Use of Social Media in Uncovering Information Services for People with Disabilities in China

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Abstract

The tangible and intangible needs of people with disabilities have been neglected in research agendas over the past decades, particularly in China. Bringing more benefits to people with disabilities and combining information delivery with Internet technology to improve their quality of life is impossible if their special needs are ignored. This study employed the crowdsourcing through social media method to investigate information needs of people who are disabled. The results indicate that using the popular social media platforms WeChat and QQ can be an effective means of reaching out to this group. Information needs can be mainly divided into internal and external needs. Leisure, tourism, and entertainment as well as assistive devices are major internal information needs, whereas work, entrepreneurship, and living services are the main external information needs.

Keywords: people with disabilities, feedback, crowdsourcing, information needs, social media, China

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What can assist people with disabilities in improving their social inclusion and social situation? To answer this question, scholars have mainly focused on community participation (Milner & Kelly, 2009), health

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(Tomlinson et al., 2009), welfare (Glendinning, 2008), assistive technology (Shi, 2015), information technology (García-Betances, Cabrera-Umpiérrez, Ottaviano, Pastorino, & Arredondo, 2016), and communication (Domingo, 2012); few studies have examined the information needs of people with disabilities. Mitchell and Sloper (2002) indicated that providing information enables service users and their families to become more active participants in the society.

Demand for information services is considerably high among people with disabilities, with each person having a unique set of needs (Vicente & López, 2010). However, their information needs are often overlooked by health planners and policy makers (Paudel, Dariang, Keeling, & Mehata, 2016). Moreover, determining their needs and delivering suitable information to them is difficult because of the diversity of their disabilities. Critical discrepancies exist between the needs of people with disabilities and the services provided to them (Barrett, 2005; Ko & McEnery, 2004). Bertot, Jaeger, and Hansen (2012) suggested that nonprofit organizations or governmental units must communicate effectively with people with disabilities to gain a clear understanding of their needs.

Rapid growth in the social acceptance of networking technology has led to an increase in social participation and has enabled new means of communication among people with disabilities. Although some people with disabilities do not have free access to a wide range of information because of their physical or mental disorder (Moisey, 2001; Myhill, 2002), many people with disabilities and their families want to receive relevant written information. Information workers generally do not have a clear understanding of the needs of people with disabilities, leading to a lack of user-centered designs (Carter & Markel, 2001). Therefore, using a range of media to provide information on different levels is critical (Mitchell & Sloper, 2002).

Most studies have determined the needs of specific groups through literature surveys, interviews, and focus group discussions (Barrett, 2005; Mitchell & Sloper, 2002). The present study expanded the investigation to all types of disability groups. The rapid development of network technology has brought a new means for solving this problem: crowdsourcing (Ford, Richard, & Ciuchta, 2015; Pitt-Catsouphes & Cosner Berzin, 2015), which is a relatively new development in information outsourcing. It is a virtue of network platforms that cooperation can be extended worldwide through various virtual social groups. Any individual who is interested in or has some understanding about crowdsourcing can participate in crowdsourcing. In addition to reducing costs, crowdsourcing can bring answers that are more comprehensive, richer, and more creative compared with those derived from traditional investigation.

Two research questions were addressed in this study: (a) which platform do people with disabilities prefer to use, and (b) what types of service information do people with disabilities in China seek. These questions are critical because they can assist policy makers in both determining how to address the needs of people with disabilities and effectively reaching out to this special group. Therefore, in this study, the needs of various people with disabilities were investigated using the crowdsourcing method to improve the quality of online information services for people with disabilities.

The remainder of this article is structured as follows. Section 2 discusses research related to disabled information platforms and crowdsourcing, and Section 3 explains the research method. The research

results are presented in Section 4, which is followed by a discussion in Section 5. Finally, Section 6 offers the conclusion of this research.

