publishing disability employment policies and has an employment portal (Central Government of PRC, 2019). 2. CDPF (2020) at all levels display disability employment policy and services on websites. 3. Internet platform for employment and entrepreneurship services (https://www.cdpee.org.cn).	1. NDIS funding to build ICT systems for disability support for 500,000 people by 2020 (2019). 2. Disability employment benefits and information on job searching websites are accessible to PWD. 3. Government sites with employment support information for employers and employees (https://www.jobaccess.gov.au/people-with-disability) and public sector (https://disabilityemployment.org.au/about-us/)
Training	Training for prospective employers, employees and farmers funded by provincial or municipal governments (https://www.cdpee.org.cn/page/training/index.html)	Assistive technology training, training for employers and training for co-workers (https://www.jobaccess.gov.au/people-with-disability/training-and-education-your-co-workers) NGOs and consultancy services funded by the Employment Assistance Fund managed by the Department of Social Services, accessible online (https://disabilityawareness.com.au).
Employment support	Social insurance subsidies Local government purchases services for legal and business advice. Community-level authorities: Targeted information distribution using social media to distribute disability employment opportunities, organise support groups and learning groups for people with disability	Employment Assistance Fund (EAF) for workplace modifications and support (Department of Social Services, 2018): • Information & communication devices • Online application for supports and services • Ongoing support for up to 12 months, help settle into the workplace. • Assess the suitability of work to condition and injury • Government purchases or support services for entrepreneurs
Improving internet access to disadvantaged regions	Mobile network access across the country (all cities, relatively affluent rural areas and hotspot in relatively impoverished rural areas), 4G internet 95% of the country, 94% of poor villages have fibre coverage.	Digital access is improving for PWD. The digital divide remains (Thomas et al. 2019). NBN expects broadband or satellite access to all locations by the end of 2020 (ACCC, 2019), aiming to improve disability access

	China	Australia
	Subsidising internet access for entrepreneurs with disability (State Council PRC, 2016)	significantly (Australian Network on Disability, 2019).
Innovation	Supporting innovative solutions for employment of PWD by competition to support entrepreneurs, usually organised at provincial and city level funded by local governments or charity funds.	Government funding for entrepreneurs to bid for innovative solutions to facilitate disability employment (https://workforce.nds.org.au).
Entrepreneurial support	Free for businesses run by PWD, tax deduction, microcredits (https://www.cdpee.org.cn/page/chuangye/shfcZC.html). Incubators sponsored by governments (https://zj.zjol.com.cn/news/701179.html) CDPF signed a contract with Alibaba to facilitate disability shops online (Luo, 2015)	Self-employment facilitators, e.g. training centres required to provide disability access. NDS: BuyAbility network for product and service procurement from Australian Disability Enterprises with an online portal (https://buyability.org.au/history/).
Job fairs	Local governments: face-to-face job fairs for PWD. ICT related jobs.	NDS organises job fairs and identifies new opportunities (Rees, 2019).

Sources: Compiled by the authors from officially published government policy documents, websites, news items.