

Feasibility Study of the new project
relating persons with Disabilities
"Accessible Digital Space for the
Persons with Disabilities"

Prepared and submitted by:



CENTRE FOR SERVICES AND INFORMATION ON DISABILITY

A Centre for Services, Research and Information Exchange

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December, 2021

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Executive Summary:

Poverty has been found to have a significant impact on disability concerns in recent studies. As a result of poverty-induced negative attitudes and practices, people with disabilities are excluded from mainstream national development activities. The employment sector is one of the most important areas where persons with disabilities are underrepresented. Disability employment in a just and fair work environment that provides equal opportunities and perspectives for all persons will ensure economic independence and reduce poverty. There would be beneficial effects on the lives of persons with disabilities in the country if poverty is tackled.

Access to economic opportunities for disabled people is extremely limited in Bangladesh. Their lack of practical experience and occupational abilities also obstructs their access to alternative sources of income. The majority of persons with impairments, including those with severe disabilities, have the confidence to pursue education and participate in financially lucrative contributing activities, which enables them to be effective contributors.

Technology should work for and be accessible to all users, but people with disabilities are running into barriers every day when they visit sites and use applications. These barriers prevent them from critical aspects of everyday digital life.

The United Nations adopted the Convention on the Rights of Persons with Disabilities (UNCRPD) on 13 December 2006 to safeguard the rights and quality of life of people with disabilities. Bangladesh signed the UNCRPD on 9 May 2007 and ratified it on 30 November 2007. Sustainable Development Goals (SDGs) were agreed by all countries in 2015 and all countries committed to “leave no one behind (LNOB),” a broad promise to address the pervasive and damaging problems of inequality and exclusion. Out of a total of seventeen Sustainable Development Goals 4, 8, 10, 11 and

17 number goals detail the activities undertaken specifically for the benefit of people with disabilities. In that case, the Bangladesh Computer Council's disability activities, which are overseen by the ICT division, are extremely beneficial in terms of improving the quality of life of persons with disabilities. Bangladesh Government enacted "Rights and Protection of Persons with Disabilities Act 2013(RPPD)" harmonizing with UN CRPD. The government also enacted the Neuro Developmental Disability Trust Act 2013 that focused Neuro Developmental Disability. Based on the World Report on Disability-2011 by WHO and World Bank around 15% of the world's population has disabilities. According to the Household Income and Expenditure Survey (2010) found the Disability prevalence rate to be 9.07 percent. As a result, the BCC is critical in integrating the disadvantaged segment of the population into the mainstream of development by empowering them through information and communication technology.

Bangladesh Computer Council under Ministry of Posts and Telecommunication has a variety of its programmes and projects, including the following major initiatives: "Screen Reader," "Sign Language Automation," and "Accessible e-learning and job portal." In addition to these significant activities, BCC conducts ICT training for people with disabilities and job fairs to engage and sensitize employers about the need of hiring people with disabilities on their merits. BCC has agreed in principle to design and create another project to better the current state of persons with disabilities based on its extensive hands-on experience delivering projects/solutions for persons with disabilities.

To effect good change in the job status of persons with disabilities, it is necessary to draw lessons from both positive and negative experiences. The study's broad objective was to conduct a comprehensive socioeconomic and socio environmental analysis of people with disabilities in both employment and non-employment situations

in order to assist development and human resource planners in both the public and private sectors; and to extend support and cooperation for empowerment and subsequent establishment of employment rights for people with disabilities. The study was conducted by a team comprised of researchers, disability programme managers, and field-level trained disability resource people, who used a variety of methodologies, techniques, and tools to elicit appropriate and authentic information on issues relating to the employment of people with disabilities from diverse geographical areas.

Bangladesh Computer Council functions as an apex body that drives innovation and thus has a positive socioeconomic impact. As a result of BCC's initiatives, digital technologies have spread rapidly throughout Bangladesh's diverse areas and sectors. Digital dividends—that is, the broader development benefits associated with the use of these technologies—have boosted growth, expanded opportunities, and enhanced service delivery for marginalized segments as well. "The BCC Model" has the potential to be adopted and replicated by other governments in order to ensure the empowerment of people with disabilities, which would have a significant global impact. This study has investigated the current state of web accessibility of three government entities and presented the report for corrective measurements.

Given BCC's experience, capital, and amalgamation of disability and technology-specific know-how, it is recommended that BCC spearhead more technology-centric initiatives (developing diverse web & mobile apps and cutting-edge tools) to disrupt the current landscape of the empowerment of persons with disabilities and help them to become the contributing allied to implement the Digital Bangladesh Model.

The study has inspected the disability centric endeavors of BCC and classified as below:

- Policy Support
- Skill Development
- Connecting to the employment market
- Social Awareness
- Encouraging Persons with Disabilities to embrace IT:
- Participation in International Competition
- Software Development.

While preparing recommendations, the aforementioned activities were considered so that the organisation could fine-tune existing activities to mitigate deviations from the goal and then pursue new initiatives under the forthcoming project to catapult the Livelihood of people with disabilities. The overarching observations and recommendations could be divided into three sections; 1) Education and Capacity Development 2) Employment and Livelihood and 3) Disability Friendly Eco System. A snippet of the recommendations has been depicted below:

Snippet of Recommendations	
Cluster	Observations & Suggestions
1) Education and Capacity Development	1.1 One of the greatest impediments to visually impaired students pursuing higher education is a dearth of accessible text or books. Under this envisioned project, books from a few selected

university classes could be converted to a readable format.

1.2 Due to their socioeconomic circumstances, purchasing a laptop computer may be prohibitively expensive for a segment of people with disabilities. Discretionary Laptops may be offered to learners with disabilities based on their merits.

1.3 In addition to the existing learning materials hosted in Emporia, contents in uncharted topics required to develop.

1.4 In order to make Emporia up and running, a variety of technical support services will be required. This is advised to arrange the operation and maintenance provision of Emporia.

1.5 Arranging divisional National IT Competition for people with disabilities in different districts in addition to the existing competition in Dhaka to spread the ethos of IT adoption among the persons with disabilities.

2) Employment and Livelihood

2.1 Create an e-commerce gateway for low literacy individuals with disabilities to enable them to transition from brick and mortar to click and mortar. While Emporia is unquestionably successful, the platform is primarily used for educated segmentation. To improve the current state of disabled-owned small and medium-sized businesses, an accessible and cutting-edge e-commerce platform is necessary. Additionally, this envisioned platform could aid in the promotion of disabled individuals' craft to local and international clients. Many disabled people are refused institutional funding due to a lack of credit ratings and Know Your Customer (KYC). This site has the potential to resolve this issue in the future.

2.2 In addition to BCC's resource centres, labs from various universities could be used to conduct ICT foundation courses lasting 20 days and encompassing 60 hours.

2.3 In order to arrange hands-on industry experience, persons with disabilities can be placed in different companies under the supervision of forthcoming project. This job orientation or apprenticeship program

	<p>will give persons with disabilities to access to the incubation and employers will also be able to harness their diversity initiatives.</p> <p>2.4 Decentralized and division centric job fair could be arrange to promote the employment right of persons with disabilities.</p> <p>2.5 Given the present landscape of accessible tools and adaptable devices, the study recommends that under the scope of the forthcoming project, assistive devices and technologies can be developed.</p>
<p>3) Disability Friendly Eco System</p>	<p>3.1 Strengthening BCC's ICT resource centres by ensuring accessibility and right equipment is essential for promoting disability inclusion. Providing additional training for officials on web and infrastructure accessibility is critical to empowering disabled people.</p> <p>3.2 Capacity development of key service providers are imperative to eradicate the ambivalence on disability. Robust training modules and sensitizing programs could be held for CDE, health allied professionals, primary teachers and PTI instructors on the domain of disability</p>

3.3 Registered non-governmental organisations (NGOs) engaged in all of these disability-related activities may be considered for financial and technical (training) incentives under the new project to encourage them to advance the rights of persons with disabilities and instill an ethos of inclusion.

3.4 Around the world, there are some unfavorable attitudes and ambivalence toward disability that impede the overall development of people with disabilities. Seminars/workshops can be held to promulgate the ethos of disability inclusion.

3.5 Human Resources from the existing project could be retained as they already have the necessary training and orientation. Additional Human Resource could be recruited to strengthen the capacity.

3.6 Disabled people are sometimes forgotten when creating digital content. This denies disabled people access to a wealth of information and internet services. National level web accessibility guideline and it's implementation is essential.

The study was able to reflect on the existing state of affairs regarding people with disabilities who are either employed or lack the necessary education and/or skills for employment. The findings are intended to aid in the design and development of planned and systematic initiatives aimed at meeting the employment needs of individuals with disabilities in the country.

Objective of the Study:

The study's main goal was to produce a comprehensive socio-economic and socio-environmental analysis of people with disabilities in both employment and non-employment situations, as well as a comprehensive analysis of the opportunities, limitations, and barriers that they faced during the process of seeking employment. It was anticipated that the findings would help development and human resource planners in both the public and private sectors to expand assistance and cooperation for the empowerment of persons with disabilities and the establishment of job rights for them.

Feasibility Study's primary goal is to determine the current state and capacity of various organisations and stakeholders in relation to the components of the forthcoming project and provide an evidence-based analysis of the deviation between the current and envisioned goals of the proposed components.. The evaluation will take into account existing initiatives and undertakings in the field of disability, as well as the suggested components, and estimate their effectiveness. It is also important to verify the work plan (components) in order to avoid any duplication or redundancy that may have been conducted by other parties in the verticals of the public and private sectors. Its precise goals were to gather information on how disabled individuals are doing in the following areas:

1. Conduct an assessment of the current state of the ICT resource centre at BCC regional offices and make necessary recommendations for its strengthening.

2. Evaluate the existing state of disabled-owned businesses at the SME and VMB levels, identifying and justifying any need for establishing an AI and blockchain-enabled e-portal for disabled people.
3. Identify significant obstacles and limits connected with the distribution of laptops, desktop computers, and other devices to persons with disabilities, as well as the necessity of a technological tracking solution for the process of distributed digital device distribution.
4. Evaluate the present process flow for the BCC's many brick and mortar disability-centric programmes (Job Fair, National IT Competition, etc.) and provide opportunities for improvement through the use of technology.
5. Recognize the necessity for the development of Assistive Tools and Technologies for People with Disabilities.
6. Identify areas where audio-video tutorials are required for individuals with impairments, taking into account available resources for remote/home learning.
7. Determine the importance of developing reading materials and books for visually impaired persons based on BCC's capacity.
8. Identify marketable skills and make recommendations for basic ICT training for disabled individuals.
9. Identify critical skills that individuals with disabilities must possess in order to obtain job.
10. Determine the level of awareness of CDE, health allied professionals, primary teachers, and PTI instructors regarding the area of disability and the corresponding training required for the indicated segmentation.

11. Conduct random accessibility audits of government agencies' websites and make recommendations for web accessibility training for government and industry ICT professionals.
12. Conduct research and analysis on other ICT projects and recommend criteria and impact of laptop and desktop distribution.
13. Recognize the importance of giving financial and technical help to NGOs and other organisations engaged in disability-related activities as an incentive.
14. Needs analysis to donate essential equipment to trained skilled disabled individuals in 64 districts to prepare them to be entrepreneurs.
15. Identify work opportunities for people with impairments in order to assist them with job placement.
16. Need assessment for organising divisional-level IT competitions for people with disabilities.
17. Assessment of the need for conducting seminars/workshops/awareness campaigns around the country.
18. Determine the requirements for operating, maintaining, and upgrading the e-Learning platform, Job Portal, and Mobile Apps in order to ensure seamless use and adaptation by individuals with disabilities.
19. Determine the criticality of keeping existing human resources (IT Instructors, Placement Officers, etc.) in order to ensure the success of subsequent projects, as they already possess the knowledge and skills necessary to deal with persons with disabilities.

The Study Methodology:

The research was carried out using a range of methodologies, strategies, and instruments in order to gather relevant and authentic information from various geographical locations on challenges relating to the employment of individuals with disabilities. The findings were presented in a report. The study was carried out by a team of researchers, disability programme managers, and field-level disability resource personnel who had received specialised training. The following approaches were used in the research:

- Employed people with disabilities were identified through notification to the long-established community and network of disabled people that CSID has built over decades, as well as through key informant surveys.
- CSID has partnerships with employers and trade associations, which has been leveraged to conduct interviews with employers, but with a bias toward employers in the ICT industry, which aligns with the BCC's objective.
- Using a set of questionnaires, 260 people from a variety of geographic locations were surveyed. Various sorts of disability, gender, employment status, and more have been analysed in a variety of ways. Rather than focusing on a certain region of the country, the geographic coverage was done at random.

Division	District
Barisal	Barguna, Barisal, Bhola, Patuakhali
Chittagong	Chandpur, Chittagong, Comilla, Feni, Noakhali
Dhaka	Dhaka, Faridpur, Gazipur, Manikganj, Rajbari, Shariatpur
Khulna	Bagerhat, Khulna, Kushtia, Magura
Mymensingh	Sherpur
Rajshahi	Rajshahi, Sirajganj
Rangpur	Dinajpur, Gaibandha, Rangpur, Thakurgaon
Sylhet	Moulvibazar, Sunamganj, Sylhet

Table 1: Areas covered for information collection.

- Individual discussions with people with disabilities and their family members have taken place regarding employed-educated, employed-illiterate, unemployed-educated, and unemployed-illiterate individuals with disabilities. Among the jobs interviewed were government officials, primary school teachers, disability movement leaders, and accessibility experts.
- Focus Group Discussions with concerned disabled employees in various locations were held to review the current situation.

Number	Type of Participants	Area/Location
1	Persons with disabilities	Dhaka
2	Persons with disabilities	Faridpur
3	Persons with disabilities	Sylhet

4	Persons with disabilities	Barisal
5	Persons with disabilities	Khulna
6	Persons with disabilities	Chittagonj
7	Persons with disabilities	Rajshahi
8	Caregivers and parents	Sylhet
9	Caregivers and parents	Barisal

Table 2: Participants of FGD.

- Interviews have been made with relevant actors with regard to employment in Bangladesh, both at Government and Non-Government.
- Web Accessibility Conformance has been performed for selective government website to evaluate the current state of government websites.

Tools to conduct the study:

A set of objective-based questionnaires was developed to collect data on employment-related topics. Additionally, a set of guidelines was designed to assist the data collector and supervisors in collecting data in a methodical manner. The recommendations define and clarify essential areas of information. The questionnaire, which had been thoroughly pre-tested, was finished following a careful analysis of the test results. Appropriate training and orientation on the methodology utilised as well as the tools have been provided to the assigned data collectors. Accordingly, data were collected from 400 respondents with impairments. The data was compiled in a tabular and graphic format using custom-made software on a computer.

For the collecting of data, we also created a case study handbook. The procedures and techniques for obtaining pertinent information and documenting it were covered by the above-mentioned guideline.

The guideline for conducting Focus Group Discussions (FGD) was created to ensure the discussion sessions were conducted in a systematic manner. Four Focus Group Discussions were held in four distinct places, with a total of 300 respondents.

The responses from additional 30 people with disabilities, who answered in response to the paper notices, have been entered into a computer database for further analysis.

Deliverables of the assignment are as following:

- (a) Develop a survey questionnaire/checklist addressing both quantitative and qualitative part
- (c) Assist to ensure data quality and reliability
- (d) Data Entry & Analysis

(e) Prepare and submit a survey report according to survey findings

Ethical Consideration, Consent &/or Assent: Prior to engaging in the survey, KII, IDI, or FGD, all participants and/or their parents/caregivers were required to sign/provide fingerprints or oral consent. Before respondents participated in the interview/FGDs, the consent form related to the set of quantitative and/or qualitative questionnaires was read out and/or handed to them. The responders' confidentiality will be preserved.

KEY FINDINGS OF THE STUDY AND INTERPRETATION

In order to glean insight and evaluate the mentioned components in the ToR, the study team has employed methodologies mentioned in the above section and in this particular section the result has been depicted and interpreted.

Current state and recommendations for improving ICT resource centres at BCC regional offices

- We asked the Officials of ICT Resource Centers who were the respondents. That how would you rate your knowledge about accessibility requirements for your facilities? 86% people answered they have a Good knowledge about that where 14% selected the option Moderate (Figure: 05).

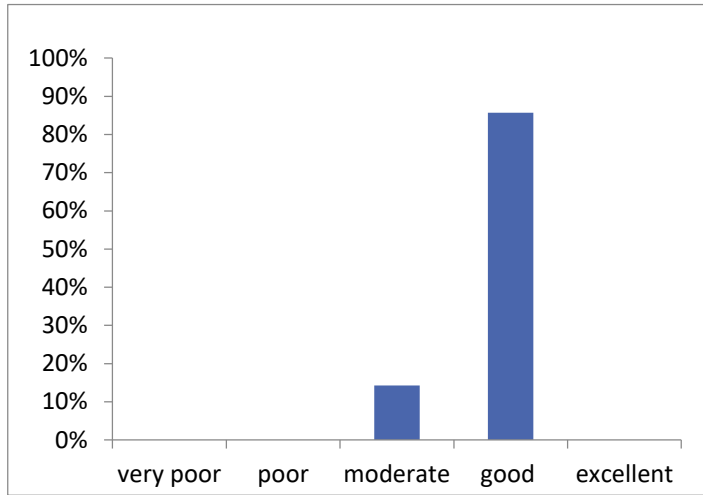


Figure: 05

- They were asked if the sidewalks leading to ICT Resource Center have curb cuts. 57% respondents mentioned ICT Resource Center does not have curb cuts (Figure: 06).

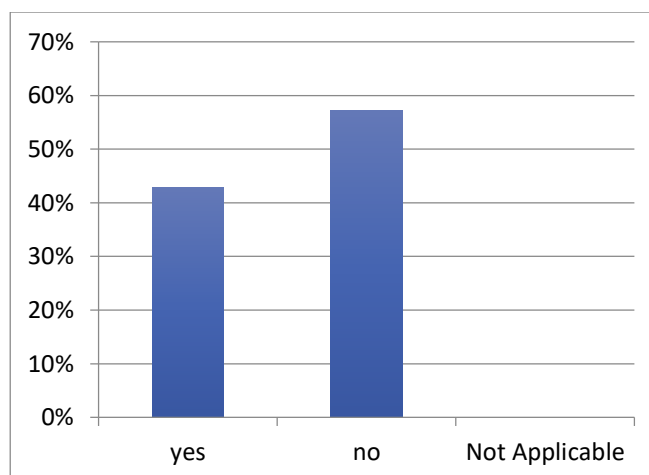


Figure: 06

- In another question 73% of the respondents said that ICT Resource Center Does not have ramps the building which works like an access barrier (Figure: 07).