Literature Review

Information Services Needs for People with Disabilities

Developers and researchers are incorporating new paradigms into their personalized service tools to satisfy the needs and requirements of people with disabilities (García-Betances et al., 2016). Bień et al. (2013) explored unmet care needs in European countries and observed inequality in the distribution of social care services among countries. Mitchell and Sloper (2002) suggested that the family members of disabled children would like to receive customized guidance with comprehensive information. Matter et al. (2009) investigated the information needs of people with spinal cord injuries and found that the Internet was the most frequently used source for information on medical issues. Paudel et al. (2016) indicated that Nepal requires a community-based rehabilitation system and uniform database to assess social inclusion of people with disabilities. Ray and Ryder (2003) examined the needs of people with disabilities when planning to travel and found that online travel guides and word-of-mouth are critical information sources.

Ritchie and Blanck (2003) investigated 200 Center for Independent Living websites in the United States and found that these centres had already begun using network technology as a traditional service supplement. Johnson and Kent (2007) investigated the usability of web applications for elderly and disabled user. The results showed that designing the application module content to be more specific effectively improved the group work efficiency, accuracy, and user satisfaction of elderly adults and people with disabilities. Vicente and López (2010) found that, in 10 European countries, the information awareness of people with disabilities who use network technology is insufficient. Roberts, Crittenden, and Crittenden (2011) stressed that network learning platforms should meet the needs of students with disabilities to ensure that they can make full use of network information.

Currently, acceptance of social media and information and computer technology by the general public is increasing (Bertot et al., 2012; García-Betances et al., 2016), which can assist in reducing the information gap. Barrett (2005) used a questionnaire survey based on a review of the literature to explore the needs of people with disabilities. The results indicated a serious gap between their actual needs and the services they received. Luo, Zhang, and Liu (2015) suggested that organizations can establish community-based social media as a means of enhancing the relationship between them and their target groups. The link between social media and social issues is expected to become a popular topic in the near future (Zhang, Wang, de Pablos, Tang, & Yan, 2015). Godfrey and Johnson (2009) reviewed the literature and summarized the information needs of elderly people, and found that networked interactive media systems are effective for providing advice as well as promoting and securing information for elderly people. However, risk, trust, and a friendly social interaction environment must be considered when developing social media platforms (Tang, Sung, & Chang, 2015; Wang, Min, & Han, 2016).

Xu, Kang, Song, and Clarke (2015) performed a survey on 39 top-ranked university libraries in China that used an official WeChat (a mobile communication service in China) account as a marketing tool. The results showed that the most frequently used functions were general social networking services, automatic reply, and interaction functions, whereas the more advanced functions, such as navigation services, assisted search, and self-services were in urgent need of improvement. Zheng and Yu (2016) applied the case study method and described how charity projects were implemented using Sina Weibo (a microblogging website) as a platform. They confirmed that social media plays an important role in the social transformation of China. Luo et al. (2015) conducted a questionnaire survey to examine how the establishment of a mobile phone brand group on social media affected loyalty. The results revealed that co-creation could enhance the relationships among consumers as well as the relationship between the customers and brand. Lien and Cao (2014) investigated the influence of psychological motivations on social media users' attitude, and to examine the effects of their attitude and trust on word-of-mouth. The results demonstrated that social activities, entertainment, information, and trust affect users' attitude. Users' attitude and trust also affect word-of-mouth reference. This implies that when policy-makers select communicating channels for people with disabilities, they should pay attention to their motivations and trust levels.

Crowdsourcing

The concept of crowdsourcing was first proposed by Howe (2006b), who defined crowdsourcing as "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call. This can take the form of peer-production (when the job is performed collaboratively), but is also often undertaken by sole individuals. The crucial prerequisite is the use of the open call format and the large network of potential laborers" (Howe, 2006a). Crowdsourced information is professional content provided by nonprofessionals, in which consumers are the content creators. On the basis of this definition, the concept of crowdsourcing has been further enriched and developed by other scholars.

Brabham (2008) indicated that crowdsourcing refers to enterprises that, through online publication, invite mass groups to participate in providing solutions to problems. This process is beneficial for enterprises, particularly because of the intellectual achievement of solving technical problems, obtaining new ideas online, overcoming distribution problems, and determining production patterns. Chanal and Caron-Fasan (2008) described crowdsourcing as open-innovation production by enterprises in which many external discrete resources are gathered through network devices. Such resources can be derived from individuals, teams, professionals, and amateurs. Studying why users contribute their knowledge to firm-hosted user communities, Jeppesen and Frederiksen (2006) indicated that the spiritual rewards derived from performing complex and creative crowdsourcing tasks are the intrinsic motives for users to become involved in crowdsourcing. Brabham (2008) argued that the main motivations for crowdsourcing among iStockphoto users are bonus incentives and improved abilities.

