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“Now I am Socially Well Respected” - From being Bullied in the Society to being Important Community Member

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ABSTRACT

People with Disabilities (PWDs) struggle in different aspects of their lives, especially in resource-constrained regions like South Asia. The role of Mobile Financial Services (MFS) in improving their lives has been emphasized in literature where works in the South Asian region focus on the challenges of MFS adoption for PWDs. This research focuses on the opportunities of the impact of MFS on PWDs in low-resource context. It considers $n=20$ PWDs in Bangladesh who were mostly technology familiar. Participants shared their struggles while seeking education and employment. MFS along with their technology familiarity facilitated them to engage in financial activities and empower themselves to change their societal and financial status. Many participants overcame their socio-economic struggles despite living in resource-constrained regions through their technological skills paired with efficient MFS

usage. This paper presents the potential of community-centric work-oriented technology training focusing on efficient MFS usage for PWDs in resource-constrained communities.

CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI); Empirical studies in HCI.**

KEYWORDS

MFS, People with Disabilities, Technology Adoption, South Asia, Low-resource Context

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1 INTRODUCTION

Disability is defined as an umbrella term for impairments, activity limitations, and participation restrictions, which refers to the negative aspects of the interaction between individuals with a health condition along with personal and environmental factors [18]. The

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World Report on Disability states that about 15% of the world's population lives with some form of disability [19]. People with Disabilities (PWDs) are one of the most vulnerable groups in society who experience neglect and antagonism at family, community, and society levels, especially in low-resource regions [17, 27, 34]. They face challenges due to high medical expenditures, lower education attainment, and lower employment rates, leading to financial struggles [7, 14, 22].

In order to help them overcome these challenges, different technology interventions are being introduced and explored. Several research works have been conducted worldwide on the role of technology in improving the lives of PWDs, and many of them focused on the South Asian regions. Financial technologies (Fintech) and Mobile Financial Services (MFS) are emphasized in the existing literature as they allow PWDs to participate in different financial activities [8, 25, 30]. The role of MFS in empowering these people is also highlighted in contemporary research works [6, 9]. However, the specific illustrations of the ways MFS adds convenience to the lives of PWDs are still underexplored in the South Asian region. A qualitative exploration providing a contextually appropriate overview of these aspects would enable researchers and policymakers to rectify initiatives and policies to complement the potential of these technologies. In this research, we aim to present such an overview to pinpoint the ways technology, especially MFS improve their lives. We conducted our study in Bangladesh as a representative of resource-constrained countries which is also the second highest disability prevalent country in South Asia and 10th worldwide [42].

Existing literature explores the challenges of MFS adoption in resource-constrained contexts that are emphasized in developing regions [3, 16, 31, 35]. Research works in Bangladesh have explored the challenges faced by MFS users [15, 35]. In this research, we focus on the opportunities of MFS rather than the challenges of its adoption to show the ways that MFS can impact PWDs in this context. The study was conducted to find out ways the utilization of MFS has pushed certain individuals forward, if at all. To observe this phenomena, we conducted 4 focus groups with $n=20$ participants who were mainly Congenital disorder and spinal cord injury patients [24, 43]. Their technology familiarity was also considered for 3 groups which had technology familiar participants and one group was selected without any considerations about technology familiarity to ensure different perspectives. Our interviews with the PWDs revealed their daily challenges and social standpoints, which often negatively impact them. Our findings suggest that MFS adoption opened avenues for the participants with better technology familiarity as it allowed them to have secured financial transactions, and access to independent financial facilities. We have observed that most participants with technology familiarity have overcome their societal and individual challenges by establishing themselves through jobs and businesses which was aided by their MFS usage. We further discuss the potential of community-centric work-oriented technology training for PWDs in resource-constrained regions to enable them to progress despite the long-term infrastructural barriers.

This research contributes to the Human-computer interaction (HCI), Computer-supported cooperative work (CSCW) and Information Communications Technology for Development (ICTD) community by presenting the scenario where PWDs can be empowered

through proper technology training bypassing the socio-economic barriers in resource-constrained communities. This work is an initiation of a series of research works that revolve around the aim of building a technology infrastructure to help PWDs in resource-constrained areas, which would take forward and appreciate the area of technology design research for PWDs.

2 RELATED WORK

Existing literature in resource-constrained context like Bangladesh has identified several challenges related to MFS [6, 8, 9, 23, 25, 30]. In this section, we will present those works along with an overview of the scenario of disabilities in Bangladesh, the place of our study.