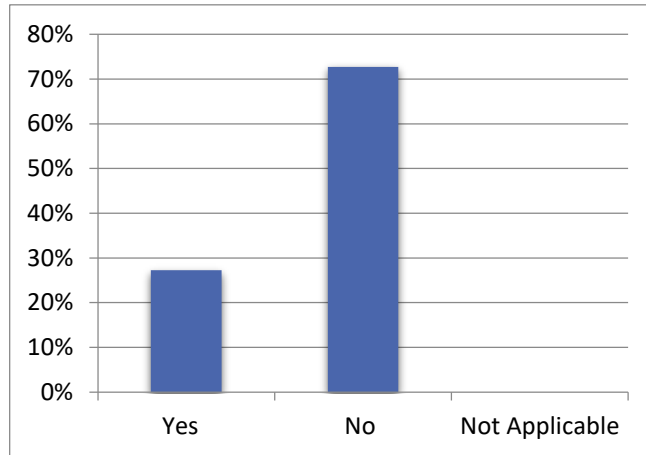


Figure: 07

- And 21% also said that there are no handrails on both sides of the ramp (Figure: 08).

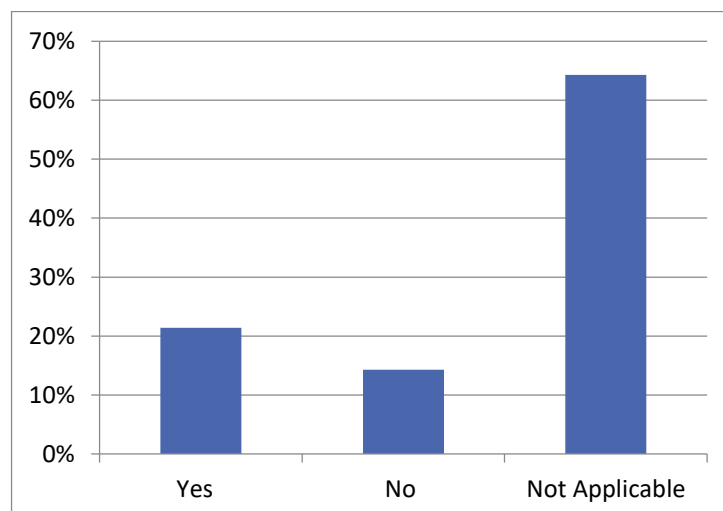


Figure: 08

- 53% respondents mentioned that the accessible route is not clearly marked (Figure: 09).

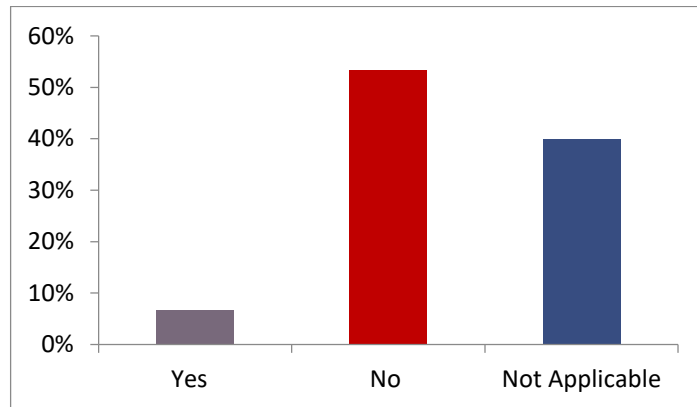


Figure: 09

- Not at least one entrance to the building is wheelchair accessible confirmed by 83% of the respondents (Figure: 10).

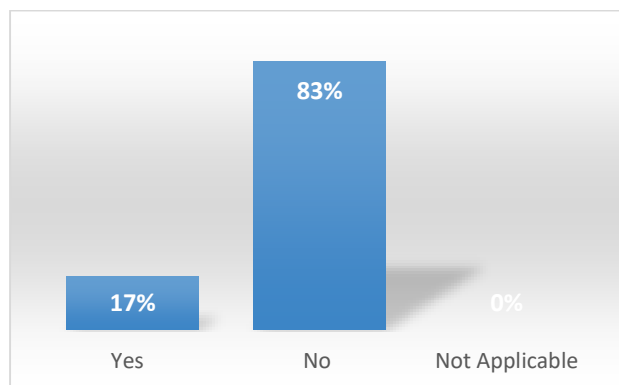


Figure: 10

- 73% said that the doors do not have a lever-type handle or push-plates so that twisting a door knob is not required? 56% mentioned that the available public restrooms are accessible for them (Figure: 11).

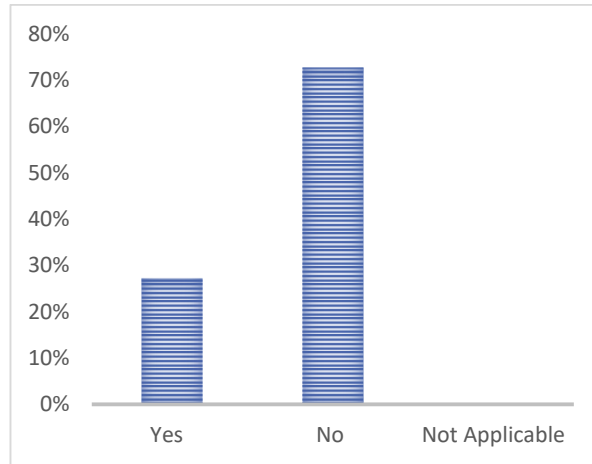


Figure: 11

- 75% are familiar with the Web Content Accessibility Guidelines. Rest 25% is not familiar with Web Content Accessibility Guidelines (Figure: 12).

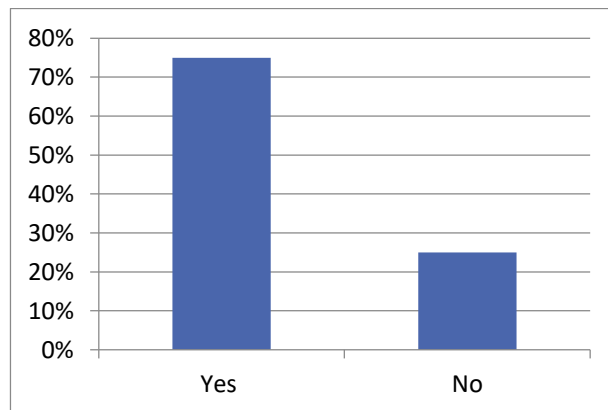


Figure: 12

Issues with distributing Laptop, Desktop and other devices among persons with disabilities

- In component 3, All the respondents replied that ICT Division/BCC Provides Laptop/Desktop to the PWD's (Figure: 13).

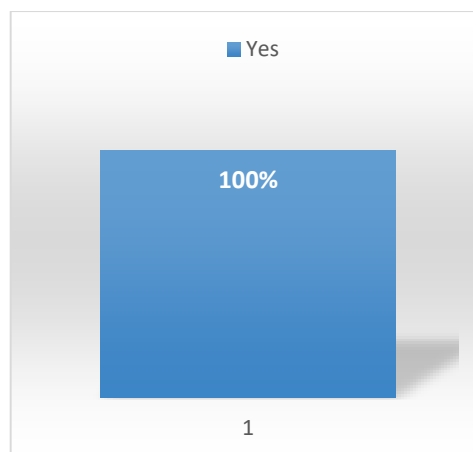


Figure: 13

- In other question, 100% of the respondents said they also follow up the usage after the disbursement of the devices (Figure: 14).

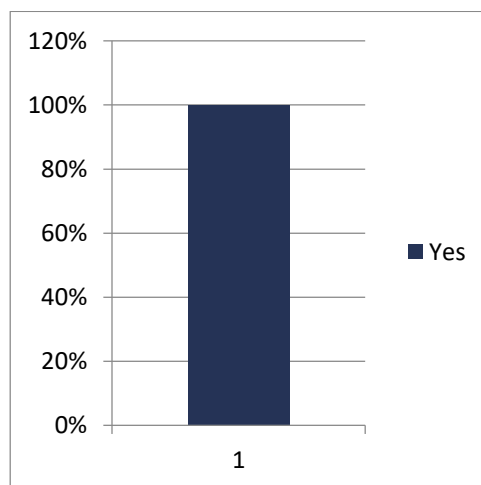


Figure: 14

Current process-flow of Job Fair, National IT Competition of BCC and suggest areas of improvement by leveraging technology.

- 75% of the respondents answered yearly 0-1 times the National IT Competition has been conducted on the other hand 25% of the people said 2-4 times it is occurred (Figure: 15).

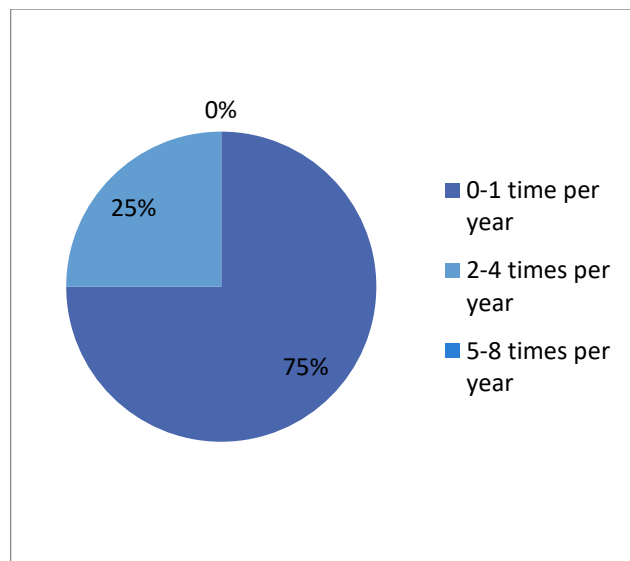


Figure: 15

- Are you satisfied with the outreach/awareness of the National IT Competition among persons with disabilities? In this questions response 56% of the people said they are not satisfied with the outreach. 44% said they are satisfied with it (Figure: 16).

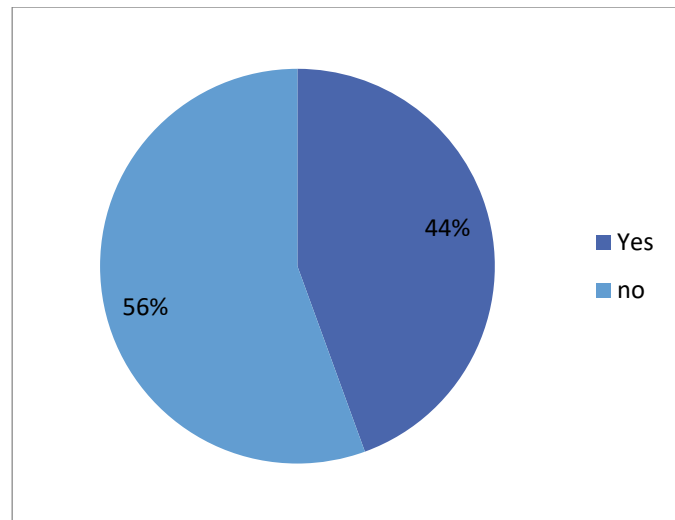


Figure: 16

- Is there any available platform at BCC's disposal to organize online National IT Competition? In response to this 27% said yes. And 73% said they do not have any such platforms (Figure: 17).

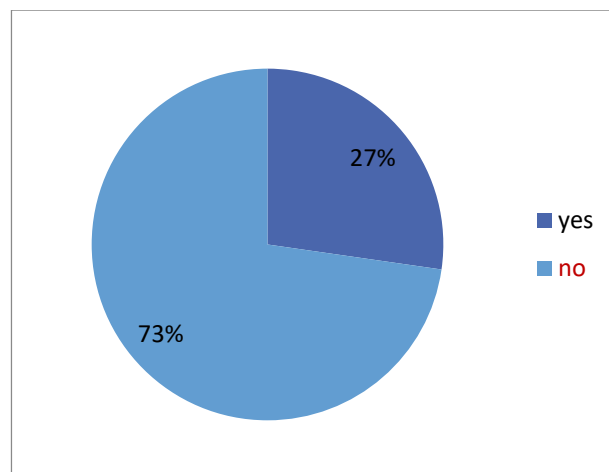


Figure: 17

- In another question where respondents were asked how have they been informed about the National IT Competition? Respondents could choose

multiple answers (Figure: 18). 33% said Partner NGO's, 24% said Social Media, 19% said BCC Website is from where they got the information and only 10% said Electronic media.

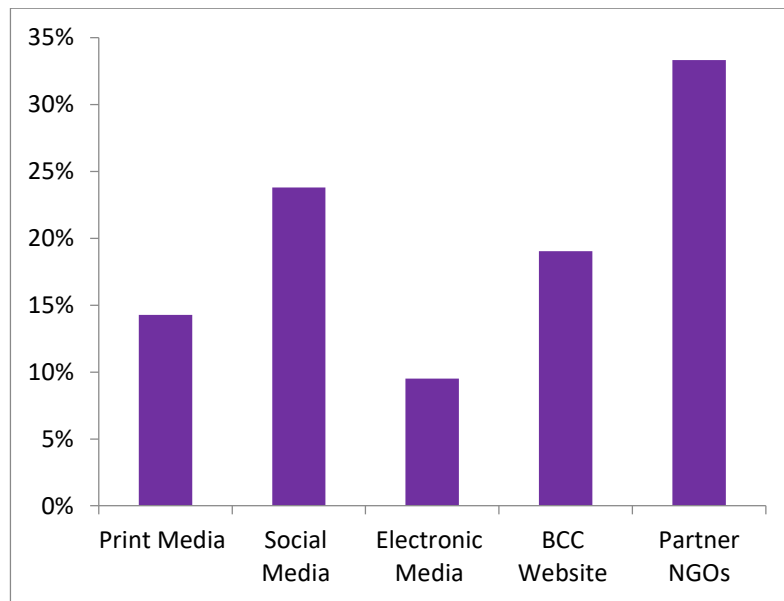


Figure: 18

- 86% people answered online application system is available in BCC, 14% said they do not have this facility. (Figure: 19)

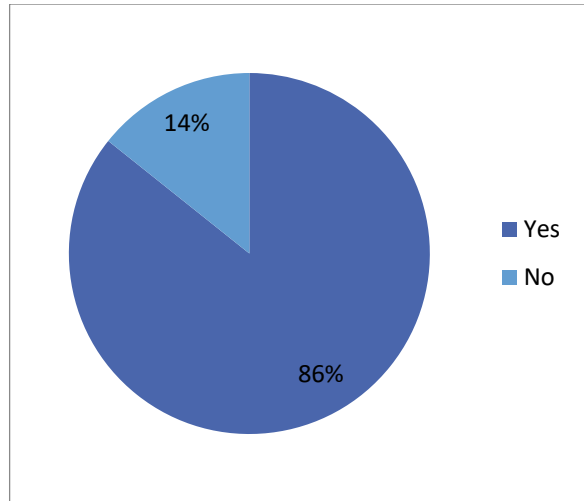


Figure: 19

Necessity of producing reading material and books for visually impaired

- Few visually impaired persons were asked which of the following tools they are familiar with. The answer is as follows-

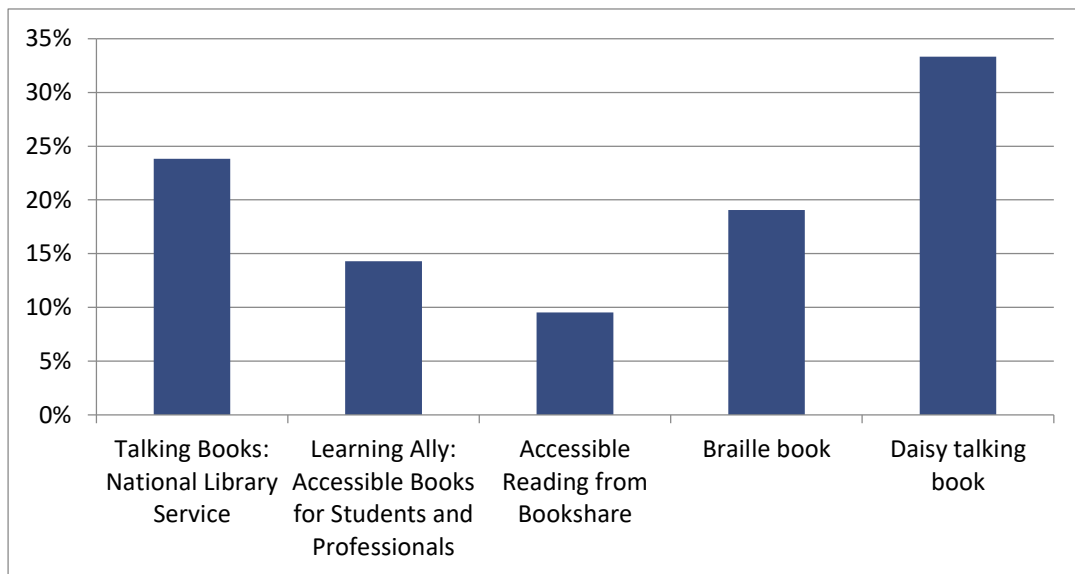


Figure: 20

33% among the respondents answered they are familiar with Daisy talking book. 24% said they know what talking book is. Braille book is familiar to 19%

of the respondents. 14% and 10% said they are familiar with learning ally and accessible book share reading books respectively (Figure: 20).

- In Another question 57% respondents responded that they do not feel comfortable working on web-based/app based tools. Whereas 43% said they do.

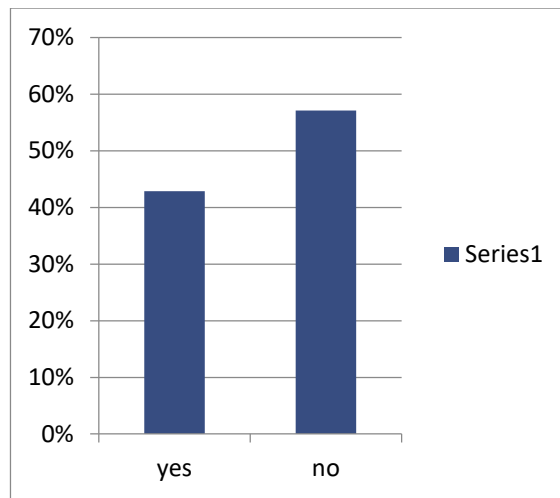


Figure: 21

- When asked if they have ever used a screen reader. 56% said yes.

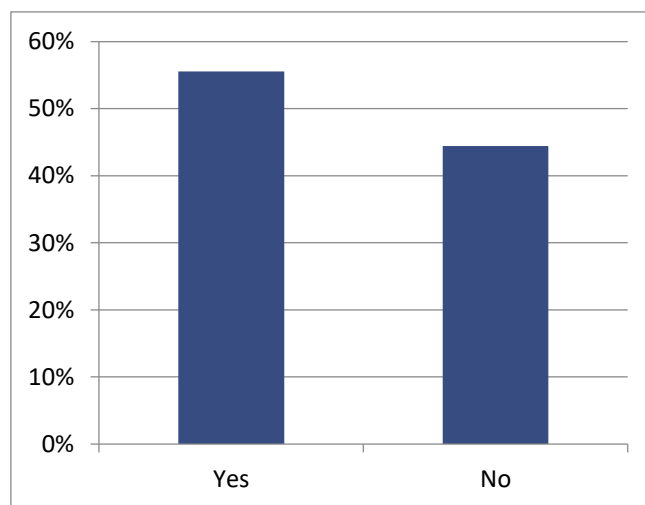


Figure: 22

- They were also asked if their laptop/desktop screen reader friendly. In response to that 75% responded in positive while 25% said no

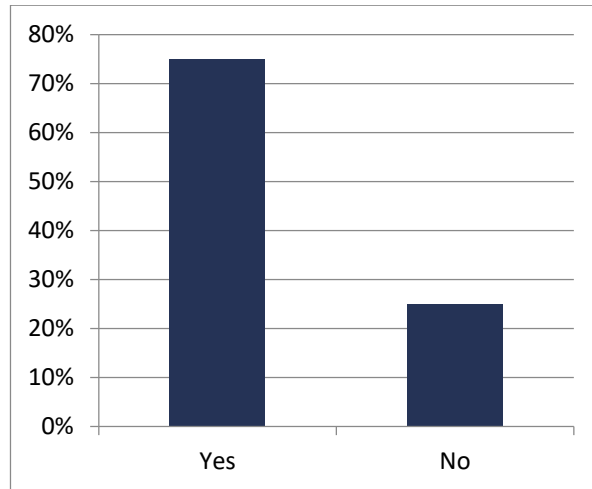


Figure: 23

Marketable skills and ICT training for persons with disabilities.