Methodology

Questionnaire Design

The semi-structured questionnaires used in this study contained questions on the demographic information of participants, the online information platforms they wanted, and their needs for information services. To ensure the quality of the questionnaires, the following procedures were implemented. First, five experts (two professors, an associate professor, and two senior engineers) were invited to determine the classifications of online information platforms and open-ended questions about the unmet information services for the current and future needs. Finally, two rounds of pretests with 150 questionnaires for each round were carried out to determine the final form of the questionnaire.

Participants and Procedures

This study conducted a crowdsourcing survey to explore how people with disabilities in China find information services. We selected a sample of disabled Chinese people for following reasons. Although approximately 15% of the world's population has some form of disability, a survey conducted in China in 2006 revealed that 83 million (6.34%) people living in China have at least one disability (Chen, Lin, Zhang, Song, & Zheng, 2006; Paudel et al., 2016). According to People's Republic of China Disabled Citizens Protection Act, people with disabilities can be categorized into Vision, Hearing, Speaking, Physical, Mental, Intellectual, Multiple, and other disability categories. The rapid development of China's economy since the 1980s has contributed substantially to improvements in the country's international status. As societies become more civilized and their economies are strengthened, people naturally pay closer attention to the various causes of people with disabilities. Social causes aimed at providing support for people with disabilities living in China have also become the focus of national leadership. In this development trend, the needs of Chinese people with disabilities are anticipated to exhibit potential opportunities to the practitioners and health planners.

The questionnaire survey was conducted anonymously through social media platforms, namely WeChat and QQ, in mid-2015. A total of 1,520 questionnaires were returned; after 492 invalid questionnaires were removed, 1,028 valid questionnaires remained (effective response rate, 67.23%). Table 1 shows the distribution of the final sample: 58.56% of the participants were male, 69.56% were between 31 and 48 years old, 37.65% had completed junior high school and 31.42% had completed senior high school, 37.55% lived in southwest China, 32.39% were unemployed, and 82.68% had a physical disability.

Table 1

Sample Distribution

Category	Classification	Times	Percentage
Sexual	Male	602	58.56%
	Female	426	41.44%
Age	Below 30	165	16.05%
	31-42	313	30.45%
	43-48	402	39.11%
	Above 49	148	14.40%
Academic background	Below primary school	122	11.87%
	Junior middle school	387	37.65%
	Senior middle school	323	31.42%
	Above junior college	206	20.04%
Living area	Southwest China	386	37.55%
	North China	102	9.92%
	East China	89	8.66%
	Northwest China	65	6.32%
	Central China region	40	3.89%
	Northeast China	34	3.31%
	South China	22	2.14%
	N/A	190	18.48%
Job	Unemployed	333	32.39%
	Freelancer	176	17.12%
	Retiree	173	16.83%
	Employee	118	11.48%
	Self-employed entrepreneurs	90	8.75%
	The government	71	6.91%
	Students	26	2.53%
	Other	41	3.99%
Main classification of the disabled	Limb	850	82.68%
	Vision	63	6.13%
	Hearing and language	35	3.40%
	Intellectual	35	3.40%
	Mental problem	29	2.82%
	Other	16	1.56%
Disability rating	First	191	18.58%
	Second	301	29.28%
	Third	300	29.18%

	Fourth	236	22.96%
Earning	Under 500	228	22.18%
	500-1000	182	17.70%
	1000-1500	216	21.01%
	1500-2000	179	17.41%
	Above 2000	223	21.69%

Encoding

To avoid personal bias and classification errors during the coding and classification process, the authors trained two research assistants to assist with the encoding. One of the authors verified the consistency of the assigned codes. After encoding every 30 questionnaires, the team discussed how to compile and adjust the classification categories. To improve interrater reliability, the team members swapped their coding results with each other to ensure interrater reliability checks. Finally, a statistical analysis of the coding process yielded a kappa coefficient of 0.842, showing that the encoding team achieved a high level of consistency. The information classification categories increased and evolved throughout the encoding process. The final products and services identified as relevant for the current and future needs of disabled users were divided into internal and external needs.