2.1 Disability in Bangladesh

According to a study by United Nations ESCAP 2015, Bangladesh is the second highest disability prevalent country in South Asia and 10th worldwide [42]. Another study conducted in Bangladesh showed that 27.8% have a single physical impairment, and 10.7% have multiple impairments [40]. PWDs or injuries leading to mobility barriers face numerous challenges in their everyday life [2, 11, 18, 34].

PWDs in Bangladesh face an unfavorable and hostile atmosphere in multiple spheres of their life [11, 28, 33]. They lack fundamental human requirements like jobs, educational opportunities, and healthcare and social necessities like food and shelter [2, 18]. Infrastructural shortcomings restrict PWDs access to important buildings and roads [11, 38]. A study on 282 Bangladeshi PWDs to understand their primary healthcare-seeking behavior found that demographic information (e.g., age), the tool they use for mobility, and the type of sickness they suffered were associated with their primary healthcare-seeking behavior [39]. Unfortunately, the condition worsens for women [33]. Many PWDs are excluded from daily life activities only due to their financial backlog [12, 21]. Subsequently, they do not have equitable access to healthcare and education and are deprived of the disability-related services [1, 2, 14, 39].

2.2 MFS for People with Disabilities

MFS is among the most popular Fintech services allowing cashless and contactless transactions using mobile money [25, 32, 36, 37]. MFS can be considered a noteworthy tool in encompassing PWDs into economic and wealth-generating activities [20]. MFS has a significant opportunity to reach the unbanked [4, 36, 37]. It allows people with mobility problems, and other sorts of disabilities, like congenital malformation/anomaly or spinal cord injury, to participate in financial transactions [4]. Thus, it plays a significant role by introducing digital and financial inclusion by removing specific barriers [6, 9]. Fintechs like MFS have proved to be effective in improving their daily lives and abilities to participate in society [8, 9]. Using mobile-based financial solutions instead of the traditional ways gives them an advantage over their regular ways of doing things, and they can therefore participate in financial activities independently and without relying on others [2, 30]. Peprah et al. suggests the widespread use of mobile money services to overcome financial backlog related adversities [30].

Existing literature in developing regions or resource-constrained settings like Bangladesh identified several challenges related to

MFS based on the existing literature in developing regions or low and middle-income countries like Bangladesh [6, 8, 9, 23, 25, 30]. A report by Leon Perlman emphasizes the importance of Unstructured Supplementary Service Data (USSD) and SIM toolkit applications as equally significant while developing MFS solutions for its users residing in rural or remote areas with slow 2G connections only [31]. Md. Rahman Mehadi and Ummaha Hazra et al. investigated and explored the challenges faced by MFS users in Bangladesh belonging to rural areas and using only feature phones rather than smartphones with app facilities [15, 35]. Some barriers to using MFS using feature phones include poor mobile signal, incompatibility between the feature phone and MFS system, not supporting 3G, 4G, or mobile data, and having small screens with low processing power and battery [31].

Existing literature about MFS adoption of PWDs in the low-resource context of South Asian regions has focused on the challenges of MFS adoption. In this research, we focus on the opportunities MFS created for the PWDs to complement the concurrent research works.

3 METHODOLOGY

We conducted a qualitative study to find out the ways MFS adoption can impact the PWDs in Bangladesh including their technology usage scenarios, story of life including their happiness, struggle, and social perception towards them. We had 4 focused group interviews with N=20 participants (Male = 65%, Female = 35%) from 3 major divisional cities Khulna (25%), Rajshahi (55%), and Chittagong (20%) in Bangladesh. Study participants were mainly Congenital disorder [43] and spinal cord injury [24] patients (Participants' details are provided in Table 1 in Appendix).

3.1 Participant Recruitment and Focus Group Interviews

Participants are reached through purposive sampling where the main criterion was the type of challenges the participants had as we focused on people with physical challenges. The technology familiarity was also considered to ensure that 3 groups had technology familiar participants. Additionally, one group was selected where the technology familiarity was not considered to provide different perspectives. The participants belonged to the same socioeconomic and similar educational backgrounds. We initially connected with a local community leader to reach out to the participants. The researchers initially shared the study objective over phone calls to the participants and asked about any reservations or preferences they had which was considered along with COVID-19 pandemic situation for selecting the mode of interview. The medium of the interview sessions was Bangla (the native language of participants and researchers).

During the interview, one researcher moderated the interview, and others took notes. The interview session is divided into three parts e.g., participants demographic information, overall challenges faced by the participants, and MFS and other technology usage scenarios. Participants expressed gratitude to the researchers for listening to them through trying times like the pandemic. During the in-person interactions with participants, the researchers offered

face masks and hand sanitizers in accordance with World Health Organization safety regulations [29].