- 44% among the disabled people can access desktop computers. 44% can access a laptop, 55% can operate any types of phones. And 44% can use smart phones (Figure: 24).

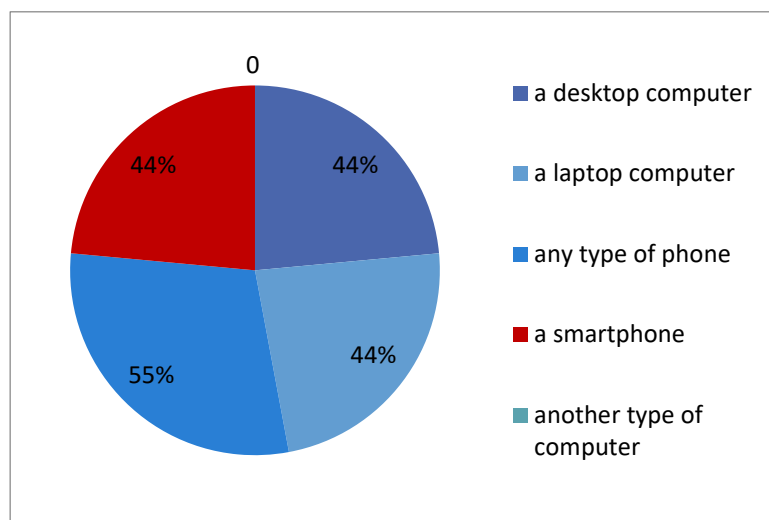


Figure: 24

- Have you ever participated in a job fair for persons with disabilities conducted by Bangladesh Computer Council (BCC)? Replying to this 67% said Yes (Figure: 25).

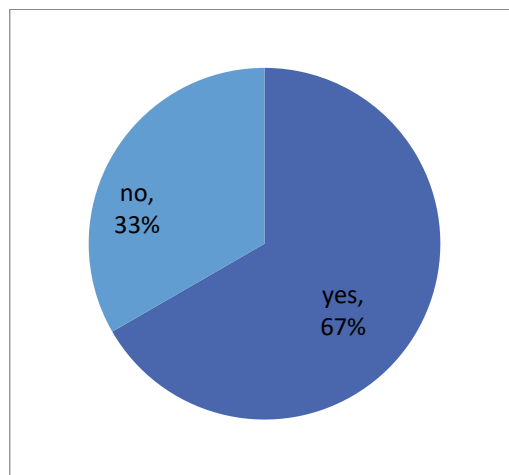


Figure: 25

- When asked if they ever hired any candidate from the above mentioned job fair? 67% replied they got hired from the job fairs (Figure: 26).

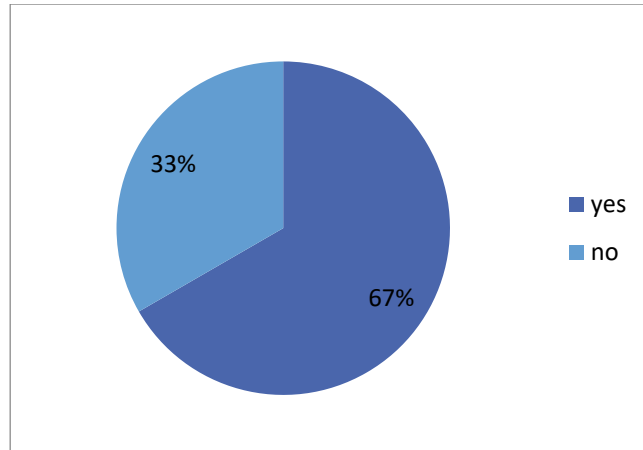


Figure: 26

- Employers were asked is your application process accessible to individuals with visual or other sensory impairments? 60% replied Yes (Figure: 27).

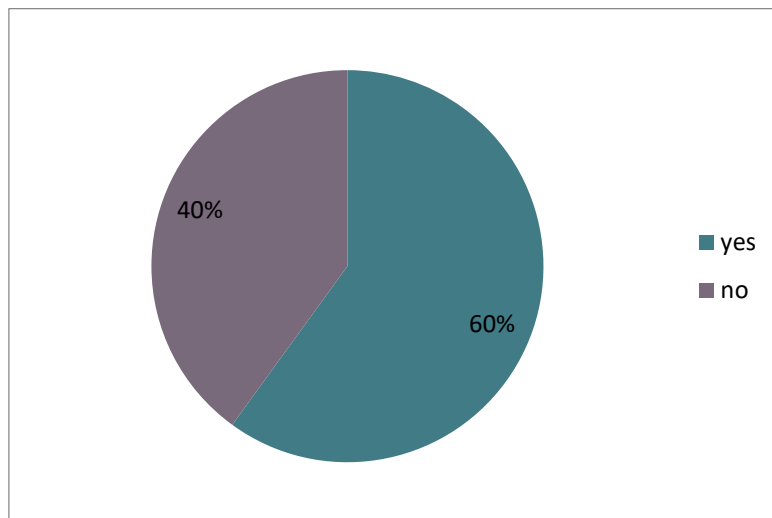


Figure: 27

Key skills required for persons with disabilities for employment.

- The respondents were asked if they have ever received on-the-job trainings from their employers. 80% responded they did not get any sort of training from their employers (Figure: 28).

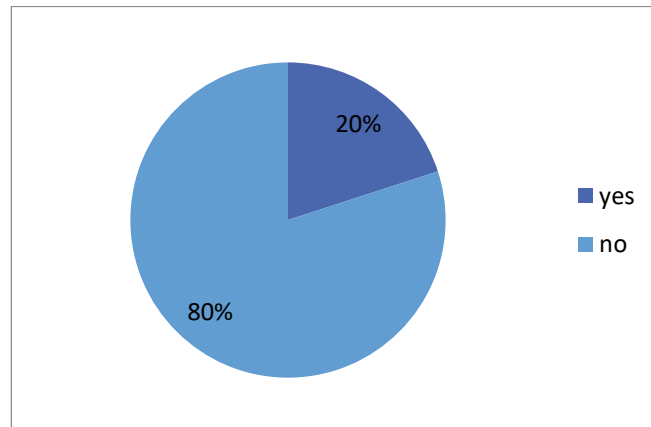


Figure: 28

- 100% of the respondents also replied these trainings helped them to get a job and sustain there (Figure: 29).

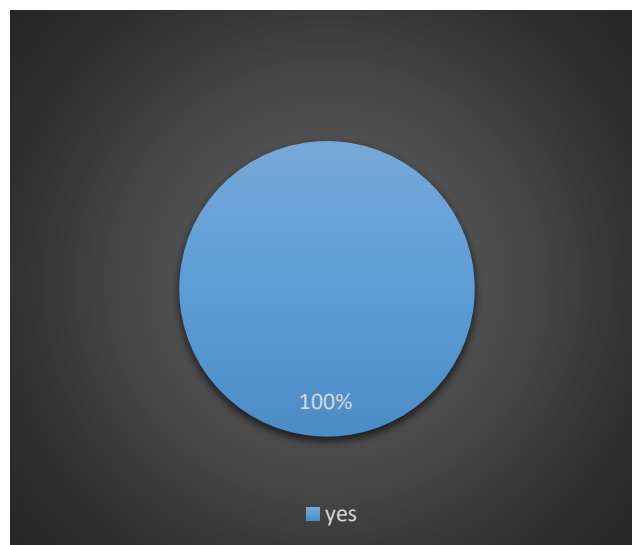


Figure: 29

- 25% said they are trained on Problem-Solving and Critical Thinking 21% responded said they got training on Communication & Presentations. Other 21% are trained on Teamwork. And 17% people are trained on Enthusiasm and Attitude (Figure: 30).

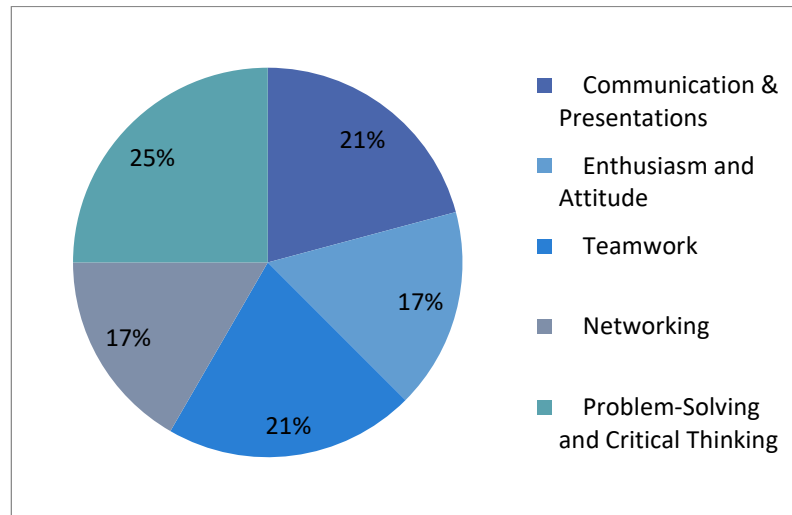


Figure: 30

Necessity CDE, health allied professionals, primary teachers and PTI instructors on the domain of disability

- 75% of the Health allied professionals know how to communicate in sign language. (Figure: 31)

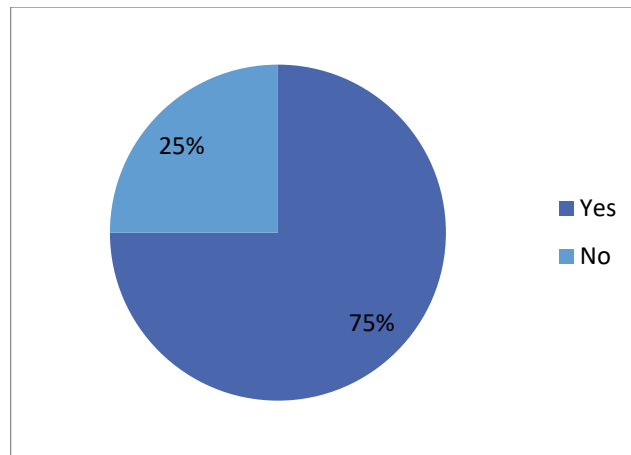


Figure: 31

- 58% of the Health allied professionals said that there are campaigns for the persons with disabilities to increase awareness about covid19? (Figure: 32)

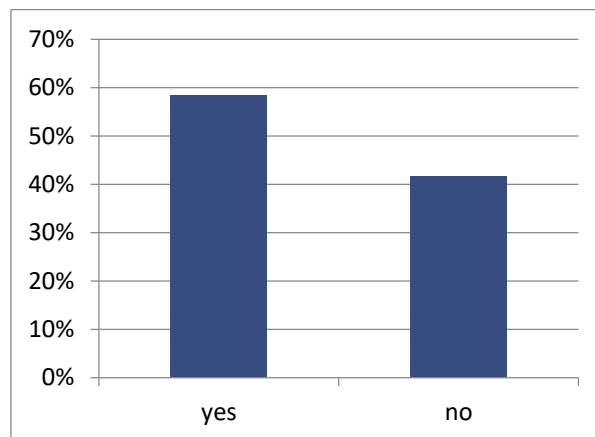


Figure: 32

- 67% of the Health allied professionals think in this corona virus outbreak, the persons having Down syndrome or mental disabilities, can cope up with the changing environment (Figure: 33).

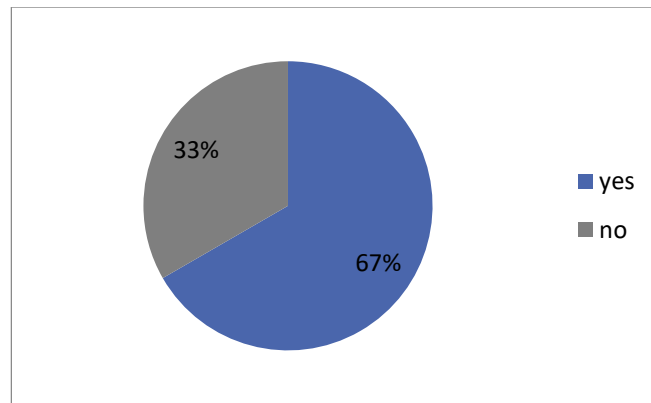


Figure: 33

- 42% of the Health allied professionals think the parents of disabled children understand how the health professionals can support their child on issues commonly affecting disabled children. (Figure: 34)

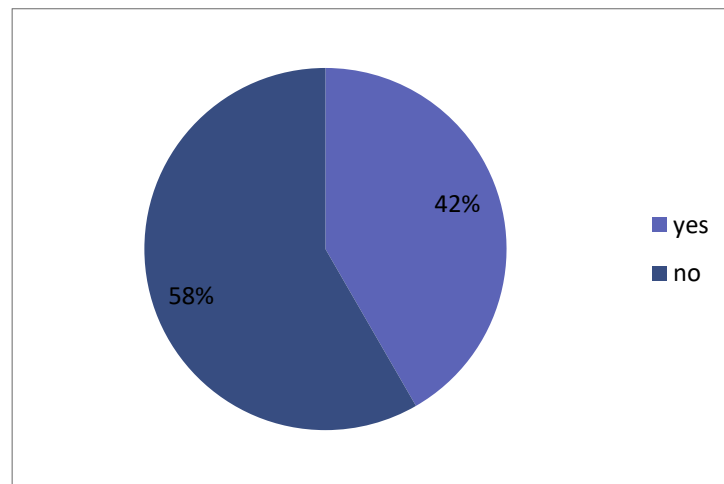


Figure: 34

- 58% of the Health allied professionals think campaigns and seminars made them aware of the covid 19 virus. Other 25% thinks it's web seminars which

help them. And only 8% thinks Schools and their own family spread the awareness. (Figure: 35).

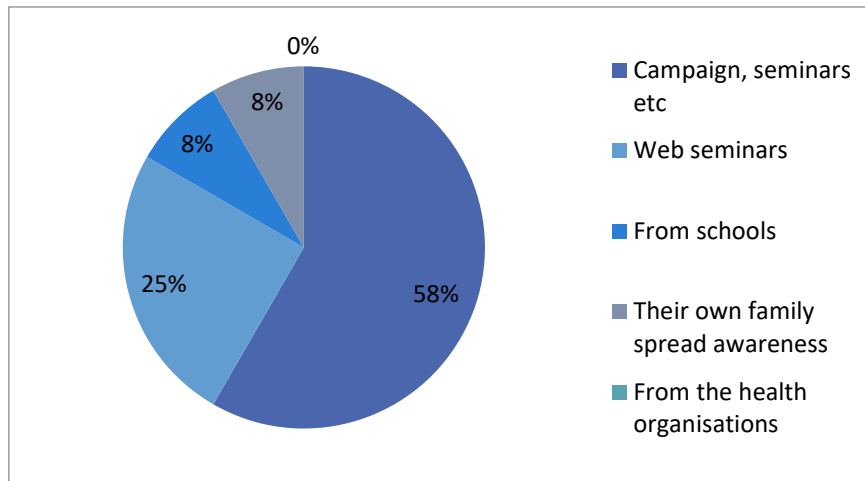


Figure: 35

- What are the challenges you think are faced by the disabled people of our country? In response to this questions 33% CDE respondents said because of discrimination and not having enough institutions? 25% said superstitious mindset. (Figure: 36)

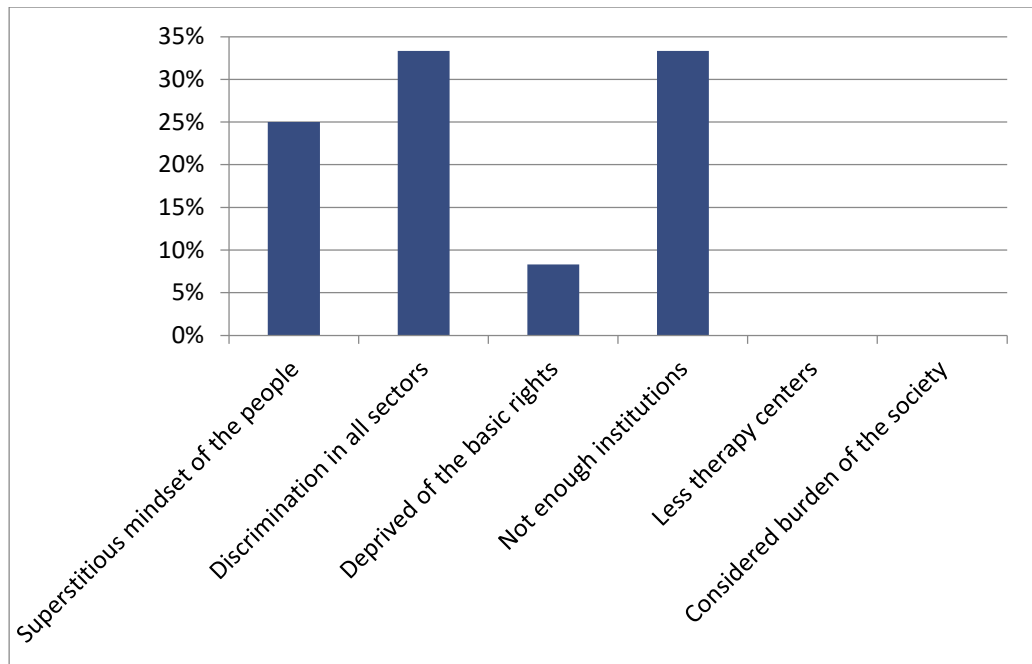


Figure: 36

- What can be done to overcome the challenges, in response to this 100% people suggested for building more therapy centers. 71% suggested educating people more about disability. 57% says to ensure basic rights. (Figure: 37)

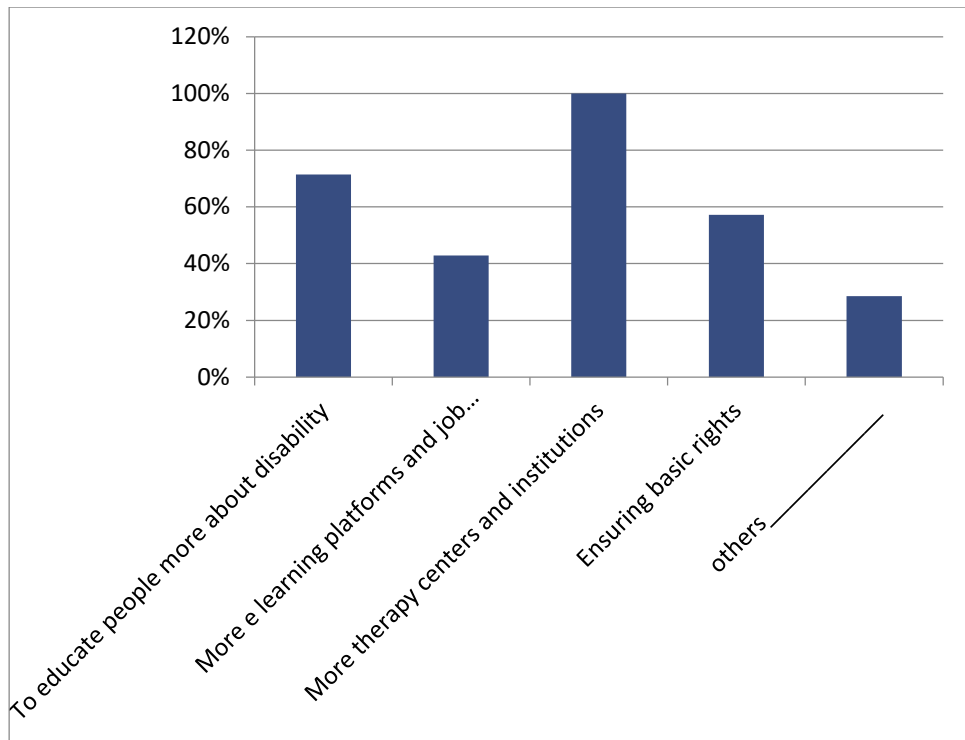


Figure: 37

- 100% of the PTI think disabled children do not get the proper care if they are in the unspecialized teaching organizations. (Figure: 38)

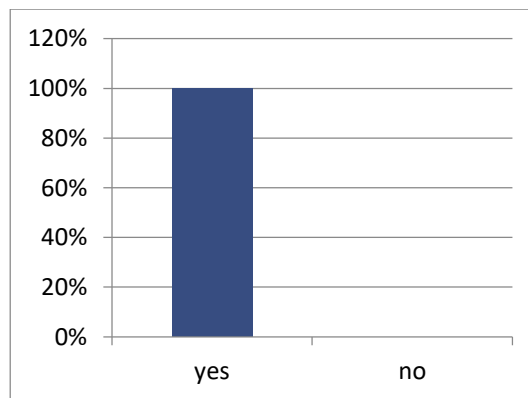


Figure: 38

- 86% of the PTI use materials from e learning platforms for disabled students. (Figure: 39).