Results

Network Platform

The information that people with disabilities need is spread over a variety of online platforms, and the differences in information provided by different channels often result in a violation of the rights of people with disabilities. The survey results in Table 2 show that a plurality (29.70%) of the respondents hoped that WeChat, more than any other network information platform, could provide advisory services for people with disabilities, followed by QQ (27.98%) and other platforms. Furthermore, based on the current development of Internet information platforms, WeChat and QQ integrate more life services such as payment and transfer functions, group purchase services, and train ticket ordering services. Information services can be established more quickly to achieve integration with existing services on WeChat and QQ; forming such a network provides a service system for people with disabilities, bringing them a more ideal information service. In addition to those who hoped for WeChat and QQ to develop services for people with disabilities, 24.06% of the respondents hoped that Web pages could be provided for people with disabilities; such pages are the mainstream platform for disseminating information over networks.

Information Service Requirements

Table 3 displays the internal information needs of people with disabilities. Leisure, tourism, and entertainment information were the most pertinent needs, accounting for 13.55% of all needs. From the

perspective of future needs, leisure, tourism, and entertainment continues to be the greatest need, accounting for 14.05% of all needs. Leisure travel barriers include the intrinsic nature of disabilities, environmental constraints, and interaction barriers (Lee, Agarwal, & Kim, 2012). In 2013, the General Office of the State Council issued the Outline for National Tourism and Leisure (2013–2020). The document strengthened the no-barrier construction of tourism leisure sites for people with disabilities to improve the quality for people with disabilities of leisure travel services provided by public services and leisure environments. The promulgation of the outline not only ensures that leisure travel markets recognize this special consumer group, but also facilitates increasing the demand among people with disabilities for leisure and tourism activities.

Table 2

Information Platform Preference

Platform	Times	Percentage
WeChat	621	29.70%
QQ	585	27.98%
Web pages	503	24.06%
Apps	229	10.95%
Weibo	141	6.74%
Other	12	0.57%
Total	2091	100%

Table 3

Internal Demand

Classification	Content	Existing demand		Future demand		Total
Leisure, tourism and entertainment	Group and package tour	110	170(13.55%)	55	117(14.05%)	287(13.75%)
	Barrier-free tourism	40		41		
	Travel consulting	14		6		
	Travel aboard	1		4		
	Film and television	5		11		
Assistive Devices	Assistive devices	31	129(10.28%)	50	79(9.48%)	208(9.96%)
	Motion-aid Device	47		5		
	Life assistive devices	30		7		
	Orthodontic appliance	4		1		
	Rehabilitation aids	1		3		

Health care	Private mobile phone and computer	16		13		
	Medical	4	92(7.33%)	9	44(5.28%)	136(6.51%)
	Recovery	43		15		
	Psychological counseling	10		5		
	Medical treatment	9		7		
	Health	26		8		
Electronic Commerce	Electronic commerce	23	27(2.15%)	18	23(2.76%)	50(2.39%)
	Finance	4		5		
Resource	Resource integration	1	1(0.08%)	6	6(0.72%)	7(0.34%)

The need for assistive devices was ranked second, accounting for 10.28% and 9.48% of current and future needs, respectively. From the perspective of the psychological aspects of disability, people with disabilities may be said to want to live a normal life as able-bodied people. Assistive devices can improve the work efficiency of people with disabilities, and such devices are inseparable from the auxiliary tools that assist them in life and work. Assistive devices "help me get on in life. We all have different ways of getting on in life. This is my way" (Gibson, Carnevale, & King, 2012, p. 1894). Currently, the design and manufacture of appliances for people with disabilities in China lags far behind that in developed countries. People with disabilities have a relatively low income level. Therefore, among the various types of auxiliary equipment supplied in China, people with disabilities focus more on mobility aids. Some advanced auxiliary tools remain unaffordable for most people with disabilities living in China, despite their eagerness for such devices. Therefore, providers of information on auxiliary appliances should continue to pay close attention to the needs of people with disabilities.