3.2 Qualitative Content Analysis

We started the qualitative content analysis by transcribing the audio recording of the interviews into English. The coding process was not guided by any predetermined theoretical frameworks or assumptions as we followed inductive analysis [10]. The process was aided by the Computer-aided Qualitative Data Analysis Software i.e., Atlas.ti Cloud [5]. During the inductive coding phase, we read the transcripts line by line, reflected deeply on the interview contents, and identified concepts. We identified 44 codes initially and refined the codes throughout the process. Finally, 15 codes were finalized (e.g., Access to technology, Impact of technology, and Financial Crisis etc.) that belonged to 5 themes such as Technology Challenge, Technology Use, Challenges, Support, and Professional experience. Two researchers participated in the initial coding phase and agreed on most of the codes. In case of any disagreement to reach a consensus, the researchers discussed it among themselves.

3.3 Research Ethics and Incentive

This study was approved by institutional review board of the researchers affiliated institution. Before the interview, we discussed research aims, principles, interview procedure, guidelines, data anonymity, participants' right to quit and permissions with participants. All research materials are stored on a secure drive that only the researchers have access to. After the completion of the interviews each participants received BDT 1000 (USD 12 approximately at the time of the study) as a token of appreciation which researchers did not disclose before to ensure that monetary incentives did not affect respondent behavior.

3.4 Positionality

All of the researchers were born and brought up in Bangladesh. The research was conducted by mixed-gender researchers from different socioeconomic backgrounds with several years of qualitative research experiences in Bangladesh on technology and special groups such as PWDs, children with autism, and transgender communities. The researchers' backgrounds, positions, and research exposures have impacted research lens to conduct the qualitative research [13, 26, 41].

4 FINDINGS

In this research, the participants shared their daily challenges and social standpoints that often impact them negatively. They shared stories of their fight for learning and education to empower them. MFS adoption opened avenues for these participants, added conveniences, and enriched their societal values. As MFS usage is directly connected with socioeconomic conditions, the study findings present their socioeconomic shift to gauge the impact of the technology in their lives. While many of these aspects have already come up in existing literature, they are important to have the comprehensive understanding of the participants' struggle, fight, and accomplishments that were enabled through their technology and MFS usage.

4.1 Fight Against Socioeconomic Vulnerabilities

This study findings suggests that the struggle of the participants starts with a social stigma where they are considered burdens. The participants shared that people from their surroundings always neglect them, provide harsh comments on activities and put them off from everything. A participant, P1, shared his experiences of social bullying, negligence, and discrimination. He shared that, traditionally, in their locality, people treat them low and are often considered beggars merely because of their outlook while sharing one such incident he faced as follows.

"I want to talk about society's view of us. The thinking is that a wheelchair person means he will beg. By begging and taking help from others, he will live. Once after university class, I was talking with my friends, and people started begging me on their own. I had to explain to them positively that I am a student, not a beggar. This is the kind of concept society has about people (with disabilities) like me." - P1.

The participants shared that their struggles were not only limited to social issues. It is often associated with most aspects such as health, economic condition, family life, etc which is further complicated in the resource-constrained regions like Bangladesh due to infrastructural limitations [11, 38]. P12, who had issues with urination and defecation as his legs were paralyzed and sat for a long time, summed up his health struggle as, *"There are many types of disabilities, but we who have spinal cord injuries due to accidents and have become wheelchair persons, we are in the worst situation."*

Some participants were the only earning persons for their families before the accident caused the disability. They mentioned that their lives changed suddenly after the accidents; they were forced to live a life of financial insecurities from the solvent one they used to live. They became unemployed, which led them to feel burdensome in their families. P18 quoted, *"This life of disability is a big burden. Not only individually but also in family life, disability, and unemployment are very miserable."* Also, many participants mentioned being abandoned by their families. They said their families were tired of them but also exhibited resilience to keep fighting against all the adversities as can be seen in the P11's following quote,

"My family left me alone. It has been a long time since I have been ill. So, they do not want to take care now. They probably pitied me at first, but now they are tired. We are neglected every day. But I am grateful to Allah that I got training from CRP (An organisation that works for the rehabilitation of the paralysed) about work. I am fighting every day. We are spinal cord patients, and we must train ourselves." - P11.

Amid such scrutinized positions in society, PWDs welcome the emergence of technologies such as MFS as they perceive it as a financial alternative to them. Using MFS allowed continuing the financial operations of these participants avoiding existing banking norms. They shared that most PWDs lacked access facilities to financial institutions such as banks (e.g., no lifts, long queues, separate booths, etc.); often, they are given lower priority, resulting in a feeling of frustration as P14 shared, *"I had to go there and wait for hours. I had to call and scream. But nothing happened. So, it was*

a big problem for me." At this point, MFS worked as an appropriate alternative over traditional banking that provided them more financial flexibility as summed up by a participant.