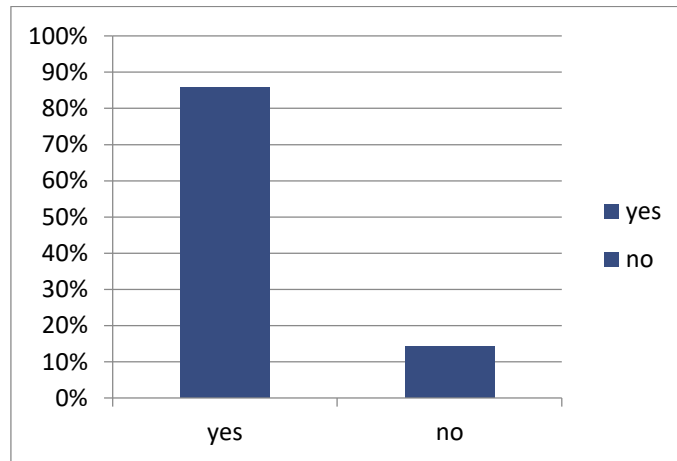


Figure: 39

- 47% instructors use Emporia learning platform to help the students with disabilities. (Figure: 40).

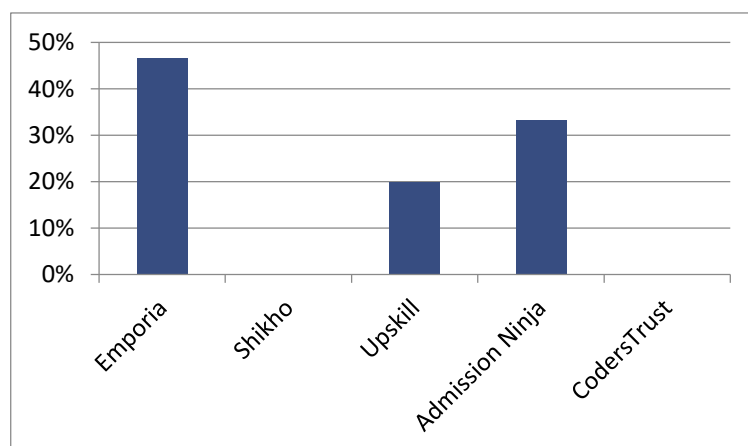


Figure: 40

Need of providing financial and technical assistance as an incentive to NGOs and other organization related to disability activities.

- In component 13, respondents were asked if they have any training programs for people with disabilities. 75% of respondents said 'Yes'. (Figure: 41)

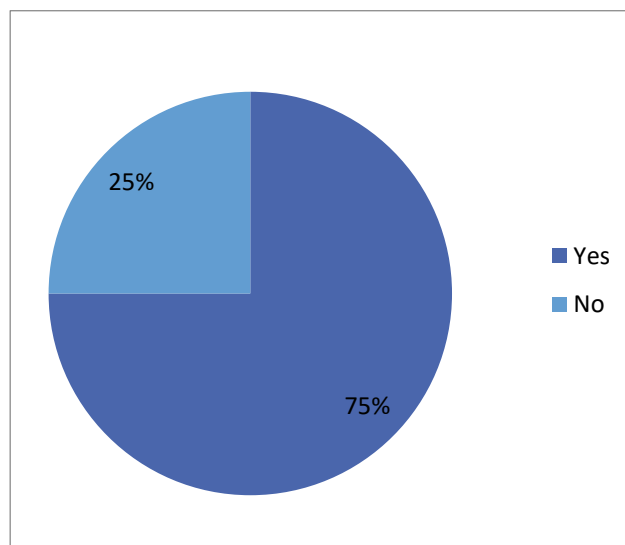


Figure: 41

Job opportunities for Persons with disabilities to provide job placement assistance.

- In component 15, respondents were asked if they are currently employed. Of all the respondents, 75% responded that they are unemployed and 25% are employed (Figure: 42).

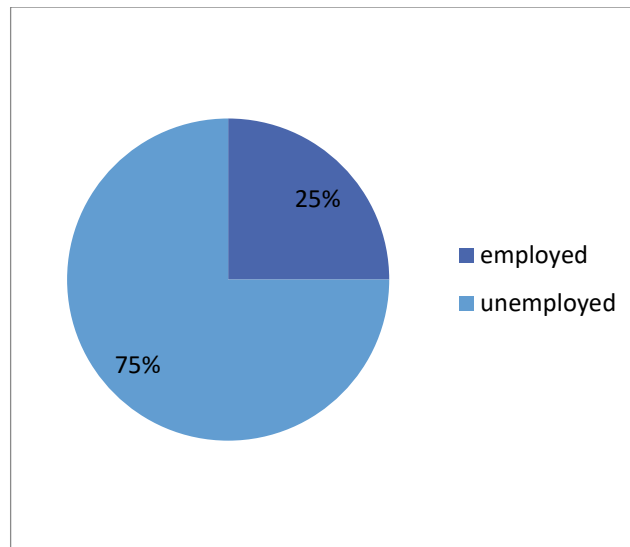


Figure: 42

- In another question, people were asked what type of job they prefer. 75% of the people responded that they prefer work from home and 25% of them prefer physical office jobs (Figure: 43).

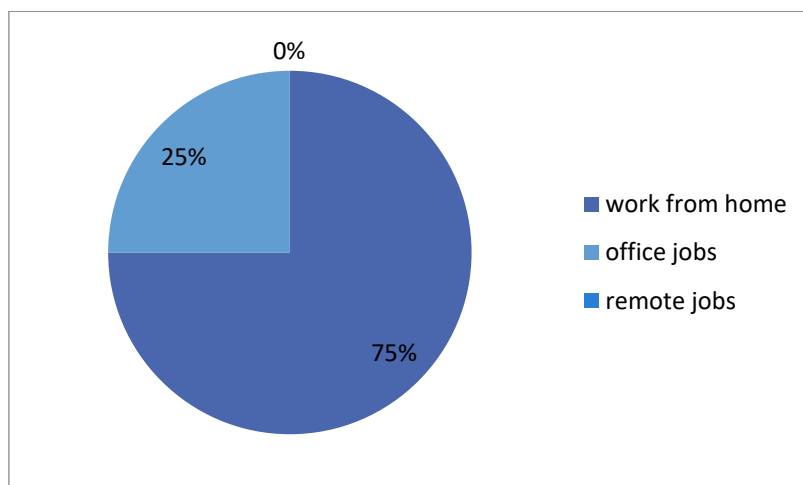


Figure: 43

- In response to “Is Technical and Vocational Education highly effective for the disabled people to get jobs?” 100% of respondents responded “Yes”. (Figure: 44)

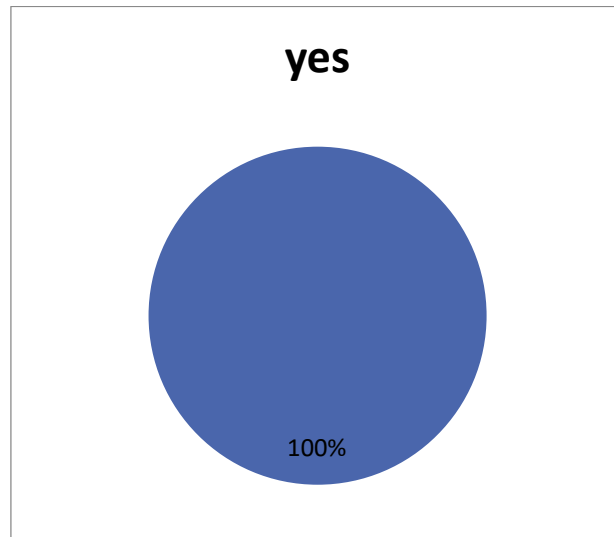


Figure: 44

- 67% of the respondents said that they have participated in a job fair for persons with disabilities conducted by Bangladesh Computer Council (BCC). (Figure: 45)

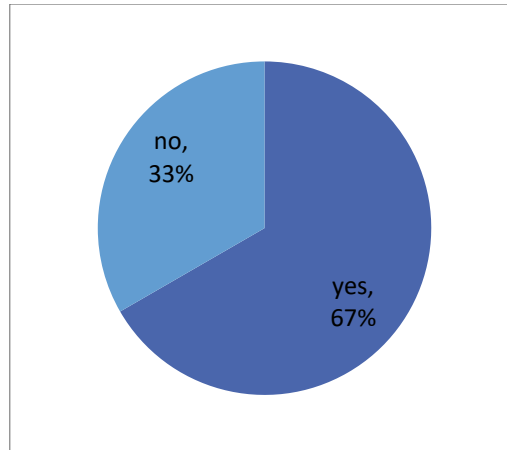


Figure: 45

- And In another response, 67% of the respondents said that they have hired candidates from the above-mentioned job fair in Figure: 46.

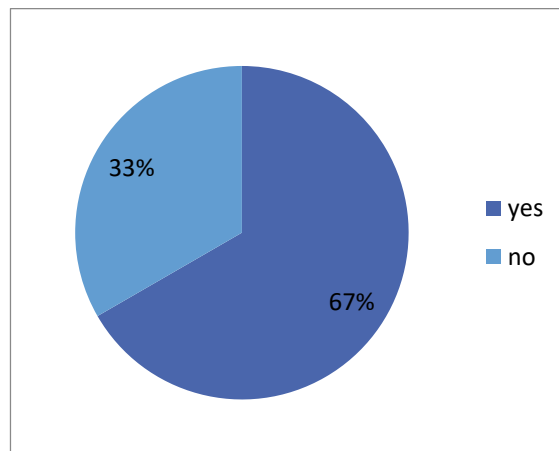


Figure: 46

Need of arranging Seminar/Workshop/Awareness campaign

- Respondents were asked if they are aware of the different types of disabilities. 100% of them replied in positive (Figure: 47).

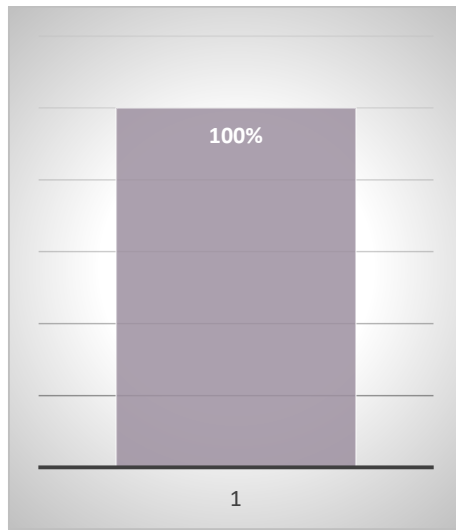


Figure: 47

- In response to "Do they know the possible reasons for their disabilities?" 100% of them said 'Yes' (Figure: 48).

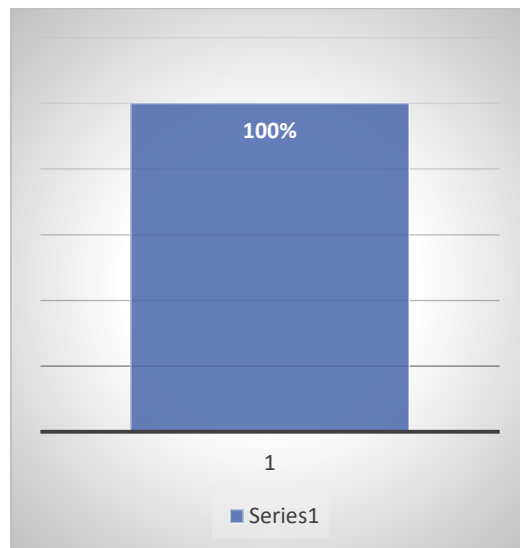


Figure: 48

- In response to “Are you aware of CRPD and national disability policies?” 56% of the respondents said that they are aware of it. (Figure: 49)

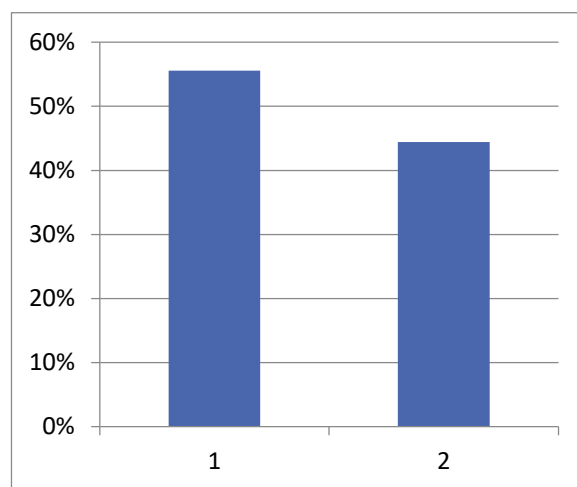


Figure: 49

- When they were asked if they know about Social Protection policies, 75% of them replied Yes and 25% of them replied No. (Figure: 50)

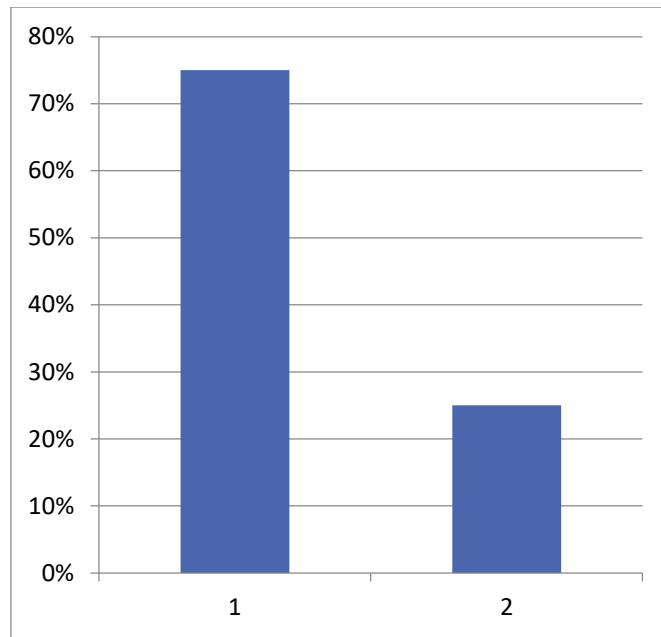


Figure: 50

- Among the respondents, 27% of them said that they know about Health policies and 73% said that they don't know about it. (Figure: 51)

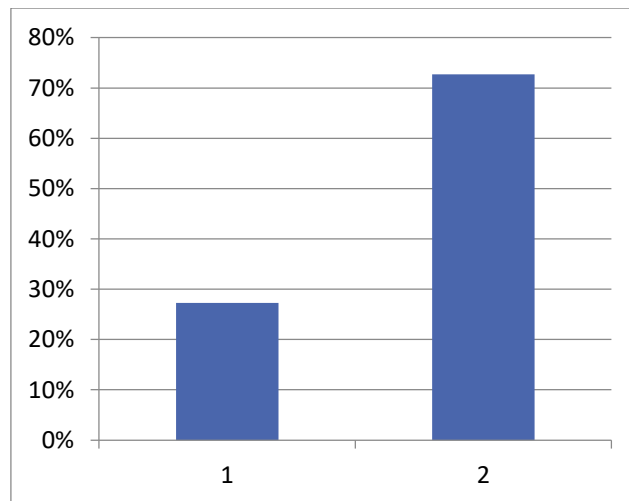


Figure: 51

- In response to “What do you think are the barriers to employment?” 50% of the respondents said that they think “Students are not taken to inclusions” is one of the barriers to employment. (Figure: 52)

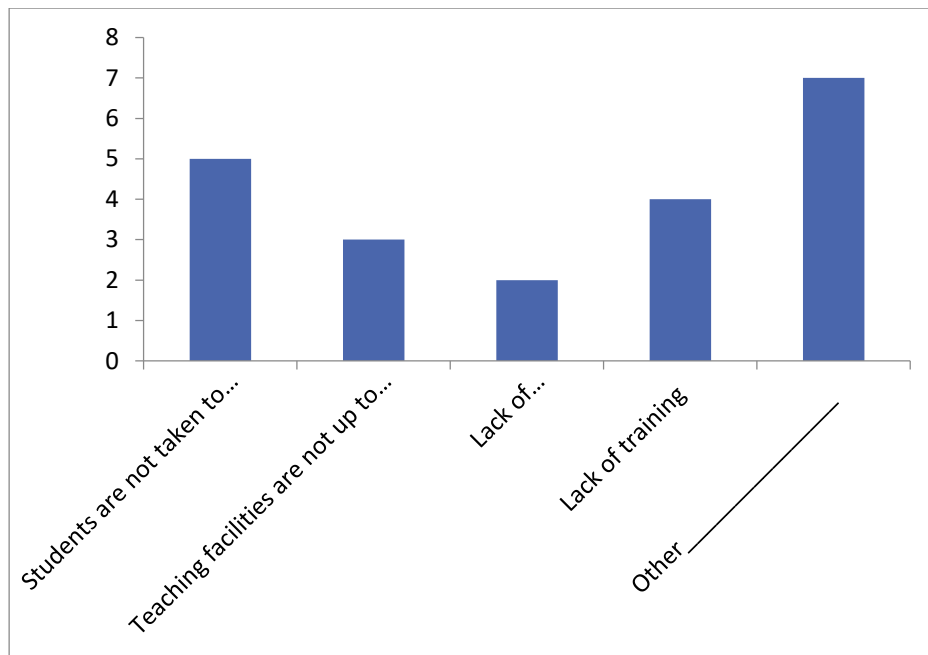


Figure: 52

- In another question, respondents were asked to suggest how to eradicate them and 70% of them think that people should be educated about disabilities.

