Factors Influencing Disability Inclusion Practice on Social Media

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ABSTRACT

Digital inclusion in Macao is in the very beginning stage, and disability inclusion practice on social media in producing and promoting accessible social media content and needs is hard to find. This study aims to analyse the factors that influence communication staff's practice of disability inclusion on social media by using the combined employee behaviour and communication process model to provide suggestions to management who wants to promote disability inclusion practice on social media.The Service Centre for the Deaf of the Macau Deaf Association (MDA) was selected as the object for this case study. The online social media used for MDA's communication was analysed, and semi-structured in-depth interviews with members of the Association were conducted. The research findings showed that, except for the reward structure, factors examined from the work environment in terms of organisation, supervision and co-workers; communication staff themselves; outcomes of accessible social media communication; audience and feedbacks show relations with disability inclusion practices on social media. The delivery of inclusive culture, the influential power of disability stakeholders and the positioning of social media platforms are the key influencing factors.The interesting part of this study is that people without disabilities seem to be excluded from the disability inclusion practice carried out on MDA's Facebook. Their social media content is highly accessible to deaf and hard-of-hearing audiences yet seems not to involve the general public. The study object is a good model for producing accessible content, yet the optimisation of promoting social media accessibility needs further exploration.

CCS CONCEPTS

• **Social and professional topics** → User characteristics; People with disabilities; • **Human-centered computing** → Accessibility.

KEYWORDS

Accessible Social Media (ASM), Disability Inclusion, Macau Deaf Association, Disability Employment

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1 INTRODUCTION

A report from DataReportal shows that social media (SM) users reached 4.55 billion in October 2021 and continue to increase by more than 1 million new users daily [1]. Thus, SM users make up more than half of the world's population, around 7.9 billion people [2]. Carta et al. [3] stated that SM was widely used for social contact during the lockdown and quarantine during the pandemic era and that after the pandemic ended, SM remained the often-preferred form of social contact.

Francis Ingham, director general of PRCA, expressed the need "to make communications inclusive for people of all abilities so we can reach every member of society" [4]. To reach larger audiences, especially of people with disabilities (PwDs), SM is proposed to be a powerful tool. SM provides "new opportunities for communication, information, and media" for PwDs [5]; fosters social interaction; and raises the voices of individuals, small groups, and disadvantaged groups [6]. However, SM content is reported to have various levels of inaccessibility, especially to PwDs, which may impede inclusive communication in digital places to include PwDs.

There are organisations of PwDs found to be producing accessible content on SM, which is currently a rare situation in Macao. This study aims to figure out the factors that influence disability inclusion practice in SM by using an organisation that provides accessible content on SM as a study case. While types of disabilities vary, such as intellectual, physical, sensory, and mental illness, this study only looks into the sensory disabilities: hearing and vision. And after a preliminary review of Facebook content accessibility for the two mentioned types of disabilities, poor practice regarding visual accessibility on SM in Macao was found, so only hearing accessibility could be focused on in this study.

The research question was, "What are the factors that influence disability inclusion practice on social media?" Management and communication perspectives were selected to guide the research to find out the answer. This study can provide references to managers who want to promote disability inclusion practices on SM and can also provide references to those who are interested in studying digital disability inclusion.

The number of active mobile SM users in Macao rose from 370,000 to 400,000 between 2017 and 2019 [7], and 444,400 Macao citizens are marked as Facebook users as of February 2022 [8]. Macao's total population was 681,700 in the first quarter of 2022 [9, p.1], which means around 65% of people in Macao were using Facebook. So far, no data shows the SM visual and hearing accessibility needs in Macao.

To give a general idea, since the latest population census report of 2021 did not include the number of PwDs, the previous report,

Table 1: Analysis of 168 Facebook posts

Examined item	Out of 88 image posts	Out of 80 video posts
No alt-text	10	–
Automatic alt-text (poor accuracy)	76	–
No audio description	–	61
No caption	–	40

conducted in 2011, is taken as a reference. In 2011, the number of PwDs (six types of disability, namely visual, hearing, language, physical, intellectual, and mental, were included) in Macao was 11,141 [10, p.22]. Researcher He Zhihui predicted that the hidden cases were not few, and the number of disabilities would be no fewer than 20,000 by 2015 [11]. Besides, the elderly with hearing or vision loss may also have increased SM accessibility needs.

Currently, in Macao, there is no regulation on digital accessibility. Some legislators have inquired about the government on the mobile app and website accessibility legislation. Legislator Ron U Tou Lam once proposed to develop a "Handbook for accessible mobile apps and websites" after receiving a reflection from a visually impaired citizen who encountered an inaccessibility issue when navigating the mobile payment app through a screen reader [12].