"Truly, the advancement of technology reduces pain for us. I can remember when bKash (a popular MFS company) was first introduced. Previously, when my family wanted me to send money for my educational purpose, they couldn't provide me instantly, rather they had to wait for someone. My hostel is 200 km away from my home. This way, Bkash reduces our banking system pain. It is a big challenge for us to go through the banking system. Still now the banking system is not accessible for people who use wheelchairs. 80% of students have a bKash account. This is very good for them." - P1.

Participants nowadays recharge their phones using MFS as it mitigates their mobility issues. Participants can also withdraw money from MFS at their convenience, improving their personal experience. P11 shared his experiences of receiving money according to his convenience with optimized mobility as he has a personal MFS account saying, *"It is also impossible for us to go for cash out now and then if someone helps us with money. Now, as they send it to our account, we can cash it out according to our preferences."* Additionally, the participants also received regular government allowance through MFS since the COVID-19 pandemic started as it is being disbursed digitally. Some participants shared the convenience of the disbursement process compared to the earlier one through agents where they were scammed. Even the participants with low technology access mentioned that receiving such allowances is one of the prime reasons for them to adopt MFS. For example, P16 had limited technology access but shared, *"I have an (MFS) account. I opened the account because I get a stipend for my younger son from primary school in bKash."*

4.2 Empowerment through Learning

The participants shared that they had to fight for education for their salvation. They were not welcomed in academic institutions and faced challenges traveling and accessing those institutions. Public transports were reluctant to take them or charged extra money. In many cases, they had to rely on family members (e.g., parents and relatives) to commute somewhere, sometimes parents refused to accompany them which kept them away from schools. Participants mentioned that despite all the odds they perceived education to be their only way of salvation. P9, who cannot walk, shared her fight for education as follows.

"They (parents) did not want me to continue education. But whoever was going to school, I requested them to take me with them. By doing this, I completed my SSC. My father left me alone saying that I don't need to study further. Then I called my brother-in-law, a college gateman. He requested the college principal who listened and admitted me to the college. That was far from home and I couldn't go with a wheelchair. I thought I could no longer continue my education. I had to crawl to the classroom from balcony. I found it very annoying and difficult to study. But I did not

give up and somehow finished my honors after a lot of hard work." - P9

Even after receiving education, the participants faced difficulties getting a job and shared that an academic degree was not enough to get a job until they have any skills. That is why most participants had to start their own businesses through enriched technological skills working as technology service providers (e.g., informal MFS agents, computer and mobile troubleshooting, freelancing, etc.). For example, P7 shared his way of empowerment as follows:

"I learned many things during my diploma, but it was insufficient to uphold myself. I invited one of my brothers to stay with me to learn more. He was good at computers. He supported me a lot and taught me all the things. After learning this, I came to know that anyone can earn working online." - P7.

MFS usage aided most participants in their professional lives in receiving payments from their customers or employers. Some participants ran businesses that relied entirely on MFS. P10, another participant who worked as an online freelancer needing to receive payment in Dollars, delightfully shared how MFS has made things easy for him saying, *"You can transfer money from PayPal to Bkash in seconds. The technology is updated at present. Now you don't need to go to the bank to convert your dollars."* Other participants shared that their experience and efficiency in MFS usage influenced them to use MFS in diverse ways. Some of them even made a business for themselves. P7, shared that he made a business idea from exchanging cryptocurrency to make it a regular business where the role of MFS was significant for making transactions.

Learning technology skills made their life meaningful and respectful for many participants amid all their adversities. Those participants also mentioned a shift in societal viewpoint regarding them due to their professional advancement. P13, who provided informal MFS agent services to their neighborhood shared how technology familiarity and efficiency in MFS usage boosted her societal positions and proudly shared that, *"Many from our neighborhood come to me whenever they need any such (MFS) services (smile)."* Likewise, the following quotation from P19 shows the transition from being bullied and neglected to become self-dependent and respected through their education and technology skillset.

"When I got admitted to school, everyone said I was of no use. School friends bullied me. As I am disabled, I was also neglected. Now I am educated and work with these brothers, and now I am socially well respected. We feel unfortunate when someone call us by different names due to our condition. Now things have changed. People now respect me because I am now studying, working, and also getting along with people." - P19.

Moreover, the findings show participants' social and family challenges where they tried to empower themselves through learning and education. Technology familiarity along with MFS adoption added value to their lives and helped them in their cause of changing their lives.