Figure: 53

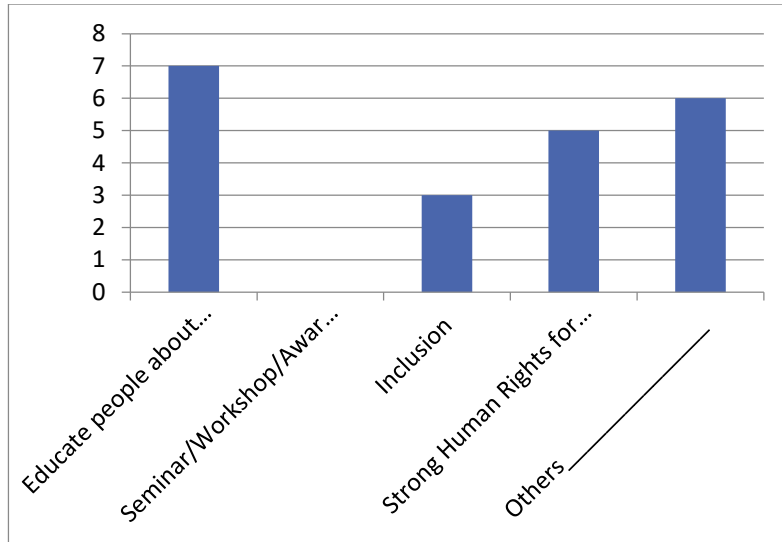


Figure: 53

- Are you aware of organizations supporting people with disabilities? 86% of them replied positive. Figure: 54

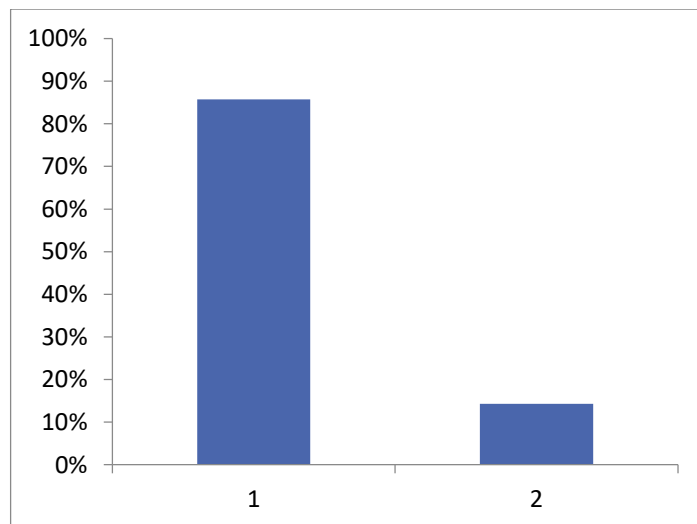


Figure: 54

- Having asked if they are aware of the benefits of inclusion, 57% of them said Yes and 43% of them said No. (Figure: 55)

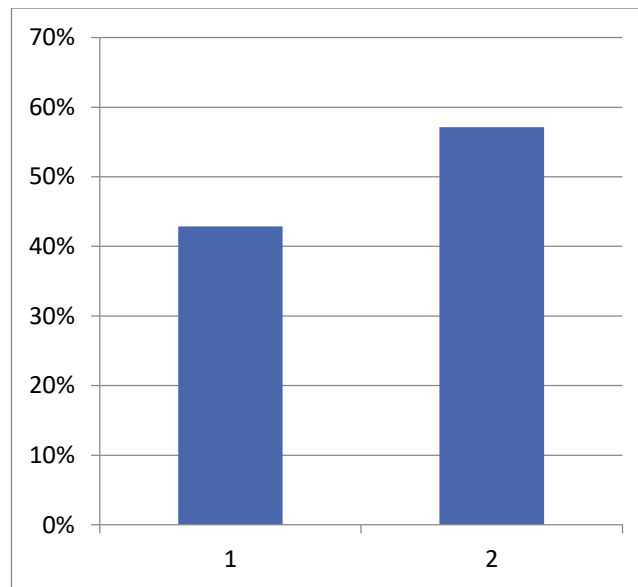


Figure: 55

- 100% of the respondents think that arranging seminars/workshop/awareness campaigns can help people with disabilities. (Figure: 56)

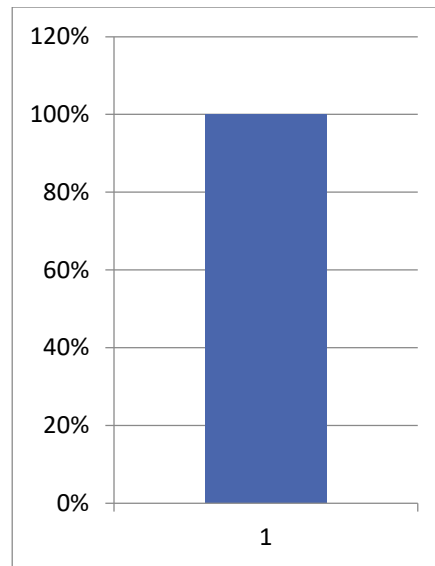


Figure: 56

Importance of continuing and retaining the existing human Resource (IT Instructors, Placement officers etc)

- Respondents were asked how many IT instructors and Placement officers work in their project. In reply, they said 58% IT instructors and Placement officers are working in their project. (Figure: 57)

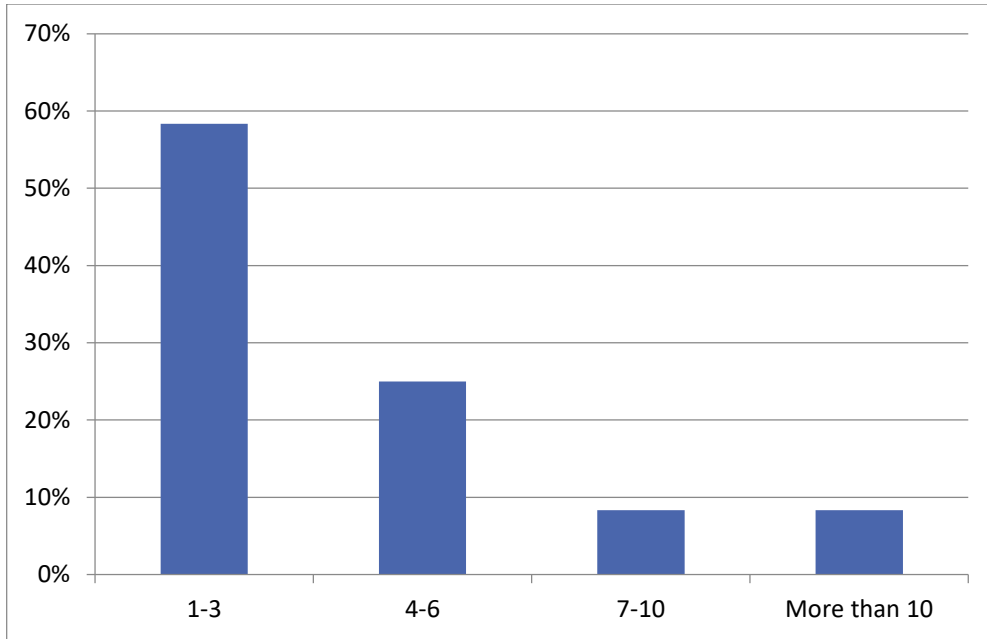


Figure: 57

- Respondents were asked, “How many days does it take to hire the existing human resource?” 25% of them responded less than a week and 33% of them responded more than a month. (Figure: 58)

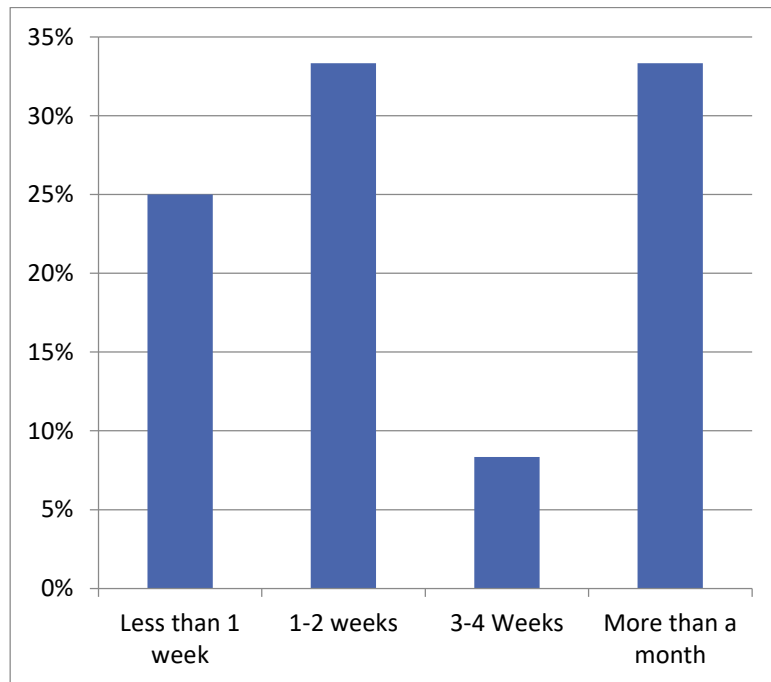


Figure: 58

- When respondents were asked do they need any further training after hiring, 42% of them responded Yes and 58% of them said No. (Figure: 59)

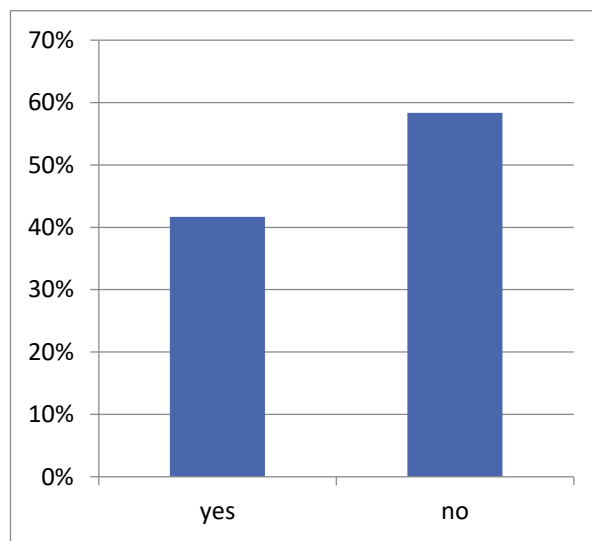


Figure: 59

- On a scale of 12, 10% of the respondents said that they are not satisfied with their current work pool with the wage scale. (Figure: 60)

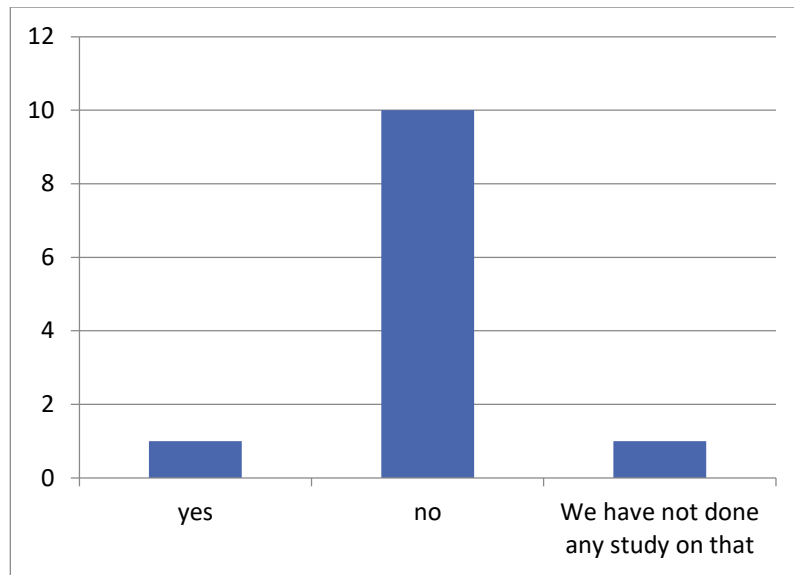


Figure: 60

- In a query, 67% of the respondents said that they feel the existing IT instructors and the placement officers are empathetic about the disabled persons. (Figure: 61)

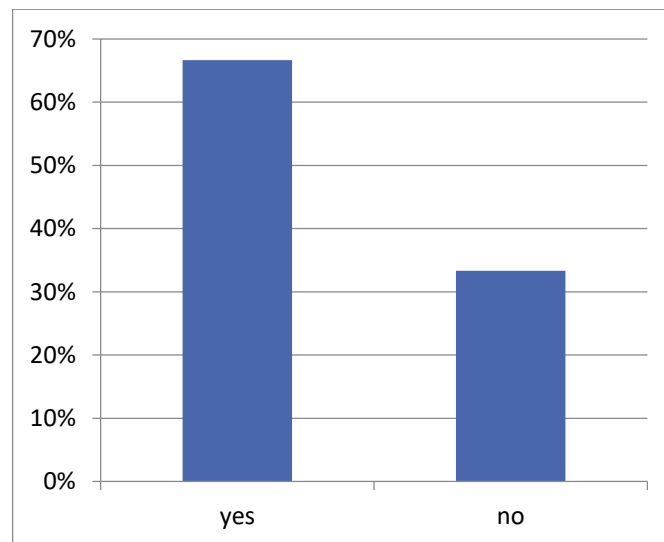


Figure: 61

- For the record, 75% of the respondents confirmed that they are given proper training on sign language. Figure: 62

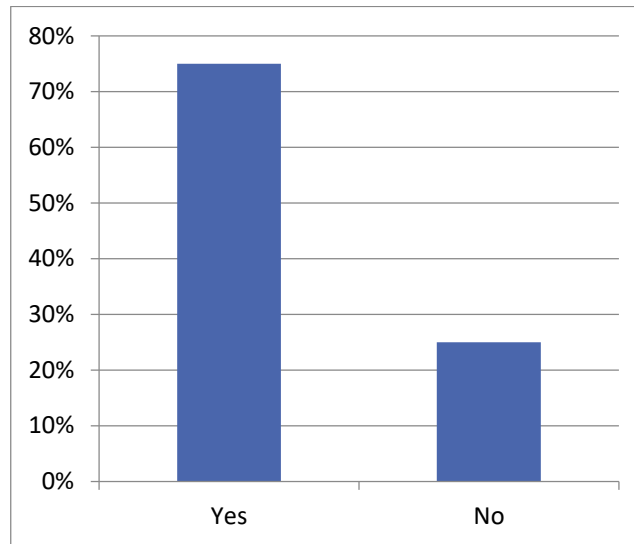


Figure: 62

- 50% of the respondents expressed that they get a satisfactory wage salary for their job. (Figure: 63)

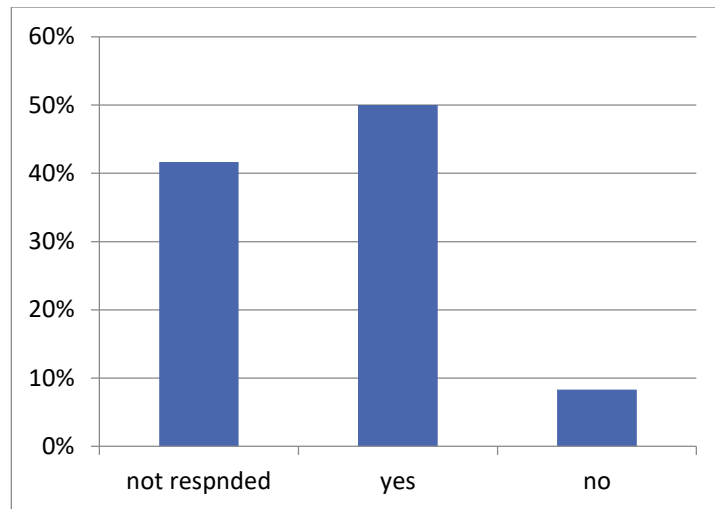


Figure: 63

- 50% of the respondents said they find the potential resource pool for the job placements. (Figure: 64)

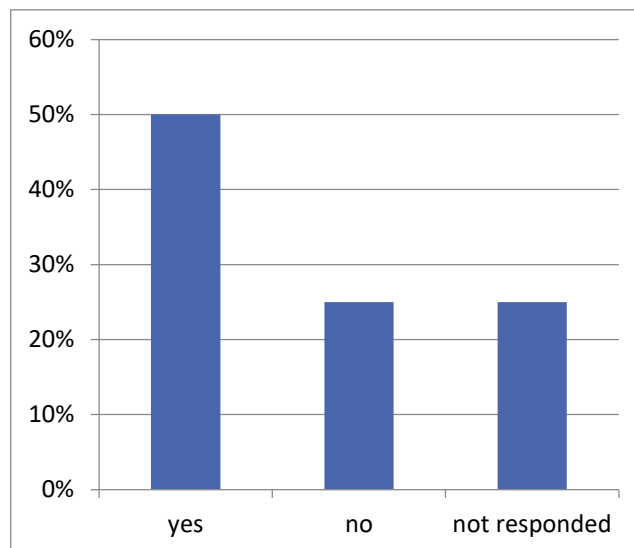


Figure: 64

Needs for developing AI and Block chain enabled e-portal for persons with disabilities

- 56% of the respondents are Male and the rest 33% are Female Respondents

(Figure: 01).

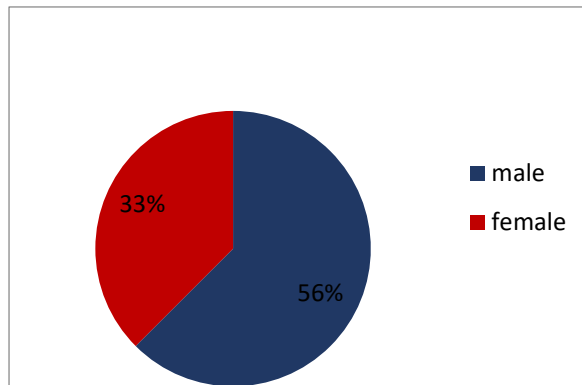


Figure: 65

- 67% of the respondents are aged 18- 40 Years, rest is above 41 Years (Figure: 02).