Since so far, not much information can be found regarding the accessibility of SM, we decided to examine SM accessibility by conducting a brief investigation on Facebook pages that originated in Macao. The reason for choosing Facebook was that more than half of the population in Macao is using it, as mentioned above. A total of 44 Facebook pages from various organisations in Macau were reviewed. Among the 44 Facebook pages, we analysed 168 posts which are information intended for the public, of which 88 were image posts and 80 were video posts. Results show that the image posts have poor content accessibility regarding insufficient image description (automatic alt-text is low in precision), and the video posts lack audio description and captions. The amount of inaccessible content for visually impaired people is more significant than for hearing impaired people.

The reviewed Facebook pages were run by various entities, covering public services, legislators, public entities, non-governmental organisations (NGOs), higher education institutions (HEIs), integrated tourism and leisure enterprises, and mass media organisations. Only two image posts were found with alt-text that provided detailed information; of the remaining 86 images, 10 had no alt text, and 76 used automatically generated alt-text, which is low in precision, such as "there are five people in the photos". Regarding the video posts, 61 out of 80 reviewed videos lacked audio descriptions, and 40 lacked captions.

In Macao, two organisations serve people with hearing disabilities and two with visual disabilities. The two organisations for visually impaired people did not provide any video posts. The image posts either had no alt text or provided low-accuracy automatic alt text. Both organisations of deaf and hard of hearing people provided videos with captions and sign language, which can be considered highly accessible for people with hearing disabilities.

The general SM accessibility specific to hearing and visual disabilities found in this investigation was poor within various industries in Macao. As mentioned, SM users are growing rapidly, and SM accessibility is being studied and optimised worldwide. The United Nations Convention on the Rights of People with Disabilities (UNCRPD) has been effective in Macao since 2008, and as stated in the convention, "states parties shall take appropriate measures to ensure to persons with disabilities access to information and communications, including information and communications technologies and systems" [13]. For respecting the right of PwDs to obtain digital information, poor SM accessibility should be regarded as an important problem waiting to be solved. The author proposes that studying the influencing factors of disability inclusion practices on SM may provide clues to optimising poor SM accessibility.

2 LITERATURE REVIEW

In order to provide the knowledge basis for a study on factors influencing the adoption of disability inclusion practices on social media, a literature review was conducted to look at past research on communication and employee behaviour models, influences on employee behaviour, digital disability inclusion, accessible social media content authoring practices, and influencing factors. The reviews of previous research help ground the conceptual framework of this study.

2.1 Disability Inclusion Practices on Social Media

The digital divide is commonly understood as the gap between people who access and use technology and those who do not. It is said to be an obstacle to social development which creates barriers to low-income, older, and disadvantaged groups' sharing the benefits of computers and internet technology [14]. The inaccessible contents in digital places exclude people with digital accessibility needs. Kent and Ellis [15] pointed out that people share content from one digital platform to another; when the original content is inaccessible, then content shared to another platform is also inaccessible. For example, suppose a video embedded on a webpage does not have subtitles. When people share the link to other digital platforms like Facebook or Instagram, the widespread video creates an inaccessible digital environment for people who need subtitles. Furthermore, when the public sector adopts inaccessible content, the digital exclusion of PwDs will be more pronounced.

In digital places, people with disabilities and impairments are widely considered central to digital inclusion [16]. Simplican et al. [17] defined social inclusion as the interaction between interpersonal relationships and community participation. Extending the inclusion concepts to SM platforms, inclusion may be based on the

indications of interacting with social media users and participating in social media communities. For PwDs to be included on SM, the contents need to be accessible. And the content on SM is created by users; hence, motivating users to author accessible social media content is an important issue to be addressed. According to this concept, the disability inclusion practice on social media is set to be focused on producing ASM content and promoting ASM needs in this study.

2.2 Accessible Social Media Content Authoring Technique, Challenges and Opportunities

ASM content authoring features include alternative text (alt-text) for image description, audio description, and closed captioning for videos. Alt-text is suggested to be applied to all images so those who need to use assistive technology can read the images. Audio description provides narration to visually describe what is going on in videos, while closed captions provide dialogue subtitles and indicate other non-speech sounds [18, 19]. Besides the inbuilt features, Gleason et al. [19] created an internet browser extension called Twitter A11y to generate alt-text on Twitter automatically; the techniques include a caption crawler, crowdsourcing images description, and machine-generated tweet text matching, to name a few. Gleason et al. [19, 20] also proposed that much inaccessible content, such as GIFs and memes, still needs to be optimised. They suggested extending the application of alt-text and audio descriptions to GIFs and memes. GIFs and memes function to add humour to posts' content. However, not many SM platforms currently provide accessible content authoring features for those elements, except Twitter, which can automatically include short alt-text for GIFs [21].

Besides the mainstream, as mentioned above, accessible content authoring features and techniques, pictograph translation technology is specially developed to assist people with intellectual disabilities to write and read on social media more independently. It contains two forms: one is text-to-pictograph, and the other is vice versa. Sevens et al. [22] found that pictograph technology helps people with intellectual disabilities chat more independently with friends on SM. The above provides a big picture of accessible social media content authoring techniques.