5 DISCUSSION

In this research, we have explored 20 PWDs to understand the impact of MFS adoption on them in a low-resource context. We found that the participants faced social stigma and socioeconomic vulnerabilities due to their physical disabilities and had to fight against different adversities where they tried to empower themselves through education and work. Researchers have also mentioned such vulnerabilities [1, 2, 14, 27, 39]. According to the stories of the participants, MFS served as the facilitator for their empowerment by enabling them to participate in financial activities effectively, providing convenience in monetary transactions, and professional convenience in both jobs and businesses where many of the aspects are prevalent in literature in the context of the Global South [4, 8, 9]. This work enhances the works by presenting the transition from being bullied and neglected to becoming self-dependent and respected through their education and technology skillset which was greatly impacted by their ability to use MFS efficiently.

Based on our study findings with respect to the existing literature we present our argument that concentrated technology training equipped with proper guidance on MFS can enable the PWDs of resource-constrained communities to be self-dependent despite all adversities as we have observed in our study. The rationale behind the argument and its boundaries are discussed hereafter.

MFS and Technology Skills are Pivotal to Bypass Infrastructural Barriers. We observed that most participants with technology familiarity was able to overcome their societal and individual challenges to a great extent by establishing themselves through jobs and businesses. Among them, most participants utilized their technology skills and efficiency to get a job or start a business, as we discussed earlier. MFS played a significant role in this process as it allowed them to engage themselves in financial activities much more conveniently than traditional banking channels or other traditional mediums. Researchers focused on how PWDs have significantly low employment and how that affects their financial status [14]. Being able to access and utilize technologies along with MFS allowed our participants to participate in professions more competently and efficiently. Due to the technology usage, more opportunities were created for them, and they could place themselves better in the competitive job markets and the competitions while starting a business. Hence, the scenario indicates the potential of MFS to improve the lives of PWDs. Technology familiarity was also observed to be a driving factor as such scenarios were much rare in the group where participants were recruited regardless of their technology familiarity. Although they share the same set of challenges and societal points of view as presented in our findings.

Acknowledging Technology Access Barriers. Throughout our study, it is prominent that PWDs who can use technology well can benefit greatly through technology interventions. But the lack of access to technology makes it very challenging for the PWDs to familiarize themselves with technology, let alone utilizing it to improve their lives. Several factors are hindering them to access technology. Health issues and financial conditions of PWDs do not allow them to access technology in many cases. PWDs who are paralyzed cannot use mobile phones but rather need help from others (e.g., family members, relatives, neighbors) to use the phone even for receiving calls which we have observed about

one of our participants. There are PWDs with other special needs also, which affects their technology usage in different ways. The financial conditions of the families also result in PWDs needing to share devices. Families tend to prioritize other family members to give a device rather than the PWDs, as they are neglected in many instances. Literacy also hinders many people from accessing and using technology, where PWDs face challenges in receiving education. The lack of education affects them in all spheres of their individual life, where technology usage and efficiency is one of them.

Community-centric Work-oriented Technology Training. Work-oriented technology training focusing on MFS usage efficiency can equip the PWDs to fight for their social and economic survival amid resource-constrained competitive settings. We have seen among our technology familiar participants that they have thrived in their professions due to their MFS efficiency. These trainings should also utilize the collectivistic nature of the societies, wherever suited, to supplement the community-wise advancement of PWDs. Additionally, a community-centric approach would also reduce the acuteness of technology access scenario as we observed in our study that the participants who were involved with any communities or organizations were more exposed to technology learning. Those participants had a channel to access technology, be it a shared device, which helped them to learn the technology, and that technology learning subsequently opened ways for many of them to improve their lives in different ways. Whereas the participants who were not involved with any communities or organizations lagged behind in technology learning like all other aspects of their lives. Hence, we emphasize the role of communities in improving technology access and familiarization among these people.

There are different policies in place and many more are being implemented nationally and globally to eradicate the diverse issues PWDs face. However, in the context of resource-constrained regions, implementation and monitoring of such policies remain a challenge. This makes most challenges faced by PWDs as the long-term ones to solve. As technology researchers, we propose the HCI, CSCW, and ICTD researchers to explore ways that can bypass certain infrastructural limitations to empower the PWDs alongside current works focusing on mitigating challenges.