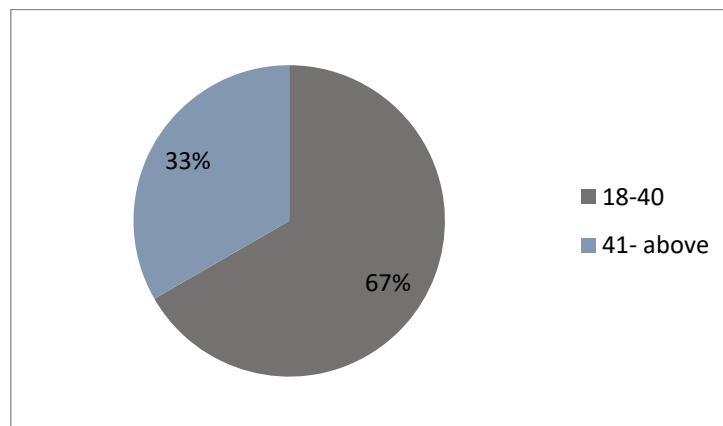


Figure: 66

- Among the disabled respondents 56% people are physically disabled. 33% PWD's are Visually Impaired. And 22% has Speech and Hearing Aid (Figure: 03).

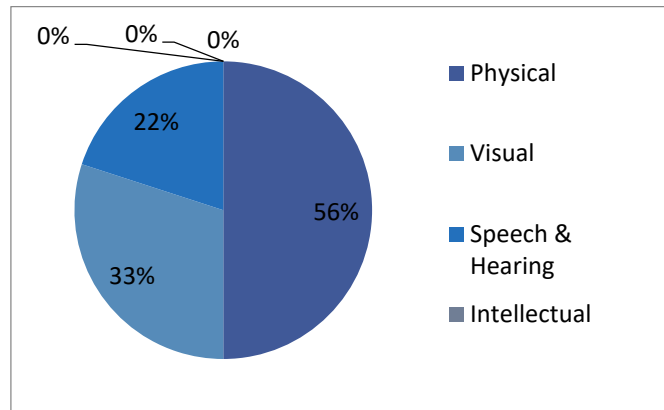


Figure: 67

- The respondents were asked if they use any kind of assistive devices? If yes, Then which one. 90% said they use hearing aids, 70% said Crutches with artificial limbs. And 40% said they use crutches. (Figure: 4)

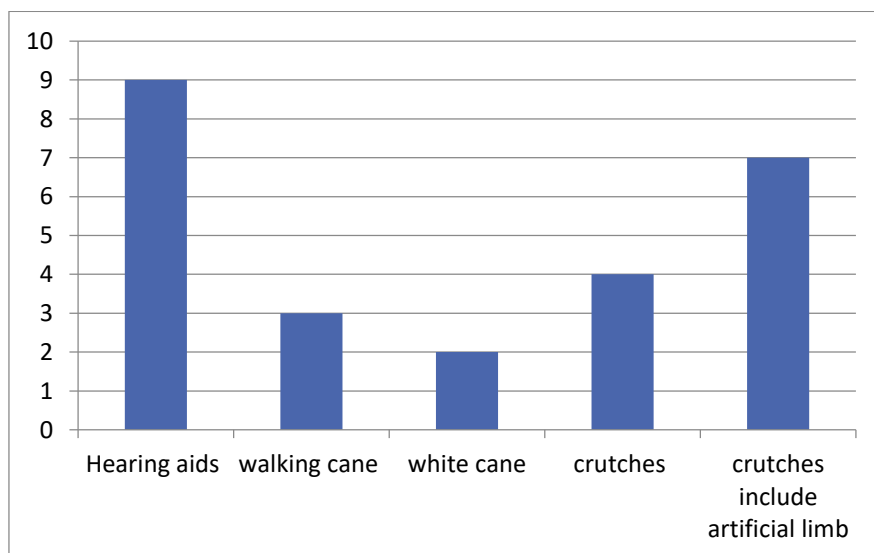


Figure: 68

- They were asked if they have any digital literacy. 55% said Yes and 45% said no.

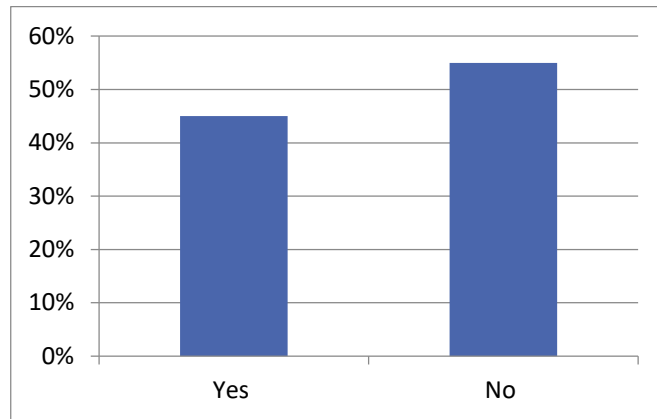


Figure: 69

- 55% said they are entitled to any institutional finance where 45% said they are not entitled?

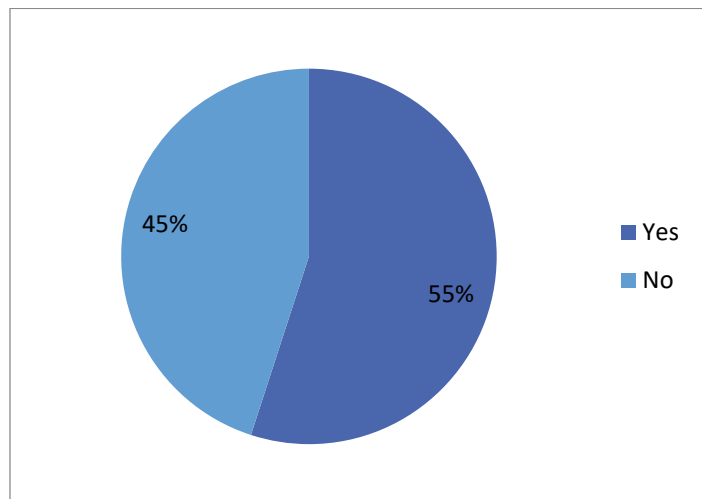


Figure: 70

- Respondents were asked if they taken any loans, if yes, they have ever taken any loans from BFI/NBFI yet. 45% replied they have taken loans from BFI/NBFI.

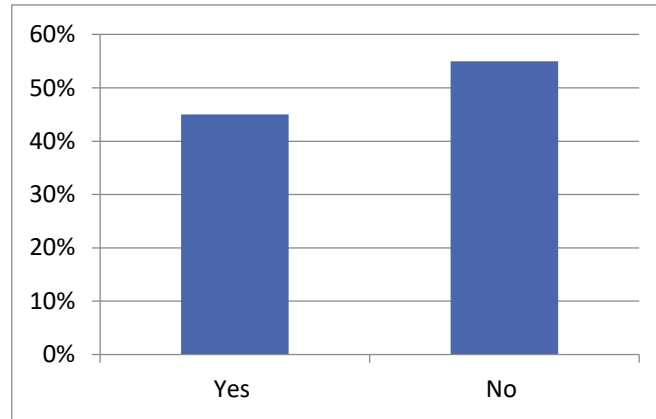


Figure: 71

- They were asked what kind of technological intervention can help their business to grow. 30% answered inventions of platforms to communicate with clients regardless of their type of disabilities. Other 26% people suggested creating platforms to get financial support.

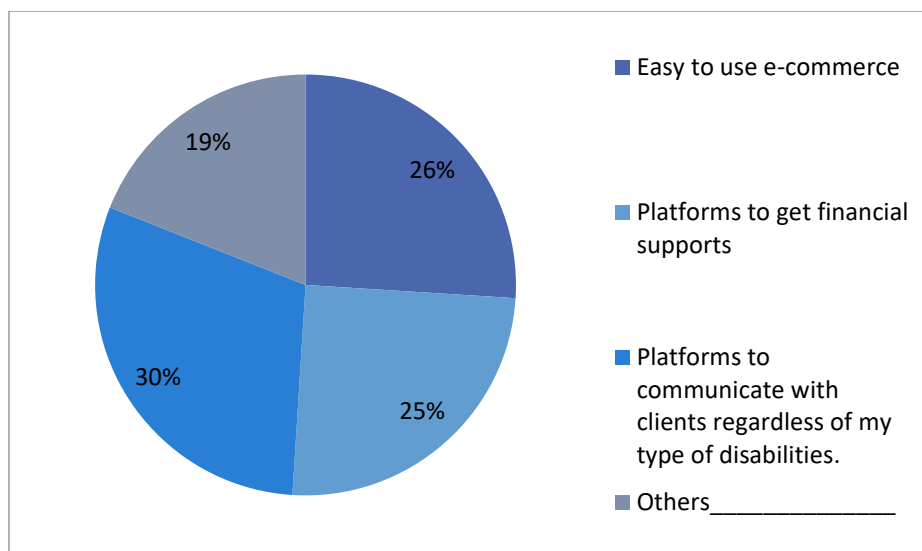


Figure: 72

Identify the need for Development of Assistive Tools and Technologies for PWD's.

- Respondents were asked if they are familiar with the term 'Assistive tool'. 56% answered Yes and 44% said they are not familiar with it.

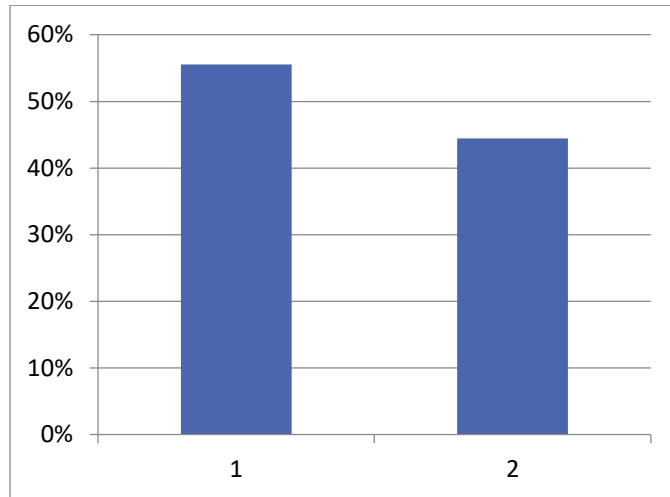


Figure: 73

- In another question, they were asked if they use any assistive technology. More than 60% people said they use it.

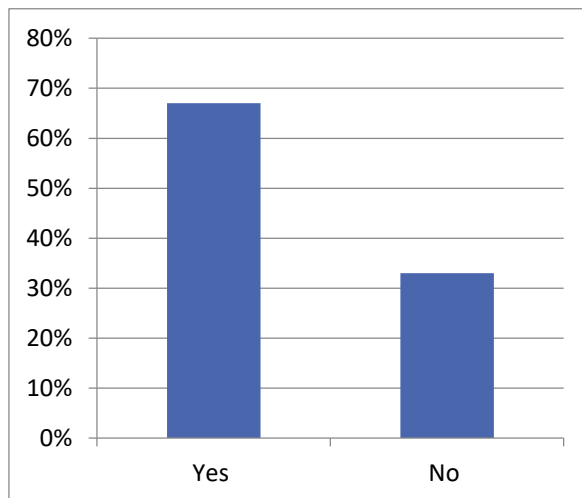


Figure: 74

- 55% of the people think they do not have any digital literacy. Other 45% thinks the opposite.

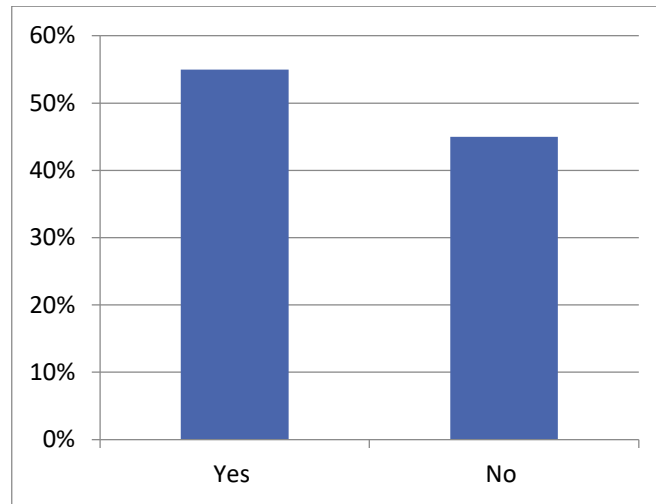


Figure: 75

- They also were asked if they think the assistive technology that they use is affordable in their locality. 56% replied that it's not available in their locality.

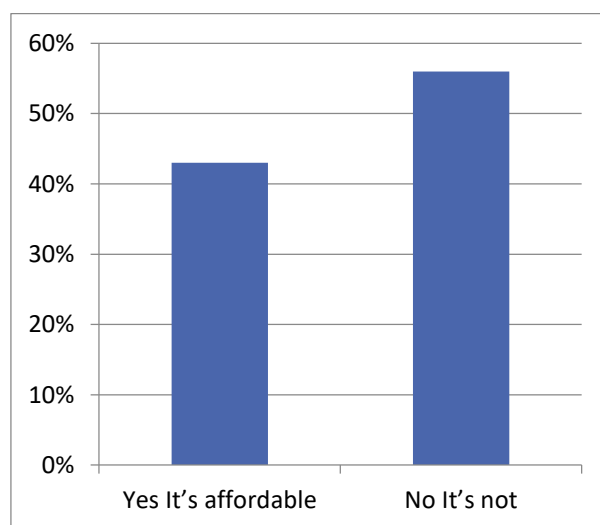


Figure: 76

- They were asked if wheelchair is replaced with electric wheelchair. Will they be ready to replace their regular wheelchair and upgrade it to the new one? 65% said they will definitely adapt the change.

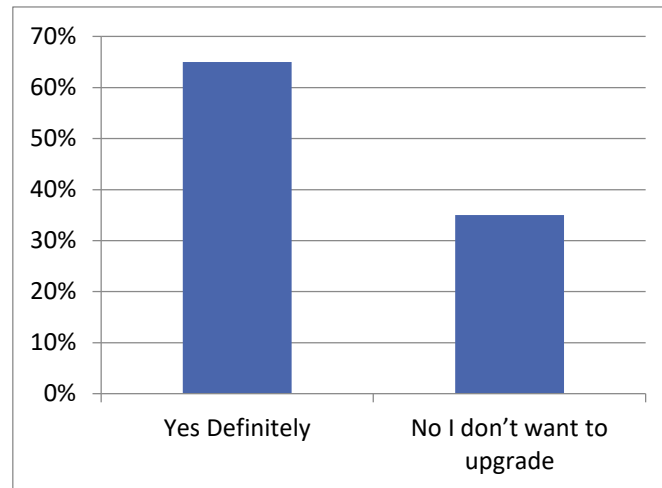


Figure: 77

Identify the areas where audio-video tutorials are necessary for persons with disabilities with considering available resources in respect of remote/ home learning

- Which of the following education are you taking? Replying to this question 45% said special education , 31% is taking Integrated education.

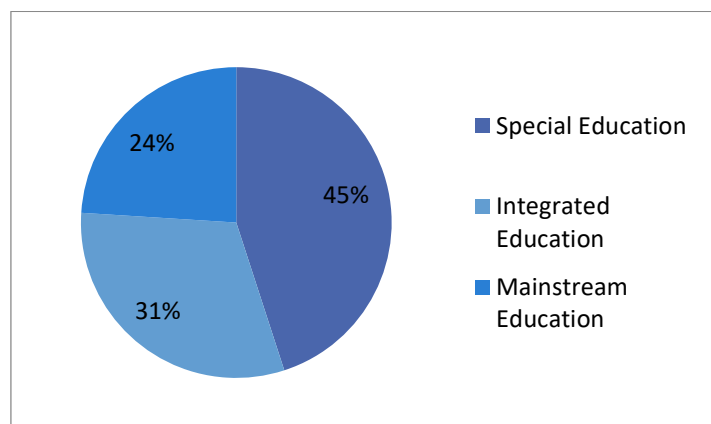


Figure: 78

- 55% people said they use YouTube tutorials for informal/ non formal education and 37% people uses E Learning Platforms.

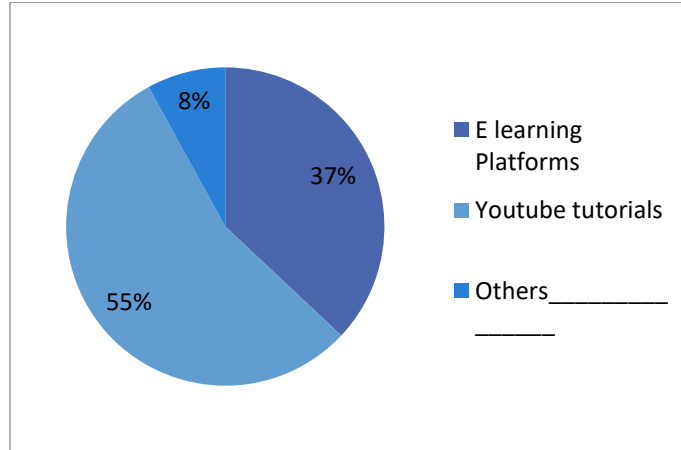


Figure: 79

- When we asked the respondents which of the following e learning platforms do they use? 45% people of the respondents said they use emporia e learning platforms.

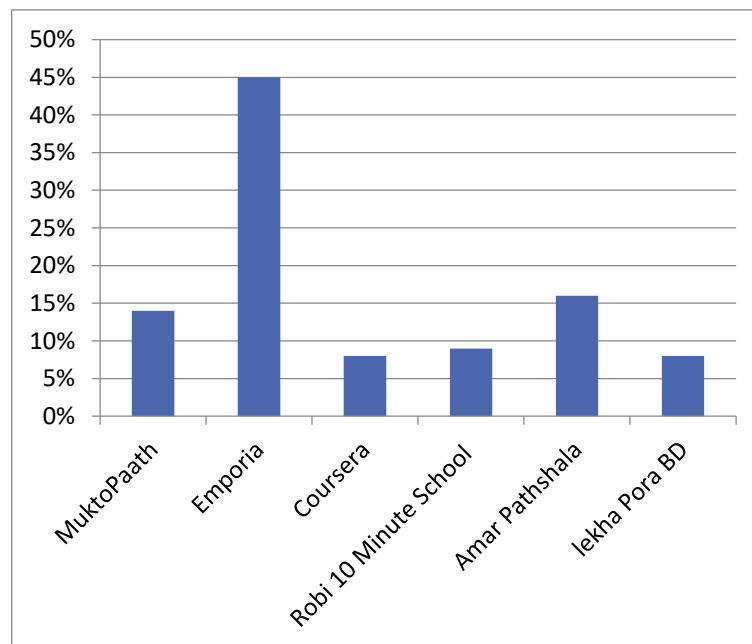


Figure: 80

- 64% of the respondents said that they have used the emporia portal of Bangladesh Computer Council.