The need for relevant medical information among people with disabilities exhibited a downward trend (7.33% to 5.28%), indicating an optimistic attitude regarding the future of China's medical security system for people with disabilities. The need for rehabilitation information accounted for a high proportion of their information needs, indicating a psychological state in which they are eager to return to normal life. Although the proportion of medical information needs has declined, as a basic type of information for people with disabilities, this type of information need is closely related to their daily living. Moreover, it remains a critical part of information platform content that cannot be ignored. The e-commerce and resource integration information needs of people with disabilities were ranked low, with both accounting for less than 5% of their information needs.

Regarding external information (Table 4), approximately 24.86% of information needs are related to work and entrepreneurship advisory services. According to Table 1, most of the respondents were unemployed or worked in freelance positions, and, compared with other social groups, faced more severe employment problems. Paid work is a core production activity that has a marked impact on quality of life (Fekete, Wahrendorf, Reinhardt, Post, & Siegrist, 2014). More than half of the families of people with disabilities

have a per capita monthly income below 1,500 RMB, which also reflects the general problem of the low income level of people with disabilities. Although China has issued relevant policies and regulations to protect people with disabilities in their employment, the employment conditions for people with disabilities remain the main problem affecting social justice; people with disabilities in China desperately require work and entrepreneurship class information services.

The need for socializing information accounted for 14.80% of all information needs. People with disabilities in China might be hindered not by physical disabilities but by psychological barriers. The collective attitude of people living with people with disabilities and the attitudes of other social groups toward people with disabilities tend to exacerbate the feeling of loneliness experienced by people with disabilities. Exchange information services for people with disabilities provide more chances for communication and opportunities for self-expression, enabling self-improvement, and providing a deep sense of relief. Therefore, WeChat and QQ, the two largest chat-based social media platforms in China, demonstrate the highest potential to become network information platforms that provide consultation services for people with disabilities.

Table 4

External Demand

Classification	Content	Existing demand		Future demand		Total
Work and Entrepreneurship	Job hunting	172	288(22.95%)	104	231(27.73%)	519(24.86%)
	Entrepreneurship	61		77		
	Career counseling	15		4		
	Skill training	40		46		
Socializing	Friendship	143	219(17.45%)	47	90(10.80%)	309(14.80%)
	Love and marriage	45		14		
	Gathering	21		26		
	Online chat	6		3		
	Mutual aid	4		0		
Living services and environment	Life service	29	112(8.92%)	20	142(17.05%)	254(12.16%)
	Volunteers	12		14		
	House-keeping service	7		2		
	Home service on communicating	2		2		
	Barrier-free living environment	11		13		
	Education training	30		36		

	Elder care	10		28		
	Consulting	10		18		
	Shuttle service	1		9		
Information news	General information	56	161(12.83%)	25	65(7.80%)	226(10.82%)
	Healthy information	5		3		
	Legal policy information	68		23		
	Related information about the disabled	24		7		
	News	8		7		
	General information	56	161(12.83%)	25	65(7.80%)	226(10.82%)
Social inclusion and policy	Be treated fairly	18	56(4.46%)	21	36(4.32%)	92(4.41%)
	Living security	7		5		
	Policies	11		10		
	Assistant or discount	20		0		

The living services and the environment accounted for 8.92% of current information needs. The environment can encourage people with disabilities to participate in and integrate themselves into their culture, economy, and society (Domingo, 2012). Because some people with disabilities have physical disabilities and must also overcome psychological obstacles, they cannot leave their homes for daily life activities. Currently, the construction of obstacle-free environments remains in the initial stage in China. Many businesses or life service institutions do not provide specialized services for people with disabilities for the sake of their own interests. A consultation service platform for the disabled can bring convenience for most people with disabilities, enabling them to overcome obstacles in their daily life.

According to the survey results, people with disabilities focus primarily on work and entrepreneurship information. Because of the importance of such information, it affects the basic life quality and living environment of people with disabilities. Thus, this type of information will always be the main content to consider when constructing an information platform because it will affect the lives of people with disabilities. Furthermore, attention should be given to enhancing education and training information to meet the needs of people with disabilities. People with disabilities have realized that network information is not only for their temporary needs; they also fully use diverse information networks and exploit their convenience to strengthen their personal knowledge. Advisory service platforms for people with disabilities can be considered critical resources for establishing sustainable development. This also indicates that attention should be given to the sustainability of such information and the timeliness of its value for people with disabilities.