6 CONCLUSION

PWDs face difficulties in all spheres of their lives, and the struggles get even more complicated in low-resource settings. We conducted a qualitative study on 20 PWDs in Bangladesh to understand the impact of MFS among the participants in a low-resource context. While most concurrent research has focused on the challenges in adopting MFS for the PWDs we considered mostly technology familiar participants to bring out the ways MFS helps PWDs to complement the existing research works. The study findings presented the scenario that many PWDs can overcome their socioeconomic struggles despite living in resource-constrained regions through their technological skills paired with efficient MFS usage. This understanding led us to propose community-centric work-oriented technology training to bypass the long-term infrastructural barriers

in the empowerment of PWDs. However, the number of participants and the focus of the study place it as a good starting point to initiate the conversation regarding such specialized sophisticated training structures rather than establishing one standalone training mechanism. While we observed the ways MFS coupled with technology improved the socioeconomic conditions of the technology familiar participants the study was conducted only on 20 PWDs and a larger participant pool can provide a detailed picture of the scenario. With this in mind, a large-scale mixed-method study will be conducted to establish such a training mechanism that can rejuvenate the PWDs of resource-constrained communities so that they can establish themselves as an important member of their community rather than being neglected and rejected from society.

REFERENCES

- [1] M. Ahmad. 2013. Health care access and barriers for the physically disabled in rural Punjab, Pakistan. *International Journal of Sociology and Social Policy* 33, 3/4 (Apr. 2013), Art. no. 3/4. <https://doi.org/10.1108/01443331311308276>
- [2] N. Ahmed, M. M. Quadir, M. A. Rahman, and H. Alamgir. 2018. Community integration and life satisfaction among individuals with spinal cord injury living in the community after receiving institutional care in Bangladesh. *Disability and Rehabilitation* 40, 9 (Apr. 2018), Art. no. 9. <https://doi.org/10.1080/09638288.2017.1283713>
- [3] S. Ambore, C. Richardson, H. Dogan, E. Apeh, and D. Osselson. 2017. A resilient cybersecurity framework for Mobile Financial Services (MFS). *Journal of Cyber Security Technology* 1, 3–4 (Oct 2017), 202–224. <https://doi.org/10.1080/23742917.2017.1386483>
- [4] A. Amoah, K. Korle, and R. K. Asiam. 2020. Mobile money as a financial inclusion instrument: what are the determinants? *IJSE* 47, 10 (Aug. 2020), 1283–1297. <https://doi.org/10.1108/IJSE-05-2020-0271>
- [5] ATLAS.ti. 2023. . ATLAS.ti. <https://atlasti.com/> accessed on April, 2022.
- [6] Heike Bähre, Giovanni Buono, and Valerie Isabel Elss. 2020. Fintech as a mean for digital and financial inclusion. *LUMEN Proceedings* 14 (2020), 205–211.
- [7] L. M. Banks, H. Kuper, and S. Polack. 2017. Poverty and disability in low- and middle-income countries: A systematic review. *PLoS ONE* 12, 12 (Dec 2017), p. e0189996. <https://doi.org/10.1371/journal.pone.0189996>
- [8] Giulia Barbareschi, Catherine Holloway, Katherine Arnold, Grace Magomere, Wycliffe Ambeyi Wetende, Gabriel Ngare, and Joyce Olenja. 2020. The social network: How people with visual impairment use mobile phones in kibera, Kenya. In *Proceedings of the 2020 CHI conference on human factors in computing systems*. ACM Digital Library, Honolulu, HI, USA, 1–15.
- [9] A. Baumgartner, T. Rohrbach, and P. Schönhagen. 2023. 'If the phone were broken, I'd be screwed': media use of people with disabilities in the digital era. *Disability & Society* 38, 1 (Jan 2023), 73–97. <https://doi.org/10.1080/09687599.2021.1916884>
- [10] Virginia Braun and Victoria Clarke. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology* 3, 2 (2006), 77–101.
- [11] A. S. Burns and C. O'Connell. 2012. The challenge of spinal cord injury care in the developing world. *The Journal of Spinal Cord Medicine* 35, 1 (Jan 2012), Art. no. 1. <https://doi.org/10.1179/2045772311Y.00000000043>
- [12] DAWN, R. 2012. Challenges in the Employment of Persons with Disabilities. *Economic and Political Weekly* 47, 36 (2012), 20–22.
- [13] Ruth Frankenberg. 2004. On unsteady ground: Crafting and engaging in the critical study of whiteness. In *Living spirit, living practice: Poetics, politics, epistemology*. Routledge, London, 104–118.
- [14] South India Disability Evidence Study Group et al. 2014. Access to health care and employment status of people with disabilities in South India, the SIDE (South India Disability Evidence) study. *BMC Public Health* 14, 1 (Dec 2014), Art. no. 1. <https://doi.org/10.1186/1471-2458-14-1125>
- [15] Ummaha Hazra and Asad Karim Khan Priyo. 2021. Mobile financial services in Bangladesh: Understanding the affordances. *The Electronic Journal of Information Systems in Developing Countries* 87, 3 (2021), e12166.
- [16] Md Jafrin Hossain, Rejuan Haque Rifat, Mahadi H Mugdho, Mohona Jahan, Annajiat Alim Rasel, and Muhammad Abdur Rahman. 2022. Cyber Threats and Scams in FinTech Organizations: A brief overview of financial fraud cases, future challenges, and recommended solutions in Bangladesh. In *2022 International Conference on Informatics, Multimedia, Cyber and Information System (ICIMCIS)*. IEEE, IEEE, Jakarta, Indonesia, 190–195.
- [17] M. M. H. Khan, H. Oku, A. Nakagawa, and M. Sano. 2020. Consideration on the improvement of assistive products' availability and the awareness of rehabilitation professionals in Bangladesh. *TAD* 32, 1 (Mar 2020), Art. no. 1. <https://doi.org/10.3233/TAD-190250>