Though several social media platforms currently provide automatically generated alt-text and captions functions, inaccurate and misleading issues frequently happen [19]. There are also challenges in engaging people without disabilities to produce accessible content or enabling PwDs to produce accessible content independently; the reasons can be concluded as the invisibility of accessible functions, lack of guidance, the need for additional efforts, and the stigma of accessibility (accessibility should be employed only when necessary) [19, 23]. On the contrary, some people are motivated to produce accessible content by the feeling of "doing the right thing", having disabilities themselves, or having family members or acquaintances with disabilities [23, 24]. To motivate users without disabilities to adopt accessible content authoring practices, Youngblood et al. [25] suggested that accessible social media should be included in the school curriculum, teaching students ASM knowledge and techniques, as well as the concept of the "right things to do" right from the beginning of their use of social media. In the "Addressing the Accessibility of Social Media" workshop, in which accessibility researchers, industry practitioners, and end-users with disabilities participated, another suggestion was made regarding education: that both SM users and platform developers should learn the needs of PwDs in using SM [19]. In short, accessible content is the entrance requirement for carrying out disability inclusion on SM. Education are suggested to be useful in making people without disabilities produce ASM content.

2.3 Conceptual Framework of Disability Inclusion Practice on Social Media

The study unit here is the behaviour of producing ASM content and promoting ASM needs. The study unit's influencing factors are proposed to be studied in the managerial and communication aspects. The employee behaviour model, communication process model, and influence factors that are not introduced in the model will also be reviewed in this section to develop the conceptual framework for this study.

According to Werner and DeSimone's [26] Employee Behaviour Model (EB-Model) (refer to Figure 1), employees' behaviour will be influenced by factors in the external and internal environments. External factors can be found in the external environment and work environment. Factors in the external environment include economic conditions, technological changes, labour market conditions, laws and regulations, and labour unions. There are supervision, organisation, and co-worker factors in the work environment. Supervisors' leadership and their performance expectations towards subordinates; the organisation's reward structure, culture, and job design; and co-workers' control over outcomes, norms, group dynamics, and teamwork are the main factors influencing employees' task performance. If supervisors have high expectations of subordinates' performance and maintain good relationships with them, the subordinates will show good performance as well [26]. Besides, a reward system positively affects employees' motivation, and an organisational culture that guides employees' behaviour and job design can improve employees' productivity [26]. Meanwhile, co-workers have a strong influence on employees' behaviour in the aspects of showing friendship or punishment; establishing informal rules that lead employees to perform in certain ways; and creating group dynamics which influence groupthink, group efforts, and, through teamwork, trust and cohesiveness to affect the level of employees' interdependence [26]. The internal factors are employee motivation, attitudes, and knowledge, skill, and abilities.

The external and internal factors influence employees' behaviour. And behaviour has a direct relationship with personal and organisational outcomes. Outcomes valued by organisations are related to things such as productivity and product quality, while employees themselves value things such as pay and recognition. "Outcomes" acts as a loop to feedback employees' performance to organisation management and influence employees' future behaviour [26].

Besides the factors mentioned above in Werner and DeSimone's EB-model, leaders' perception of organisational culture isalso an important factor influencing employee behaviours. Leaders will shape the minds of subordinates according to the perception of company culture [27]. Inclusive climate, leadership, and practices will affect employees' perception of workgroup inclusion [28]. In other words,