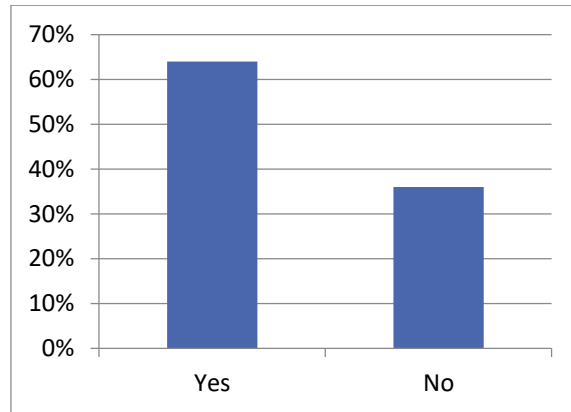


Figure: 81

- When we asked them which of course they learned on emporia. 20% people answered 'Web and mobile application development'. Other 19% said they have done the course 'Basic internet tutorial for visually impaired people' 18% people said they have done 'Screen reader for visually impaired people' where 'Graphics design and multimedia' was selected by the respondents.

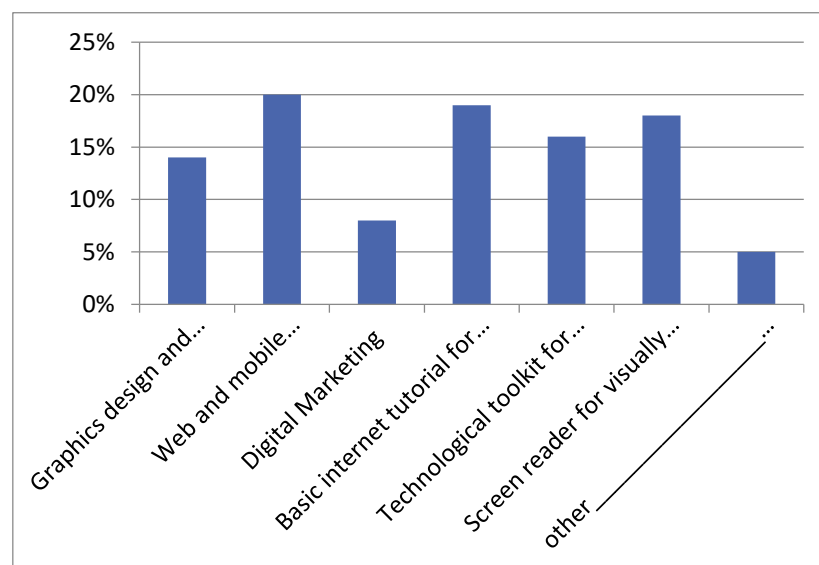


Figure: 82

- Then they were asked If they were satisfied and what made them like the Emporia portal. 27% people answered 'Their labels like primary, intermediate and advanced are highly effective' other 20% respondents said 'They have enough audio video tutorials for sensory impaired persons' then another 19% people described 'The quality and quantity of audio tutorials are extremely good for vision impaired people' 18% said that they liked it because 'They teach vision impaired people MS excel through audio'

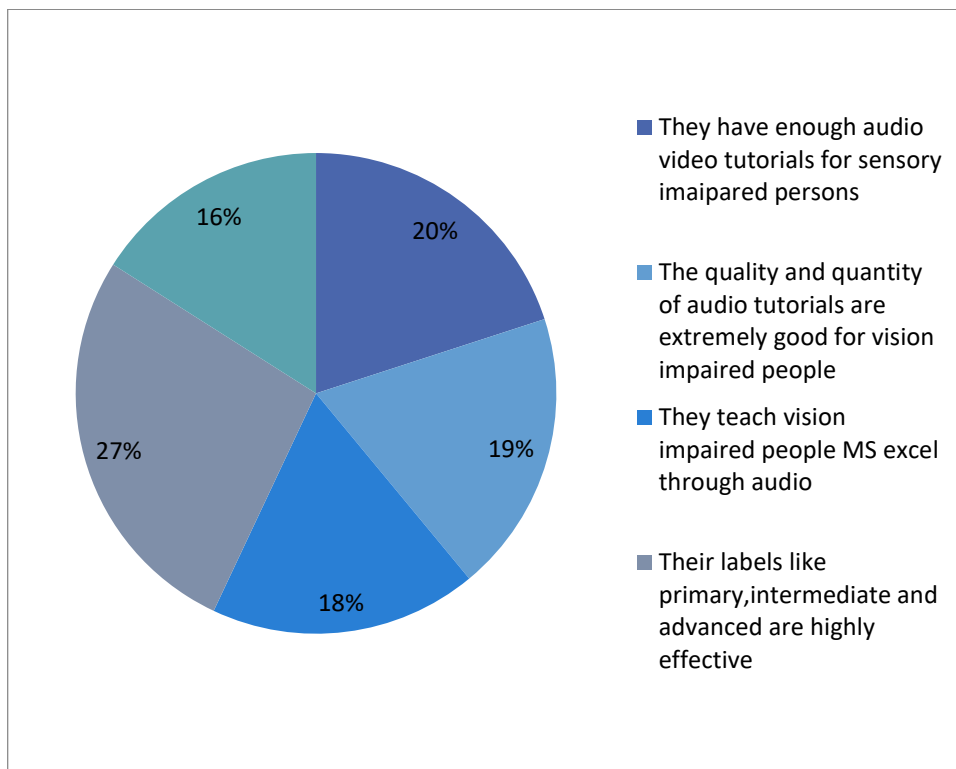


Figure: 83

- 53% of the people think they emporia portal have necessary audio, video tutorials are there in emporia.

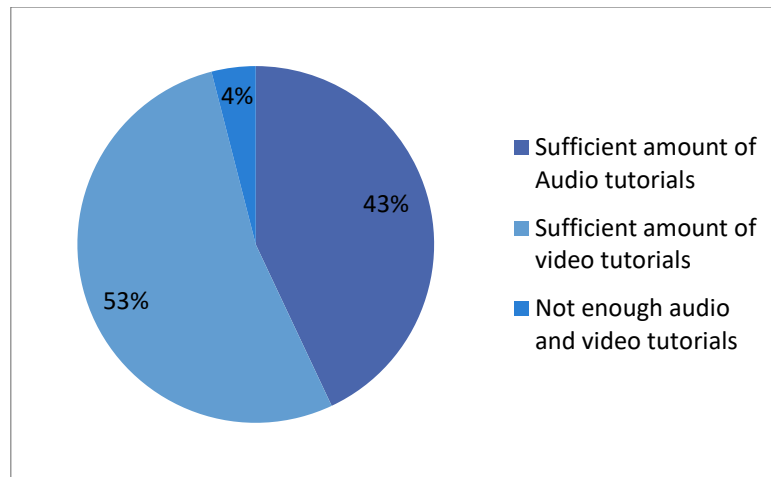


Figure: 84

- 77% people think emporia should include courses which will teach sign language via video tutorials.

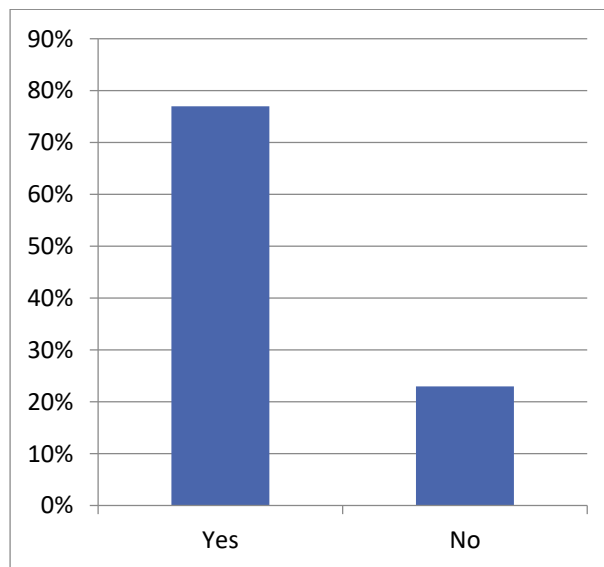


Figure: 85

Need analysis to donate necessary equipment to trained skilled disabled persons in 64 districts in order to prepare them as entrepreneurs.

Respondents: BCC/ Entrepreneurs

- 56% of the respondents know How to operate a computer or desktop, where 44% still cannot operate a computer or desktop.

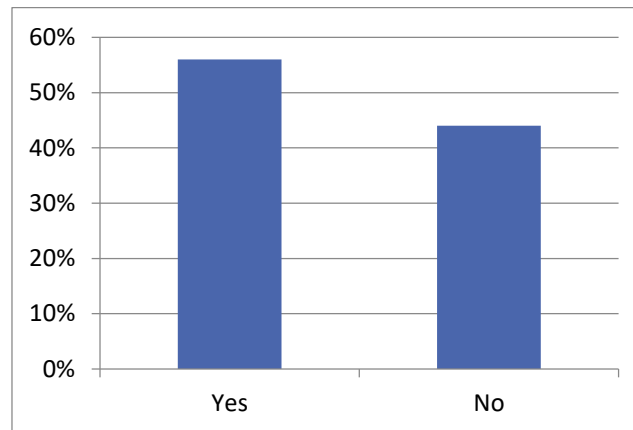


Figure: 86

- And 65% people still Do not have Laptops/Desktops in their current business.

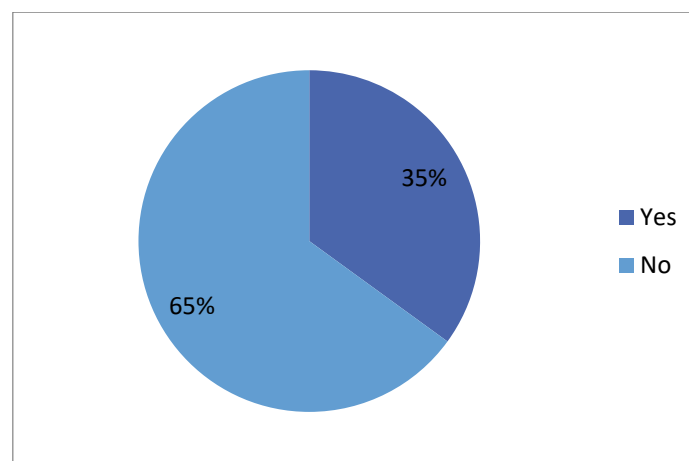


Figure: 87

- Respondents were asked what is the usage of computers in their business, more than 30% people said they use it for Digital Marketing other 25% said Customer Management and sales.

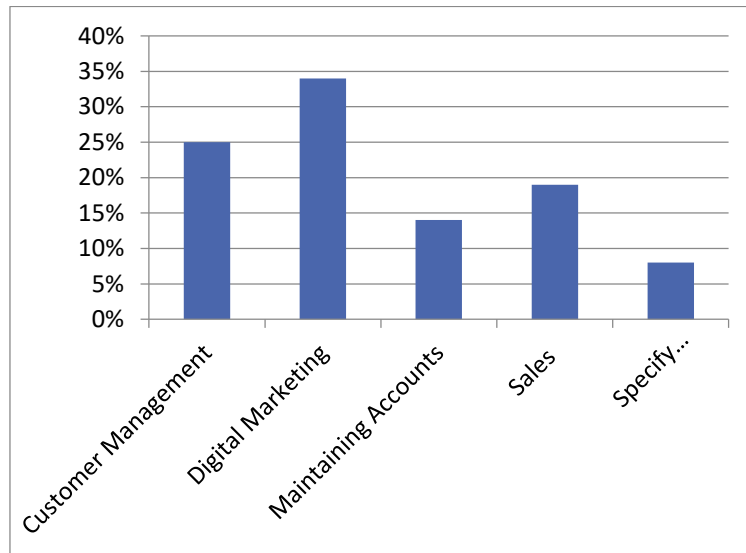


Figure: 88

- 56% respondents said that they face difficulties in operating their business.

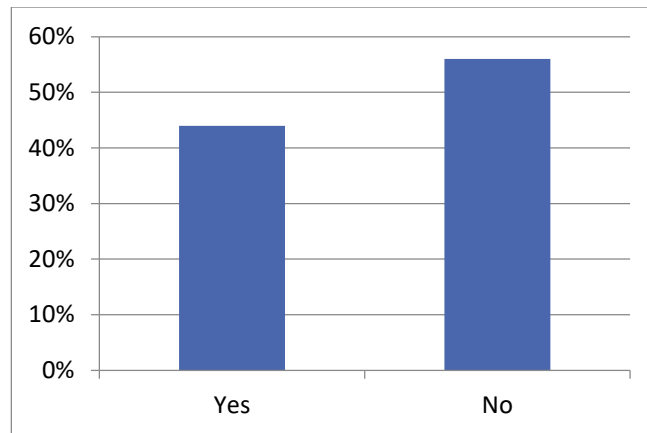


Figure: 89

- Then they were asked ‘what obstacle are you facing in your entrepreneurship?’

In the reply 55% said ‘because of the lack of technological equipments, i do everything manually’ and 35% face accessibility issues, because of their physical limitations

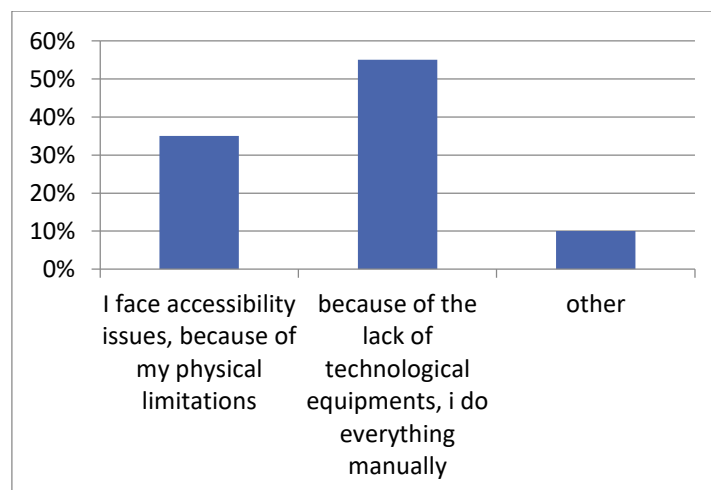


Figure: 90

Identify the requirement of conducting Operation, Maintenance and upgradation of e-Learning platform and Job Portal and Mobile Apps in order to ensure seamless usage and adaptation of persons with disabilities.

Respondent: EPWDICT Project Authorities

- When asked to EPWDICT Project Authorities if they do have existing/in-house resources to change the Data Formats when necessary. 80% people said 'NO' they do not have this facility.

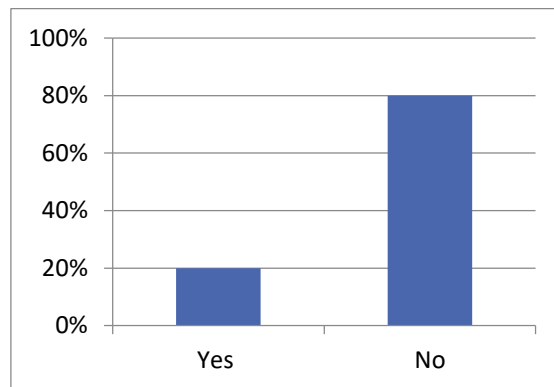


Figure: 91

- 'Do you have existing/in-house resources for Bug Fixes, Defect Resolution, Change Request Handling, Configuration management when necessary?'
In reply to this question 75% people answered they do not have it.

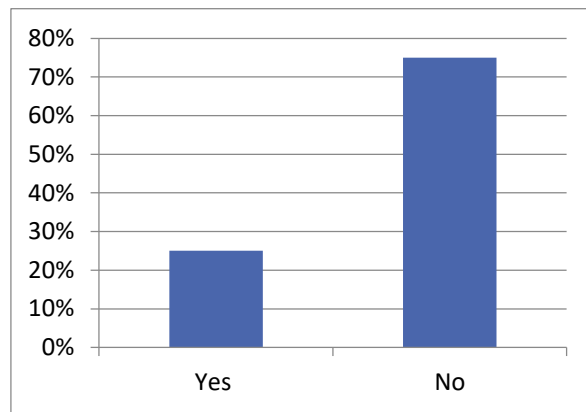


Figure: 92

- 85% people said they do not have existing/in-house resources to solve coding errors.

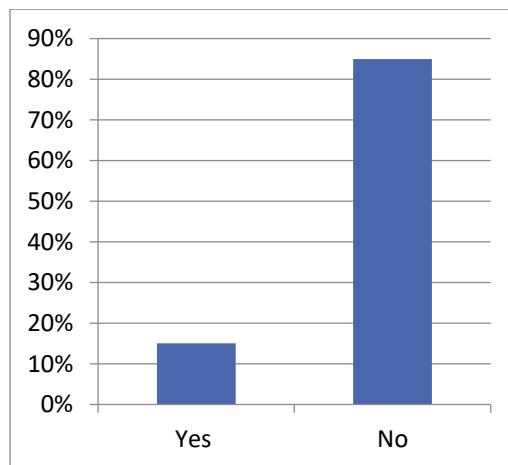


Figure: 93

- 79% people said they do have existing/in-house resources to solve bugs that may arise in Emporia software algorithms.

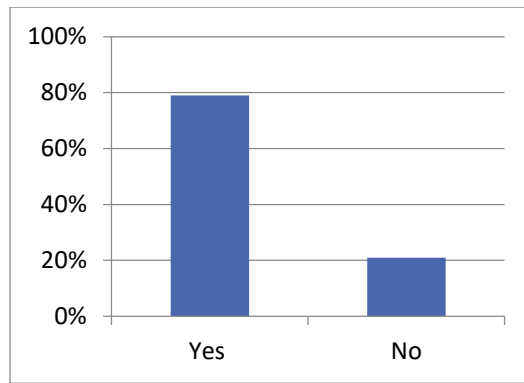


Figure: 94

- When we asked 'Do you have existing/in-house resources to conduct modifications, rectifications, editing, deletions, additions in Emporia Software?' 81% replied in the affirmative said they do have this facility.

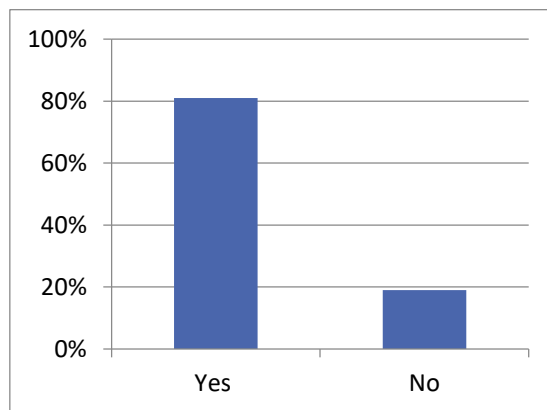


Figure: 95

Recommendation based on the findings:

After clustering the findings and interpreting the result, below recommendations has been provided:

Strengthening of ICT resource center at BCC regional offices

Strengthening the ICT resource centers at BCC by promulgating the importance of disability inclusion, conducting more trainings for officials on the topic of web and infrastructural accessibility is imperative for instilling the ethos of empowering the people with disabilities.

This research reveals that seven (seven) ICT resource centres have been established in regional centres as part of an ongoing project. However, these resource centres have been established within the regional centres' existing space facilities. It has been observed that in the majority of cases, people with disabilities have difficulty accessing these resource centres. Accordingly, after interviewing project officials, the study team learned that incumbents from the Planning Commission and the ICT Division went through various trainings conducted in these centres and observed the difficulties that people with disabilities face when accessing the centres. Taking into account all of the advice and suggestions, the study team developed the following recommendations.