Discussion

The first research question asks, "Which platform do people with disabilities prefer to use?" Our results reveal that Wechat and QQ are the most favorable network information platform. Social media have become crucial platforms for information exchange, where people with disabilities can easily acquire information and health planners can interact with and listen to their target groups (Raghavendra, Newman, Grace, & Wood, 2015). Such platforms are for placing collaborative learning, social learning, and value cocreation practices between organizations and their customers (Luo et al., 2015; Zhang, Gao, et al., 2015; Zhang, Wang, et al., 2015). Our results reveal that WeChat and QQ are the most favorable network information platforms. In addition, both WeChat and QQ have voice message functionality, which could meet the special needs of people with disabilities. Guo, Bricout, and Huang (2005) indicated that the Internet can effectively reduce existing social barriers in social and physical environment for people with disabilities. Research has shown that social media platforms such as WeChat, Twitter, and Facebook are developing rapidly in the contexts of interpersonal communication, news and information dissemination, education, and other fields (Chen & Bryer, 2012; Gikas & Grant, 2013). People with disabilities can access information they are interested in through operating a user interface. This suggests that policy makers can set an information community on social media as a means to help people with disabilities.

The second research question states, "What types of service information do people with disabilities in China seek?" Our results suggest that the needs of information can be divided into internal demand and external demand. Regarding the internal needs of people with disabilities, leisure, tourism, and entertainment; assistive devices; and medical service were ranked as the top three needs and are thus worthy of attention. A report by the China Disabled Persons' Federation estimated that 60% of people with disabilities in China have leisure travel needs (China Disabled Persons' Federation, 2003). Bi, Card, and Cole (2007), indicating that China's tourism market for people with disabilities has considerable potential for growth. To satisfy this need, professional services and accurate information must be provided (Darcy, 1998). Ray and Ryder (2003) also stressed that online travel guides serve as the most critical factor. Therefore, understanding leisure, tourism, and environmental needs for people with disabilities can improve tourism participation (Packer, McKercher, & Yau, 2007).

The lack of mobility is one of the major problems that people with disabilities face (Gibson et al., 2012). Limited abilities and a limited range of motion cause people with disabilities to experience negative emotions, which then affect their spiritual and cultural life. Solving activity-constrained problems for people with disabilities is crucial in meeting their needs. Improving activities for people with disabilities mainly relies on auxiliary tools (Yang, 2012). Therefore, the importance of auxiliary tool information for people with disabilities cannot be ignored.

Medical information is a critical part of life and is closely connected with ensuring that people with disabilities lead a healthy life. Physical health is the most important factor to measure when examining the life quality of people with disabilities (Xu, Wang, Xiang, & Hu, 2005). Our results accord with those of O'Regan and Drummond (2008), who revealed the importance of relevant medical information for people

with disabilities. Rehabilitation for people with disabilities is another main requirement that must be addressed in China (Stratford & Ng, 2000). The present study suggests that basic medical information should be provided to people with disabilities and continually updated to help them improve their life quality.

From the perspective of external information needs, both present and future, the two major information types sought by people with disabilities in China are: (a) work and entrepreneurial information and (b) life services and environmental information. Because work is the most crucial source of income for people with disabilities, it is fundamental to their basic survival needs (Fekete et al., 2014). The need for life services and environmental information reflects the pursuit of independence in the daily lives of people with disabilities. They hope that society can create an environment in which they can live like able-bodied people rather than simply receive relief through social welfare systems (Lan, 2008). McLoughlin, Zhou, and Clark (2005) also showed that the modernization of special education services (information on life services and the environment) is crucial to ensuring that people with disabilities can develop their abilities.

When information service platforms are constructed for people with disabilities, the services should meet the peoples' needs and be updated regularly to ensure sustainability (Carter & Markel, 2001; Myhill, 2002). In other words, sustainability should be a critical consideration when constructing service platforms for people with disabilities.