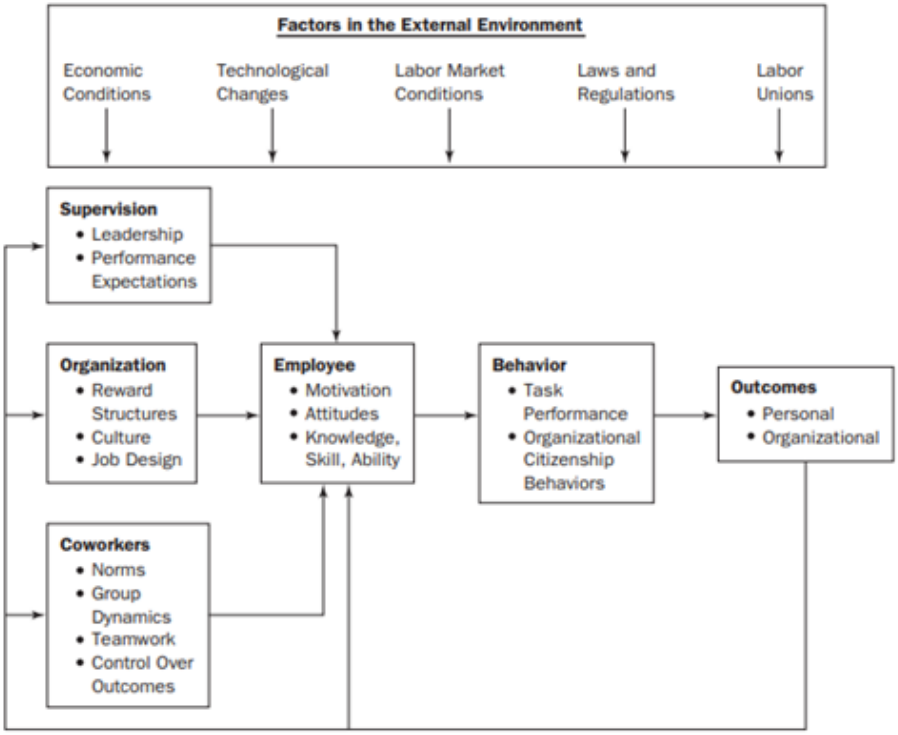

Figure 1: Model of Employee Behaviour [26]

if the leader perceives the organisational culture as inclusive, the subordinates will perform inclusive practice accordingly.

Communication models show what is happening in the communication process. The communication process studied here is that the sender sends messages through an online medium to the receiver, and the receiver feeds back their opinion through the online medium too. According to this, the Shannon–Weaver Model of Communication is chosen as referencing model. The model includes the information source, which is the selected message and may consist of text, pictures, music, or video. The transmitter transforms the message into a signal; then, the signal is sent over the communication channel to the receiver; the receiver changes the received signal back into a message and handles it at the destination. [29, p.7] used the example of oral speech to illustrate the model. When one person talks to another, one person's brain is the information source, and the other's is the destination. The vocal system of the speaker is the transmitter, the ear and associated nerve of the other person act as the receiver, and the channel is the air. And the errors during the signal transmission in terms of sound and image distortion are called noise. Also, referring to another interactive communication model, feedback helps the sender control the intended effects and adjust future messages [30]. Besides the informative functions, feedback is also said to be motivational [31]: the sender will be motivated by feedback from the receiver. So, feedback is added to the Shannon–Weaver model to develop a variant version that may better suit this study (refer to Figure 2).

The model adapted for this study considers the information source as the employee, the transmitter and receiver are the social media platform, the destination as the audience, the channel as the internet, and the instability of network, inaccessibility of SM platforms and their contents are the noise. Noise will be ignored since accessible social media platforms and their content is required in this study.

Based on the Model of Employee Behaviour (Figure 1) and the variant of the Shannon–Weaver Model (Figure 2), along with the literature review findings in terms of leaders' perception of organisational disability inclusion culture as well as the audience's feedback, the conceptual framework of disability inclusion practice on social media is created as shown in Figure 3. The behaviour examined in this study consisted of producing ASM content and promoting ASM needs. And since the message needs to be sent to the audience with and without accessibility, the SM platform was adjusted to ASM. Also, according to the public nature of social media, feedback such as comments left on social media could be viewed by the organisation's members, so the feedback loop is extended to supervision, the organisation, and co-workers. Under the framework, influence factors will be analysed from (1) the work environment, which includes supervision, the organisation, and co-workers; (2) the senders themselves; (3) outcomes of behaviour; (4) audience and (5) feedback.

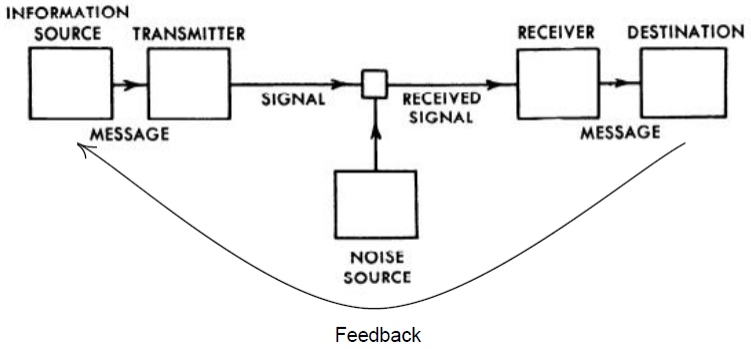

Figure 2: Variant of Shannon–Weaver Model of Communication [29]