- [18] A. Khetarpal. 2014. Information and Communication Technology (ICT) and Disability. *Review of Market Integration* 6, 1 (Apr 2014), Art. no. 1. <https://doi.org/10.1177/0974929214560117>
- [19] The Lancet. 2011. World Report on Disability. *The Lancet* 377, 9782 (Jun 2011), Art. no. 9782. [https://doi.org/10.1016/S0140-6736\(11\)60844-1](https://doi.org/10.1016/S0140-6736(11)60844-1)
- [20] Kelvin Leong and Anna Sung. 2018. FinTech (Financial Technology): what is it and how to use technologies to create business value in fintech way? *International Journal of Innovation, Management and Technology* 9, 2 (2018), 74–78.
- [21] Oxana Loseva. 2021. *Financial Inclusion Tool for People with Disabilities*. Drexel University, Philadelphia, PA, USA.
- [22] S. Mitra, A. Posarac, and B. Vick. 2013. Disability and Poverty in Developing Countries: A Multidimensional Study. *World Development* 41 (Jan 2013), 1–18. <https://doi.org/10.1016/j.worlddev.2012.05.024>
- [23] Adair Morse and Karen Pence. 2021. *Technological innovation and discrimination in household finance*. Springer, New York, NY, USA. https://doi.org/10.1007/978-3-030-65117-6_28
- [24] Nature. 2023. *Spinal Cord*. Springer Nature. <https://www.nature.com/sc/journal-information> Retrieved on 15 April 2023.
- [25] R. Nour. 2022. An Assessment of Accessibility and Usability of Saudi Online FinTech Services for People with Disabilities. *Computational and Mathematical Methods in Medicine* 2022 (Sep 2022), 1–9. <https://doi.org/10.1155/2022/8610844>
- [26] Lorelli S. Nowell, Jill M. Norris, Deborah E. White, and Nancy J. Moules. 2017. Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods* 16, 1 (2017), 1–13.
- [27] R. P. Nuri, S. Ghahari, H. M. Aldersey, and A. S. Huque. 2020. Exploring access to government-led support for children with disabilities in Bangladesh. *PLoS ONE* 15, 7 (Jul 2020), Art. no. 7. <https://doi.org/10.1371/journal.pone.0235439>
- [28] Reshma Parvin Nuri, Xiaolin Xu, and Heather Michelle Aldersey. 2022. Users' satisfaction and experiences in using assistive devices distributed by a rehabilitation centre in Bangladesh: a cross-sectional study. *Disability and Rehabilitation: Assistive Technology* 2022 Oct 7:1-0 (2022), 1–10. <https://doi.org/10.1080/17483107.2022.2129849>
- [29] World Health Organization. 2023. *Coronavirus disease (COVID-19) pandemic*. WHO. <https://www.who.int/europe/emergencies/situations/covid-19> Retrieved on 15 April 2023.
- [30] James Atta Peprah, Eric Atsu Avorkpo, and Evans Kulu. 2023. People with disability and access to financial services: Evidence from Ghana. *Regional Science Policy & Practice* 15, 6 (2023), 1198–1215.
- [31] Leon Perlman. 2017. Technology inequality: Opportunities and challenges for mobile financial services. *Columbia Business School Research Paper* 2017 Apr (2017), 17–49.
- [32] T. Puschmann. 2017. Fintech. *Bus Inf Syst Eng* 59, 1 (Feb. 2017), 69–76. <https://doi.org/10.1007/s12599-017-0464-6>
- [33] M. E. Quinn, C. L. Hunter, S. Ray, M. M. Quadir Rimon, K. Sen, and R. Cumming. 2016. The Double Burden: Barriers and Facilitators to Socioeconomic Inclusion for Women with Disability in Bangladesh. *DCID* 27, 2 (Sep 2016), Art. no. 2. <https://doi.org/10.5463/dcid.v27i2.474>
- [34] E. Rahman, N. Bardhan, M. Curtin, Md. S. Islam, Md. F. K. Patwary, and S. Kumar Das. 2023. An assessment of disability and quality of life in people with spinal cord injury upon discharge from a Bangladesh rehabilitation unit. *Spinal Cord* 61, 1 (Jan 2023), Art. no. 1. <https://doi.org/10.1038/s41393-022-00852-4>
- [35] Mehadi Rahman. 2021. The rural users challenges with mobile financial services (MFS) in Bangladesh. *Asian Journal of Management* 12, 4 (2021), 359–366.
- [36] P. Senyo and E. L. C. Osabutey. 2020. Unearthing antecedents to financial inclusion through FinTech innovations. *Technovation* 98 (Dec. 2020), 102155. <https://doi.org/10.1016/j.technovation.2020.102155>
- [37] A. A. Shaikh, H. Alamoudi, M. Alharthi, and R. Glavee-Geo. 2023. Advances in mobile financial services: a review of the literature and future research directions. *IJBM* 41, 1 (Jan. 2023), 1–33. <https://doi.org/10.1108/IJBM-06-2021-0230>
- [38] Z. Sultana. 2010. Agony of Persons with Disability - A Comparative Study of Bangladesh. *JPL* 3, 2 (Aug. 2010), Art. no. 2. <https://doi.org/10.5539/jpl.v3n2p212>
- [39] J. R. Talukdar, I. Mahmud, and S. F. Rashid. 2018. Primary health care seeking behaviour of people with physical disabilities in Bangladesh: a cross-sectional study. *Arch Public Health* 76, 1 (Dec. 2018), Art. no. 1. <https://doi.org/10.1186/s13690-018-0293-1>
- [40] R. A. M. Titumir and J. Hossain. 2005. Disability in Bangladesh: Prevalence, Knowledge, Attitudes, and Practices.
- [41] Allison Tong, Peter Sainsbury, and Jonathan Craig. 2007. Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care* 19 (2007), 349–357. <https://doi.org/10.1093/intqhc/mzm042>
- [42] Economic United Nations, Social Commission for Asia, and the Pacific. 2015. *Disability at a glance 2015: strengthening employment prospects for persons with disabilities in Asia and the Pacific*. United Nations, Bangkok.
- [43] World Health Organization. n.d.. *Congenital disorders*. WHO. https://www.who.int/health-topics/congenital-anomalies#tab=tab_1 Retrieved on 15 April 2023.