Implications for Practice

The findings of this paper have several implications for policy makers and practitioners interested in the needs of people with disabilities and advocacy for them. First, the most valuable information for people with disabilities is work-related information for the present and for the future. Employers and policymakers should set up an online zone containing job searching information for people with disabilities. Tailored to the needs of people with disabilities, job vacancies can be published proactively through social media. Furthermore, there is also a great demand from people with disabilities for work-related training, skills, starting a business, and education. Therefore, an integrated informative platform can be established to provide information on employment for people with disabilities, diverse vocational training, and courses. This platform can also be linked to job centres and vocational training institutes or universities in order to provide distance-learning and technological education to people with disabilities. In China, people with disabilities are scattered across the country and do not have easy mobility, which makes distance learning an effective solution. Diversified courses should be designed to fit these specific needs. Combining the knowledge and modern technology with effective vocational training and placement, assistance can be provided to people with disabilities in finding employment, which in turn, will enable them to become economically independent and participate in social activities. Mobile learning technology can indeed fulfill the needs of special education and increase learners' interests in learning and participation (Fernández-López, Rodríguez-Fórtiz, Rodríguez-Almendros, & Martínez-Segura, 2013).

Second, people with disabilities mostly engage in their daily activities within their residence; therefore, information on social and recreational activities is an urgent need for them. In the future, policymakers

should provide a leisure travel environment that is accessible to users with disabilities. They should also plan for a comprehensive information system, allowing practitioners or people with disabilities to look up information. Practitioners can also launch tours and activity packages of diverse recreational travel that are suitable for people with disabilities, in order to satisfy their social, recreational, and developmental needs. Moreover, due to the additional difficulties experienced by people with physical or psychological disabilities in meeting people romantically, one recommendation is to set up friend groups on social media for this population to look for partners.

Third, since people with disabilities are more vulnerable to encounter limitations in employment, education, transport, communications, housing, and other areas, government authorities should strengthen their legal consultation services to help prevent or resolve such issues. People with disabilities should be provided equal opportunities to ensure that they can benefit from the projects, services, and activities organized by the government. Fourth, the government must possess the ability to effective communicate with people with disabilities. The current information system only relies on certain forms of senses and abilities, and operations compatible with multiple forms are rare. Social media can convey words, graphics, documents, sounds, and videos, and it also offers opportunities for public and private interactions, enhancing the ability to exchange. Nonetheless, the attitude and trust of people with disabilities remain the determining factors for the effectiveness of informational communication channels using the word-of-mouth approach in social media (Lien & Cao, 2014). Lastly, future policymakers can define policy priorities based on the urgency and importance of existing and future needs in order to gradually build a website of information for people with disabilities on social media.

Limitations and Future Research Directions

First, in this study, we adopted a crowdsourcing research method. However, in reality, many people with disabilities have had no contact with network information technology. Therefore, the adopted methods have some limitations. Second, the only crowdsourcing platforms we distributed the questionnaire through were WeChat and QQ, which reduced the size and generalizability of our sample. Finally, we obtained only 1,028 effective samples. Narrowing the scope of the investigation may have influenced the accuracy of our analysis results.

On the basis of this paper, future research will be devoted to gaining a deeper understanding of the information needs of people with different types of disabilities. Differences in the living environments and physiological states of different groups of people with disabilities show that their information needs vary. The sample target should be extended beyond disabled groups with physical disabilities, and the investigation should not be confined to crowdsourcing. Through a field investigation, we could communicate with people with disabilities face to face, and other methods may reveal more information about their needs. In addition, regarding information service platforms for people with disabilities, their content needs must be combined with developing relevant Web technologies. From professional Web development and technical perspectives, the needs of people with disabilities must be classified in a more detailed manner to ensure that they are provided with professional, specialized, and personalized disabled

information platforms that satisfy their needs.

Conclusion

The crowdsourcing method was adopted to study the information needs of people with disabilities. Our results show that people with disabilities hope to be provided with network information platforms such as WeChat and QQ, which can be utilized as information services, because these platforms accommodate a wide range of users and feature a more humanized research and development design; moreover, they are at a mature stage of development. The information needs of people with disabilities can mainly be divided into internal and external needs. The major internal needs are leisure, tourism, and entertainment as well as assistive devices. The major external needs are mainly work and entrepreneurship and life service needs.

Acknowledgement

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