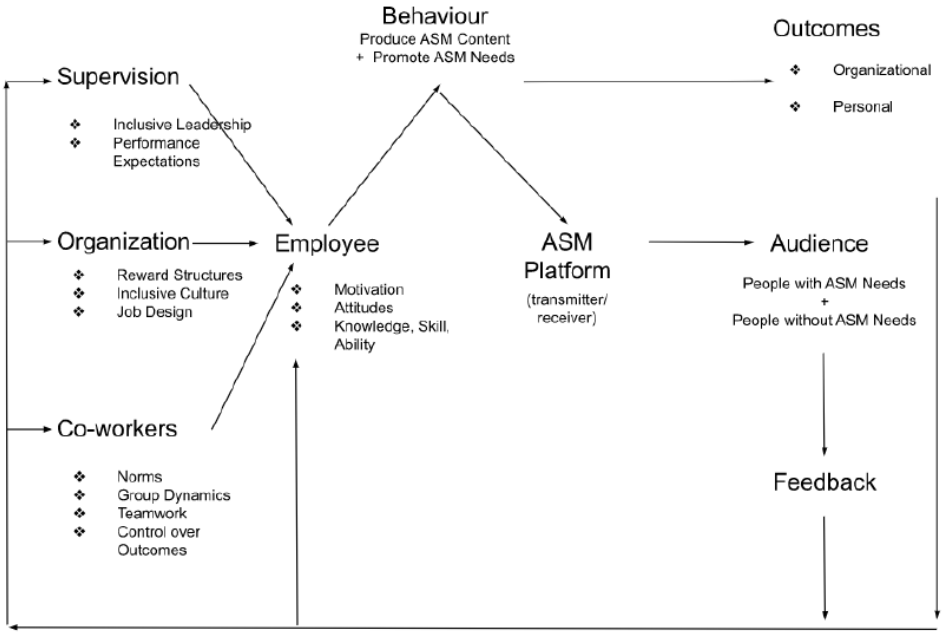

Figure 3: Conceptual Framework of Disability Inclusion Practice on Social Media

3 RESEARCH METHODOLOGY

Macau Deaf Association (MDA) and the Macau Association of the Hearing Impaired are found to provide accessible content on social media for their deaf and hard-of-hearing members, making them suitable study objects. After comparing the objectives written on the official website and FB page of the two selected associations, MDA is purposively selected since enhancing the public's knowledge of the needs of the deaf and hard of hearing is clearly stated in their objective. Furthermore, besides sign language videos, MDA also provides graphics and animation on their FB page, which shows more eye-catching elements and seems to have more information for exploration.

Under the condition of initial stages and limited research objects, a case study approach was adopted for this study in order to make the preliminary findings on the study theme: factors influencing disability inclusion practice on social media.

There were two phases of data collection: (1) Review three months' records of MDA's Facebook page. (2) Design the questionnaire according to the previously established conceptual framework to gather the information that cannot be found in the first phase. An invitation email was sent to MDA on 29 June 2022 to request interviews. Then, the invitation was passed to the Service Centre for the Deaf, a subordinate unit assigned to operate the SM platforms for MDA. Four in-depth interviews were conducted with MDA's staff members directly involved in decision-making and operating the SM platforms. The MDA assigned two sign language interpreters to assist with interviews with the hearing-impaired interviewees.

The interviewees respectively were the director of the Service Centre for the Deaf, a social worker who was responsible for the

daily contact with service clients, event planning, gathering information and preparing text scripts for social media; a senior sign language interpreter, who was responsible for the sign language interpreting and allocating tasks to colleagues in the sign language interpreting team; and the digital platform team leader, who was responsible for the production and operation of digital platforms.

All interviews were video-recorded and transcribed using the "cSubtitle" AI online speech-to-text service. All interviews were conducted in Cantonese and transcribed into Chinese. A total of four transcripts were coded in NVivo 11. A deductive approach was used to identify categories related to the pre-established conceptual framework, and an inductive approach was used to identify new themes. The thematic analysis was run from the Chinese transcripts, and the results were then written in English.

4 RESULTS AND DISCUSSION

According to MDA's website, facilitating deaf and hard of hearing people's engagement in and contribution to society as well as promoting rehabilitation services, hearing accessibility, and community inclusion, are stated as the objectives of the association.

Regarding information about disability inclusion practices on SM, an examination of MDA's Facebook posts from 26 March to 26 June 2022 was conducted. There were 2900 followers on the MDA Facebook page. A total of 57 posts were posted within the review period, and five content types, including member activity (21), sign language news (17), public activity (9), disability inclusion promotion (8), and other information (2), were identified. Higher amounts of posts for the audience with ASM needs could be seen.

Under the 57 reviewed posts, no comments were found; the post that gained the most reactions received 42 emoticons and was about news reporting that MDA had signed a cooperation agreement with the University of Saint Joseph regarding opening up the sign language course to university students. The post with the second most reactions recorded 33 emoticons and was about a stress relief workshop open to parents of deaf and hard-of-hearing children. The most shared post, regarding covid-19 sign language news, recorded eight shares. The second most shared post, regarding disability inclusion promotion, recorded six shares. There seemed to be little response to the majority of posts. Post that received the most reaction was related to disability inclusion news, while the post that got the highest share rate was ASM content, namely the sign language news.

From the interview transcripts, a total of 51 nodes and 271 references were sorted out in Nvivo11 and grouped into 17 categories, including "inclusive culture", "inclusive leadership", "performance expectations", "reward structures", "job design", "norms", "group dynamics", "teamwork", "control over outcomes", "motivation", "attitudes", "knowledge, skill, ability", "causes of using of social media", "outcomes", "audience", "feedback" and "stakeholder engagement". Except for "reward structures", all other 16 categories are found to be related to the disability inclusion practice on SM.