A APPENDIX

The following Table illustrates the participants' details e.g., age, gender, type of disability, region, and educational level for the comprehensive understanding of the reader about the participants' context.

Table 1: Participants' Details

ID	Age	Gender	Type of Disability (Support)	Region	Education Level
Group 1					
P1	18-29	Male	Spinal Cord Injury (Wheelchair)	Khulna	Bachelor's
P2	18-29	Male	Congenital disorders	Khulna	Secondary School
P3	30-39	Male	Congenital disorders	Khulna	Higher Secondary
P4	18-29	Female	Disability- Chronic Hypocalcemia, Broken bones)	Khulna	Higher Secondary
P5	30-39	Male	Disability- Post Pneumonia	Khulna	Higher Secondary
Group 2					
P6	30-39	Female	Disability- Post-Polio	Rajshahi	Bachelor's
P7	18-29	Male	Congenital disorders (Wheelchair)	Rajshahi	Master's
P8	18-29	Male	Congenital disorders (Wheelchair)	Rajshahi	Master's
P9	30-39	Female	Congenital disorders (Wheelchair)	Rajshahi	Master's
P10	18-29	Male	Congenital disorders	Rajshahi	Bachelor's
Group 3					
P11	40-49	Male	Spinal Cord Injury (Wheelchair)	Chittagong	No Education
P12	30-39	Male	Spinal Cord Injury (Wheelchair)	Chittagong	Secondary School
P13	18-29	Female	Congenital disorders	Chittagong	Secondary School
P14	18-29	Male	Spinal Cord Injury (Wheelchair)	Chittagong	Secondary School
Group 4					
P15	18-29	Male	Congenital disorders	Rajshahi	Higher Secondary
P16	30-39	Female	Congenital disorders	Rajshahi	No Education
P17	30-39	Female	Congenital disorders	Rajshahi	No Education
P18	50-65	Male	Spinal Cord Injury (Fully Dependent on Caregiver)	Rajshahi	Higher Secondary
P19	18-29	Male	Congenital disorders	Rajshahi	Higher Secondary
P20	18-29	Male	Congenital disorders	Rajshahi	No Education