All interviewees stated that they cared less about promotions and pay rises as long as they found meaning in their actions. The inclusive culture is in accordance with MDA's objective and philosophy, namely "inclusive of the deaf and hard of hearing" and "help oneself, help others". The leadership style of the director was found to be following the organisation culture, influencing the performance expectation, namely to provide prompt and accessible information to the service clients, also influencing the job design, which was respecting the different of staff and appointing them to the appropriate position, empowering the deaf staff. For example, deaf staff are appointed to be in charge of the social media operation, providing accessible content to audiences with the same type of disability. The interaction between deaf and hearing staff in terms of group norms, dynamics, and teamwork showed trust and appreciation that all interviewees described the cooperation within the Centre as smooth and stable. The operators of social media are composed of deaf and hard-of-hearing staff. They have the social media accessibility needs motivating them to learn the ASM production techniques. All interviewees showed committed attitudes toward disability inclusion that they paid efforts to produce and promote ASM. To keep up with the information-receiving trend of the service members, MDA started to develop ASM communication practices. The expected outcomes of using social media to disseminate information to service members and empower and polish the image of the deaf and hard-of-hearing people keep interviewees' enthusiasm in producing ASM. The general public is also stated as MDA's target audience, but communication strategies for attracting the general public seem to be lacking. Feedback received from the deaf circle relies on the deaf and hard-of-hearing staff, which helps assure the quality of content accessibility. Lastly, both external and internal stakeholders of MDA included deaf and hard-of-hearing people, which let the hearing stakeholders have a deeper understanding of the ASM needs through daily connection with service members and cooperation with deaf and hard-of-hearing colleagues.

From the data collected through the social media used by MDA and the in-depth interviews, three main themes were identified:

4.1 Delivery of Disability Inclusion Culture

The objectives and philosophy written on the webpages of MDA emphasise disability inclusion as well as disability empowerment. These form the inclusive culture that permeates the whole association regarding performance expectations, deaf and hearing cooperation, staff;s motivation and disability empowerment. The following description gives support to the inclusion culture at MDA.

Performance expectations: The director expected the social media operation team to provide prompt and accessible information to their service clients. The reason behind is to reduce clients' trouble caused by information inaccessibility, also help them to keep up with the information receiving pace of those without disability.

Deaf and hearing Cooperation: According to the director, the hearing colleagues were mainly social workers, occupational therapists, hearing therapists, and psychological counsellors. Their professional background gave them some understanding of disability inclusion, which was helpful in the inclusion cooperation at the Centre.

"They (hearing staff) are knowledgeable about the deaf's disability needs, so the teamwork is relatively smooth in the Centre. I worked for a care home before, and the ratio of staff having professional backgrounds was relatively low compared to this Centre. More staff

having professional backgrounds related to disability makes them get along well."

The hiring requirement of the hearing staff shows MDA's efforts in providing inclusive working environment for the deaf and hearing staff working together. Interviewees also agreed that the cooperation between deaf and hearing in the Centre is smooth and stable.

Staff's motivation: The Centre did not have a promotion or pay rise regulations. According to the interviewees' description, the salary was not high compared to other large-scale social welfare organisations. The digital platform team leader stated that his previous job paid more than the current one; he was not doing the ASM production job for money but to promote disability inclusion. All interviewees expressed their ambitions of promoting disability inclusion, letting the public learn more about the accessibility needs of the deaf, and helping deaf and hearing people increase their quality of life.

Disability empowerment: The director stated that the Centre assigned ASM production tasks to deaf colleagues who showed ability in doing related work, which is a reflection of disability empowerment. The Centre helped deaf colleagues to produce ASM information for deaf people as an example of helping themselves to help others.

The success of implementing the inclusive culture in each part of the organisation facilitated the staff's achievement of the goal of disability inclusion, which may consider the fundamental influencing factor for staff to produce and promote ASM.

4.2 Disability Stakeholders Influential Power

The Council of MDA, the executive organ, is composed of five representatives, four deaf people and one parent of a hard-of-hearing child. The Centre has 44 staff members, 11 of whom are deaf or hard of hearing. The digital platform team responsible for producing and publishing the ASM content consisted of three staff members; one is deaf and others are hard of hearing. The decision-making and executive power of deaf and hard of hearing stakeholders are influential in MDA, all along from the executive organ to the ASM operation team. As stated by the digital platform team leader, who also was the chief officer of MDA, the content on MDA's Facebook was not always accessible in the beginning, as subtitles and sign language were sometimes missing. He reported the issue to the director general of MDA. With the support of the MDA executive organ, he joined the Centre in 2015 and started to promote and optimise the content accessibility of MDA's Facebook page.

During the interviews, the hearing interviewees repeatedly mentioned that they value the opinions of deaf and hard-of-hearing staff since they provide service to clients of the same kind. Also, the deaf colleagues had strong connections with the deaf group, so they always represented them to bring feedback to the Centre. Besides having the identity as service clients, the deaf and hard-of-hearing staff were also the service providers, providing the ASM communication service to clients. Regarding the content type, the priority is based on the elderly deaf people's understanding, which is more graphic and fewer texts. The deaf and hard-of-hearing stakeholders significantly influenced the information type and accessibility levels of social media content.

Vice versa, the hearing staff seemed less powerful in producing ASM content. Though there were hearing staff with more than ten years of experience in sign language interpreting, they believed that sign language is the mother tongue of the deaf, and they needed recognition from their deaf colleagues to produce accurate or understandable sign language for the deaf. The discourse of the deaf and hard-of-hearing stakeholders played an important role in developing ASM production in MDA.

4.3 The Positioning of Social Media Platforms

The Centre's social media positioning provided information to their service members, especially elderly deaf people. Hence, the number of messages and accessibility level of SM content is high for those audiences. On the contrary, the social connection function with the general public who have no relations with the deaf and hard of hearing seems not strong. Fewer messages were provided to the general public through the SM platform compared to the information provided to their members. The social worker who was responsible for drafting the contents of the Facebook posts explained when asked about who the audiences of MDA's Facebook were:

"It is a good suggestion to promote ASM knowledge to the public through the SM platform; I have not thought of this before; our audiences are mainly deaf and hard of hearing."

Also, when asked who the expected receivers of the ASM posts were, the social worker replied: *"Everyone who has a mobile phone."*

On the other hand, the director thought the ASM content, especially videos added with sign language, promotes disability inclusion. People who came across the sign language posts might be attracted by the communication method among the deaf. Those interested in learning more about accessibility needs would find the information by themselves. And she considered the target receivers of the sign language video to be everyone.

In the interviewees' perception, the general public was included in the target audience group. Strategies regarding promoting ASM needs to the general public seem lacking.

4.4 Discussion

4.4.1 Impact of Organisational Culture on Employee. Organisational culture deeply impacts performance, employees, and various organisational processes [32]. In this case study, the disability inclusion culture was implemented throughout the Centre. The director demonstrated a sense of identity with the organisational culture that she made efforts to carry out a lot of communication work to help the deaf staff understand the hearing staff and vice versa. As a result, mutual understanding and trust were established between deaf and hearing staff at work. Moreover, deaf and hearing staff were placed in the appropriate positions to contribute their abilities thanks to the inclusive supervision influenced by the inclusive organisational culture.

The inclusive culture, at some points, influenced the staff's recognition of diversity, letting both the deaf and hearing staff be more open to accepting differences. As described by the social worker, deaf colleagues were more sensitive to vision, and with their design background, they could do better converting text into graphics. However, the hearing staff could do better in collecting information

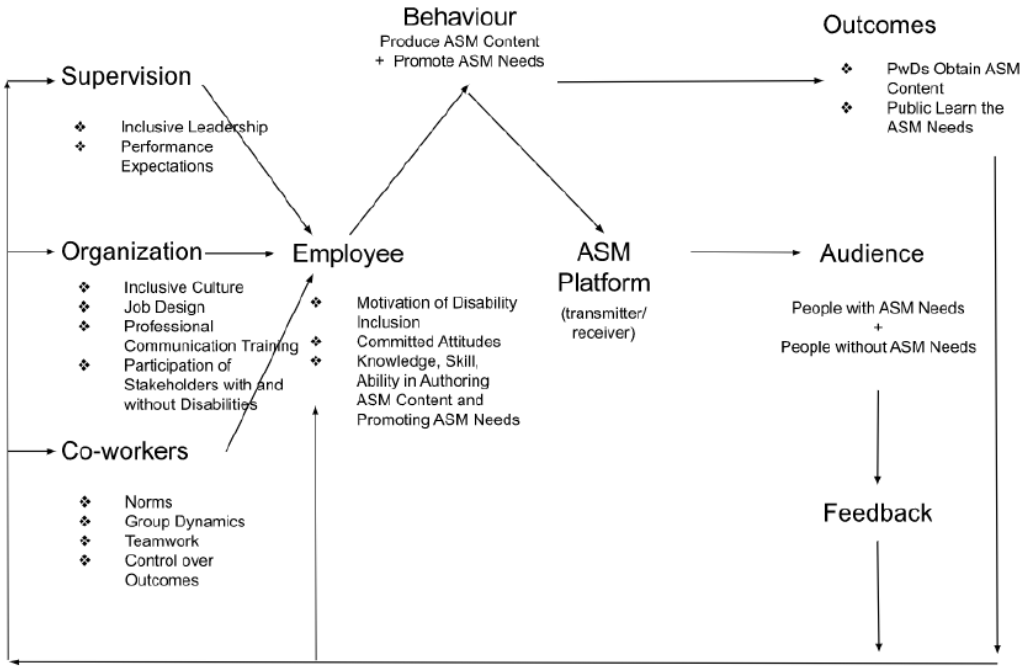

Figure 4: Conceptual Framework of Disability Inclusion Practice on Social Media (Updated)

since they have less limited access than their deaf colleagues. They appreciate each other's working ability and are satisfied with the current cooperation formation. Also, they are more open to accepting different ideas. When the deaf staff proposed to produce ASM content on MDA's Facebook, other staff showed openness to try and willingness to help produce ASM content. The inclusive culture of MDA shows impacts on various aspects of the employees.

4.4.2 Participation of People Without Digital Accessibility Needs. Saff with accessibility needs showed strong motivation in producing ASM content in this study. The hearing staff also showed a good understanding of accessibility needs according to their disability-related educational background and knowledge gained from cooperating with deaf and hard-of-hearing colleagues. People with less connection with PwDs may lack the motivation to produce ASM content and even learn the ASM needs.

Inclusion of disabilities needs mutual efforts from people with and without disabilities. As the digital team leader said, *"it is no use for us [deaf people] to know what ASM is. It is important for them [hearing people] to learn what it is and the accessibility needs of deaf people."*

The influential power of the deaf and hard-of-hearing stakeholders shows significant influence in improving the accessibility level of social media content. But increasing the amount of ASM content takes the efforts of social media users. Especially when the number of social media without accessibility needs is obviously higher than those with accessibility needs, people without accessibility needs are the main force in changing the ecology of content inaccessibility.

4.4.3 Target Audience and Social Media Communication Knowledge. In this study, the interviewees perceived anyone with a mobile phone as their target audience. And they hope the general public can, by chance, read the ASM posts and learn more about the accessibility needs by themselves. They do not demonstrate any specific strategy to attract their perceived target audiences. Also, the higher ratio of Facebook posts is composed of ASM content. When the sender encodes the accessible message, their target audience might be those with digital accessibility needs. It is more likely that they already set the target audience as people with accessibility needs. This may imply a vague understanding of the target audience and a lack of social media communication strategies.

Though they have good ASM production skills, the social media operation team may also need to obtain social media communication training to increase the effectiveness of engaging the general public to achieve their aim of promoting the ASM needs to the general public.

5 CONCLUSION

This section provides concluding thoughts on the findings and recommendations for practical management application.

Disability inclusion is a mutual effort by people with and without disabilities. Just as the deaf digital platform team leader said, "It is no use for us to know what ASM is"—people who have accessibility needs on social media are the users of the ASM content. The production of ASM in the current technology environment still needs help from people without disabilities. Education regarding the knowledge of ASM, including what ASM is, why produced ASM, and how to produce ASM, provided to people without accessibility

needs, as stated in the literature review, may be the opportunity to guide the public to author ASM content.

In this case study, the Service Centre for the Deaf promoted the ASM needs to the hearing staff by letting the deaf and hearing work together to operate the platform. Also, the hearing staff's professional background helped them sense the needs of those with disabilities more quickly. But on their social media page, more efforts seemed to be paid to disseminate information to deaf and hard-of-hearing people and their families. In contrast, the general public seemed to receive less attention.

Organisations that want to carry out disability inclusion practices on social media may need to explore the following issues: 1. Implementation of disability inclusion culture; 2. Sender as a receiver: involve people from the general public, who have less knowledge or relation with PwDs, to give suggestions about what the public wants to learn about ASM needs. Vice versa, consider employing people with accessibility needs to work in the ASM operation position and 3. Examine if the social media operating team has enough social media communication training in theories, trends and strategies, and provide training when appropriate.

In the aspect of disability inclusion practice on social media, the conceptual framework is updated below (Figure 4). Compared to the previous framework (refer to Figure 3), the "reward structures" are omitted. "Professional communication training" and "participation of stakeholders with and without disabilities" are suggested to be added to the framework. Furthermore, the "motivation", "attitudes", and "knowledge, skill, ability" are suggested to be specified as "motivation of disability inclusion", "committed attitudes", and "knowledge, skill, ability in authoring ASM content and promoting ASM needs". The "organisational" and "personal" outcome are suggested to be revised as "PwDs obtain ASM content" and "public learn the ASM needs" that correspond to the "Behaviour".

This study merely provides an assumption about disability inclusion practice in SM. The effectiveness of the proposed conceptual framework needs to be verified with experiments. Hence, there is still much room to study disability inclusion on social media: for example, the effective strategies of producing and promoting ASM to achieve disability inclusion and the effectiveness of promoting disability inclusion through social media. Furthermore, this topic can also be studied in different aspects: for example, policy-making, education, and social psychology. Especially in Macao, digital disability inclusion is beginning; many elements or influencing factors are still waiting to be discovered.

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