- ◆ If the ICT resource centres are attached to BCC buildings, it is recommended that they be located on the ground floor or that lift facilities be provided if they are not. ICT resource centres can be established in nearby buildings in case they are not adjunct with BCC building facilities;

- ◆ If ICT centres are situated in close proximity of BCC offices, this would elicit credibility and acceptance from the general public;
- ◆ Locating near BCC's offices may have some intrinsic value. For example, BCC officials could be enlisted to firmly and effectively carry out the resource centres' mission. Additionally, this would aid in the establishment of positive working relationships with field-level administration and partner organisations;
- ◆ The inspection revealed that the laboratory equipment, as well as other equipment and furnishings used in the ongoing project, were outdated and in some cases damaged. In that case, new computers, chairs, tables, and other furniture for the ICT Resource Center can be purchased for the project's first four or five years of operation;
- ◆ To provide training to disabled individuals from all across the nation, resource centres could be constructed in Dhaka, Rajshahi, Khulna, Barishan, Sylhet, Chattogram, and Rangpur under the forthcoming project. Along with the aforementioned locations, new resource centres may be established in Gopalganj, Mymensing, and Rangamati. In this case, if the conditions in these Upazillas are favourable, a computer laboratory can be rented locally to meet training demands;

Needs for developing AI and Block chain enabled e-portal for persons with disabilities

A substantial portion of Bangladesh's economy is based on the supply of labour. There is a movement toward meritocracy throughout the world thanks to information technology. Bangladesh has also begun to follow this pattern. As far as popular online job marketplaces are concerned, Bangladesh ranks in the top 10. There is a global appreciation for the work of Bangladeshi freelancers. However, we also have our own online market place to promulgate the thriving freelancer community. This study finds that People with disabilities struggle to have their access needs met when it comes to digital properties. However, people with disabilities can be widely benefited from accessible sites as that solves the problem with mobility at large. Design and develop an e-trading portal for people with disabilities from the low literacy segment so that they can move from brick-and-mortar activities to click and mortar activities. Emporia is an evident success, but the platform is only suitable for the educated segmentation. The advent of this envisioned e-trading portal can elevate the current state of small and medium scale businesses run by people with disabilities and therefore an accessible and cutting-edge e-trading platform is imperative. Artificial Intelligence and Blockchain technology could be leveraged to deplete the digital divide and assure seamless access of people with disabilities. This envisioned platform could also aid in order to derive the outreach of the craft of people with disabilities to local and international buyers. People with disabilities are often deprived from instructional financing because of the absence of credit scores and KYC. This platform may help overcome such barriers and pave the door for alternative finance, as crowd

fundraising and equity crowdfunding have gained substantial support globally. The Emporia platform may contain this envisioned e-trade portal, as the term Emporia complements the stated trading portal's ethos, and given Emporia's vast coverage, end users and stakeholders may benefit. This cutting-edge technology may also assist in breaking down the silos between various entities and establishing a strong connection between cross-domain stakeholders such as government agencies, non-governmental organisations, SME foundations, and banking and non-banking institutions. And eventually, this firm handshake benefits the end users; persons with disabilities.

Issues with distributing Laptop/ Desktop and other devices among person with disabilities

Due to their socioeconomic circumstances, purchasing a laptop computer may be prohibitively expensive for a segment of people with disabilities. Laptops may be offered to learners with disabilities based on their merits. However, it may be granted to persons with disabilities who successfully complete level-1 training as part of the planned project and demonstrate their eligibility to enroll in level-2. To recapitulate, While this device distribution may be deemed discretionary, the risk of improper laptop use (not being used by the specified user or being sold for encashment) must be considered if the recommendation is to be implemented.

Atomization of process-flow of Job Fair, National IT Competition of BCC and suggest areas of improvement by leveraging technology.

At the moment, Bangladesh Computer Council holds a Job Fair and a National IT Competition each year for disabled youth. These activities are growing in popularity, and an increasing number of people with disabilities are joining involved. Numerous job fair operations, including registration, stall allocation, recruitment life cycle management, enrollment, examination, and result of IT competition, can be automated for better and effective management. However, this is imperative that this modular basis solutions to be incorporated under the umbrella of Emporia.

Necessity of producing reading material and books for visually impaired

One of the greatest impediments to visually impaired students pursuing higher education is a dearth of accessible text or books. Under this envisioned project, books from a few selected university classes could be converted to a readable format. In this instance, university professors or professionals in this field may be consulted to assist with the selection of readable media. More in-depth analysis is required to inspect the best suitable media or format for such endeavor. However, Daisy Talking Books, Epub3 could be effective for visually impaired people. Further investigation is necessary to eliminate any conflicts of interest and redundancy with other agencies.

Marketable skills and ICT training for persons with disabilities.

In addition to BCC's resource centres, labs from various universities could be used to conduct ICT foundation courses lasting 20 days and encompassing 60 hours. A course curriculum committee comprised of diverse stakeholders may be formed to finalise the course curriculum and ensure its effectiveness. And it is critical to revise the syllabus on a regular basis in order to keep the courses current and effective.

Each course's syllabus should include at least ten hours of soft skills training. In this context, audio-video courses on soft skills training can be produced and uploaded to an e-learning platform.

Key skills required for persons with disabilities for employment.

After providing basic ICT training to persons with disabilities via the ICT Resource Center, 20 trainees might be identified for job orientation training in the form of a three-month internship (industry attachment) by selecting the industry / employer organization's field of work. Forthcoming project can allocate a monthly budget as an allowance for selected apprentice. This job orientation or apprenticeship program will give persons with disabilities to access to the incubation and employers will also be able to harness their diversity initiatives. In order to implement this recommendations, Memorandum of Understanding could be formed with credible organizations who would be eager to onboard talented individuals with disabilities. A comprehensive service level agreement can be signed between interested organizations and project office.

Necessity CDE, health allied professionals, primary teachers and PTI instructors on the domain of disability

This training can be continued in the subsequent project. It has been learned that while the current project makes use of the video conferencing system established by the Department of Health via the Upazila Health Complex's telemedicine centre, various administrative and technical difficulties were encountered while conducting trainings using DG health facilities. Thus, training can be delivered in two ways in the new project: directly through BCC's video conferencing system or through an ICT resource centre. The end result will be to raise awareness of disabilities among individuals from all walks of life. Aim would be to ensure the empowerment and therefore employment of persons with disabilities including NDDs and to include them in the workforce it's imperative to systematically preparing them from early childhood with interventions that will help them overcome much of the burdens imposed by their disability and by ensuring that they receive educational and skill building opportunities.

Need of providing financial and technical assistance as an incentive to NGOs and other organization related to disability activities.

The government has been completely working with disability activities and implementing various initiatives in accordance with the Rights and Protection of Persons with Disabilities Act, 2013. Apart from the government, numerous NGOs and non-governmental organisations are working to enhance the living standards of persons with disabilities in the country through a variety of developmental initiatives other than education and employment. Registered non-governmental organisations (NGOs) engaged in all of these disability-related activities may be considered for

financial and technical (training) incentives under the new project to encourage them to advance the rights of persons with disabilities and instill an ethos of inclusion.

Job opportunities for Persons with disabilities to provide job placement assistance.

Since 2009, the Government of Bangladesh has been working relentlessly to implement Vision 2021: Digital Bangladesh. As a result, computer and digital technology are now widely used across the country's socioeconomic sectors. It is worth noting that, as a result of the government's favorable policies and actions, digital technology is being extensively employed to improve the living conditions of the economically disadvantaged segments of society, including those with disabilities. Since 2015, the Bangladesh Computer Council (BCC) has been hosting job fairs to promote employment of talented persons with disabilities. Along with job fairs, it has been implementing efforts to assist persons with disabilities in obtaining jobs at the local level through ongoing projects across the country over the last three fiscal years. Under the proposed concept, job fairs for disabled individuals might be held annually at seven regional levels in collaboration with the BCC and non-governmental organisations.

Need of arranging Seminar/Workshop/Awareness campaign

Around the world, there are some unfavorable attitudes and ambivalence toward disability that impede the overall development of people with disabilities. Seminars/workshops can be held at regional offices, including the head office in Dhaka, and educational institutions as part of a comprehensive public relations effort for the project for disabled people. As a result, the proposed project will educate people with disabilities about the government's actions and provide them with numerous opportunities, as well as foster a favorable attitude toward people with disabilities among people from all walks of life and professions.

Importance of continuing and retaining the existing human Resource (IT Instructors, Placement officers etc)

- Two officers are currently assigned to the ICT Resource Center established throughout BCC's seven regional offices as part of the continuing initiative. One is an Instructor (IT), while the other is a Cumulative Placement Officer for the NDD. There are a total of 15 officers working to accomplish the objective of the stated project. Everyone appears to be empathetic toward those with impairments, and training appears to be conducted effectively. This is reflected in the trainee course evaluation at the conclusion of the training.
- Each officer has been provided 60 hours of master trainer training immediately after joining the project

- Motivation sessions were conducted by experienced instructors to ensure that the newly onboarded project officials are aware and empathetic towards persons with disabilities.
- Many officials have obtained expertise providing inclusive learning and disability orientation training as a result of the soft skills training provided by project office.
- Each officer has received basic sign language training under the project initiatives and has demonstrated proficiency in the subject.
- It is hoped that this will be extremely beneficial in achieving the new project's goals and objectives if the existing officers are retained and assigned to the project from the start. Which, in the case of new officers, may cause a delay in achieving the desired objectives. Additionally, money has been invested in ongoing efforts to develop this qualified workforce, therefore it is critical that the investment is protected.

Conduct random accessibility audits of government agencies' websites and make recommendations for web accessibility training for government and industry ICT professionals.

Governments and policymakers in various countries have already enacted national accessibility guidelines. Bangladesh's government (ICT professionals) and software development community are unfamiliar with the Web Accessibility Guideline. As a result, individuals with disabilities are sometimes overlooked while developing digital properties. This restricts disabled individuals' access to a wealth of information and deprives them of numerous online services. This clearly constitutes a violation of human rights. Additionally, as the findings of the study reveal, software developers

should be familiar with in web accessibility in order to provide services to international clients, where violations of web accessibility are not tolerated. Hence, Guidelines for web accessibility should be established, and as a pilot scheme, the websites of the Government Public Administration, the Cabinet, and the Prime Minister's Office should be made accessible to spearhead the process of continual improvement.

Other bordering recommendations:

(a) **Content Development:** After analyzing the impact of the contents developed and hosted in Emporia, the study outlined the below recommendations:

- At least 100 audio-video tutorials could be developed to assist people with disabilities to develop and enhance their entrepreneurial skills;
- Using the International Labor Organization's guidelines, at least 50 soft-skill training tutorials can be produced to promote the employment participation of persons with disabilities;
- It is imperative to develop comprehensive tutorials (at least containing 150 contents) on Web Accessibility so that incumbents from government and ICT industry can be equipped to meet the access need while developing digital properties.
- Adding a new course on freelancing could result in the creation of 50 audio-video tutorials on the subject;

(b) Four years operation, maintenance of existing software of the project

The investigation concludes that Emporia's preservation and promotion are vital. Due to the fact that this one-of-a-kind piece of software which is hosted in BCC's data centre. However, once an e-learning platform and employment portal are

active, a variety of technical support services will be required to assure daily operation. Various requirements include, but are not limited to, software updates, modifications, and enhancements, server configuration, database maintenance, security and user access, and software patch installation. These requirements are crucial for the continued operation of any software. As a result, the project office will require assistance and guidance from an expert firm in order to advance the maintenance and operation.

(c) Development of Assistive Tools and Technologies

Given the present landscape of accessible tools and adaptable devices, the study recommends that under the scope of the forthcoming project, assistive devices and technologies can be developed for four distinct groups of disabled individuals (Physical, Visual, Hearing and Speech & NDD). Innovative ideas can be gathered by holding campaigns / workshops in many educational institutions throughout the country to assist those with disabilities in selecting effective Assistive Devices and Technologies. Following that, a total of 20 Assistive Tools and Technologies for each type of disabled individuals can be developed by finalising the concepts through an expert pair board. Companies in the information technology sector, university faculty, and students can all contribute to the progress. Direct funds may be made if a Master's level student's research is selected on the basis of merit.

(d) ICT Competition in divisional level

Each year, national IT competitions are held to generate interest in information technology, to enhance practise, and to develop the competence of persons with disabilities, and the best contenders in several categories are recognised. The top

four contestants are chosen among the winning contestants, and arrangements are made for them to compete in international competitions at the expense of the government. Additionally, the ICT Division provides laptops as an incentive for those who excel in these national and international events. BCC in conjunction with EPWDICT has organized this initiatives for the last three fiscal years. This study suggests that while BCC should continue to host Dhaka-centric events, IT competitions might be conducted under the new project at divisional level.

(e) Aid in Foreign tours

Youth with disabilities are participating in the GITC tournament under the supervision of BCC. The new project may include funding for parents who are unable to pay the costs associated with accompanying their disabled offspring to foreign events.

Annex 1: Accessibility Assessment Cabinet Division, Finance Division, PMO, ICT Division Website

1. Purpose of the document

This document evaluates some of the government websites for accessibility against Web content accessibility guidelines 2.1 AA. This document also presents the methodologies and approaches that will be needed to meet the desired accessibility conformance.

2. Accessibility Assessment of the Websites

2.1 Applicable standards/guidelines

This report covers the degree of conformance for the following accessibility standards/guidelines:

- [Web Content Accessibility Guidelines \(WCAG\) 2.1](#) - Level A and Level AA, but not Level AAA.

2.2 Evaluation methods

The following applications have been used to evaluate the websites:

- Desktop browsers: Firefox, Chrome.
- Assistive technologies: JAWS, NVDA.
- Accessibility testing tools: Browser developer tools.

We used both automated and manual approaches while evaluating the websites.

2.3 Terminology

The terms used in the evaluation information are defined as follows:

- **Supports:** The functionality of the product meets the criterion without known defects or meets with equivalent facilitation.
- **Partially supports:** Some functionality of the product does not meet the criterion.
- **Does not support:** The majority of product functionality does not meet the criterion.
- **Not applicable:** The criterion is not relevant to the product. The feature does not exist on the pages or website.
- **Not evaluated:** The product has not been evaluated against the criterion. This can only be used in WCAG 2.1 Level AAA.

2.4 WCAG Conformance Requirements

1. Conformance Level
2. Full pages
3. Complete processes
4. Only Accessibility-Supported Ways of Using Technologies
5. Non-Interference

Link: [WCAG 2.1 Conformance Requirements](#)

2.5 Cabinet Website Accessibility Assessment

2.5.1 Website Details

Name of Website: Cabinet Division Website

Website Description: The cabinet.gov.bd is a web portal for the Cabinet Division of Government of the People's Republic of Bangladesh. As a one stop online portal, this web portal of the Bangladesh government has been launched to provide updated information about government services. This is one of the most e-Governance initiatives aimed at integrating all government websites and their information into a single web portal.

2.5.2 Scope of the Cabinet Division Website Assessment

This is an accessibility assessment of the Cabinet Division website. The pages viewed are the Cabinet Division website homepage (<https://cabinet.gov.bd/>) as it is the main point of entry to the site, plus another important page chosen to be representative. In total, the following important web pages have been assessed from the cabinet.gov.bd website as representative for WCAG 2.1 AA conformance level:

1. <https://cabinet.gov.bd/> (Cabinet Division Website homepage)
2. <https://cabinet.gov.bd/site/page/c3a1d735-abd6-4655-89ff-9e506d7537d7/মাননীয়-মন্ত্রীগণ> (Cabinet Division Website Ministers page)

The assessment is performed in August, 2021.

2.5.3 Accessibility Overview of Cabinet Division Website

Cabinet Division website lacks many important features to meet WCAG 2.1 AA conformance level and is not accessible to a large number of persons of disabilities users. Some of the important features that are missing in the website are:

- Keyboard navigation is poor. Visually impaired users or Physically disabled users who solely rely on the keyboard while using a website will not be able to navigate fully with the keyboard.
- Where animation is present, there is no stop/pause button. Those who have problems in reading and can not read faster will not be able to read the paragraph / sentence and may feel disturbed with it.
- Color contrast is not good and is not in proper ratio. Those who are color blind or have visual problems will face difficulties in distinguishing colors and will not see clearly important text or features in the page.
- Page markup / structure is not appropriate.
- Image alt attribute missing in many places.

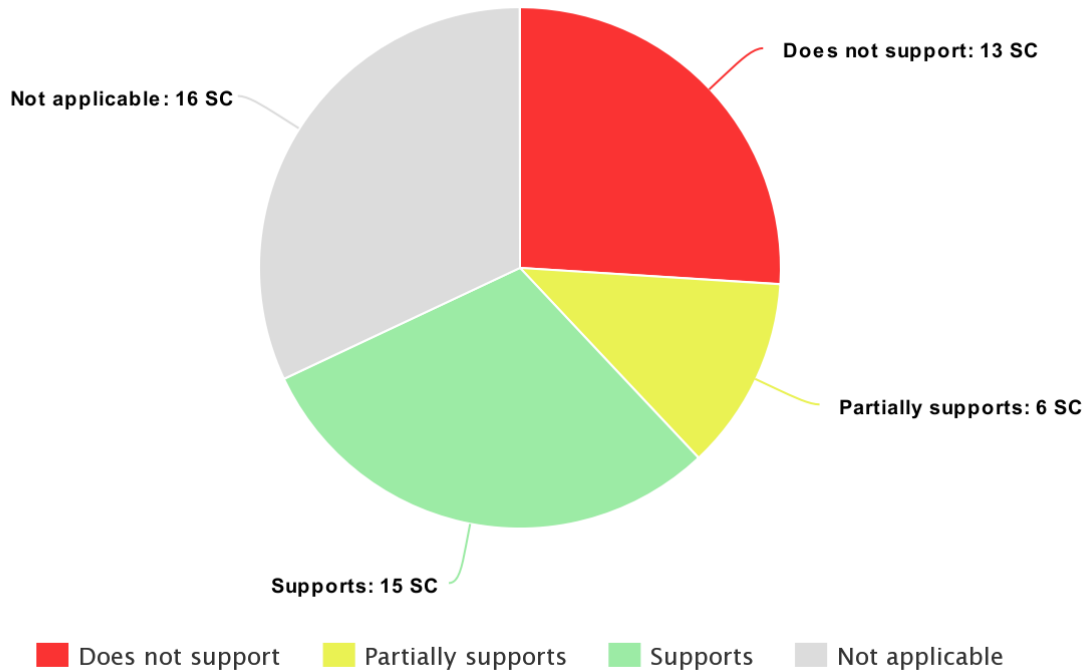
Under the A and AA conformance level, there are a total 50 success criterias (points).

For the **Cabinet Division Website Homepage**, the following details have been found. Total A and AA conformance level success criteria(sc) = 50

Cabinet Division Website homepage -

- Does not support = 13 out of 50 success criteria
- Partially supports = 6 out of 50 success criteria
- Supports = 15 out of 50 success criteria
- Not applicable = 16 out of 50 success criteria

Cabinet Division Homepage Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

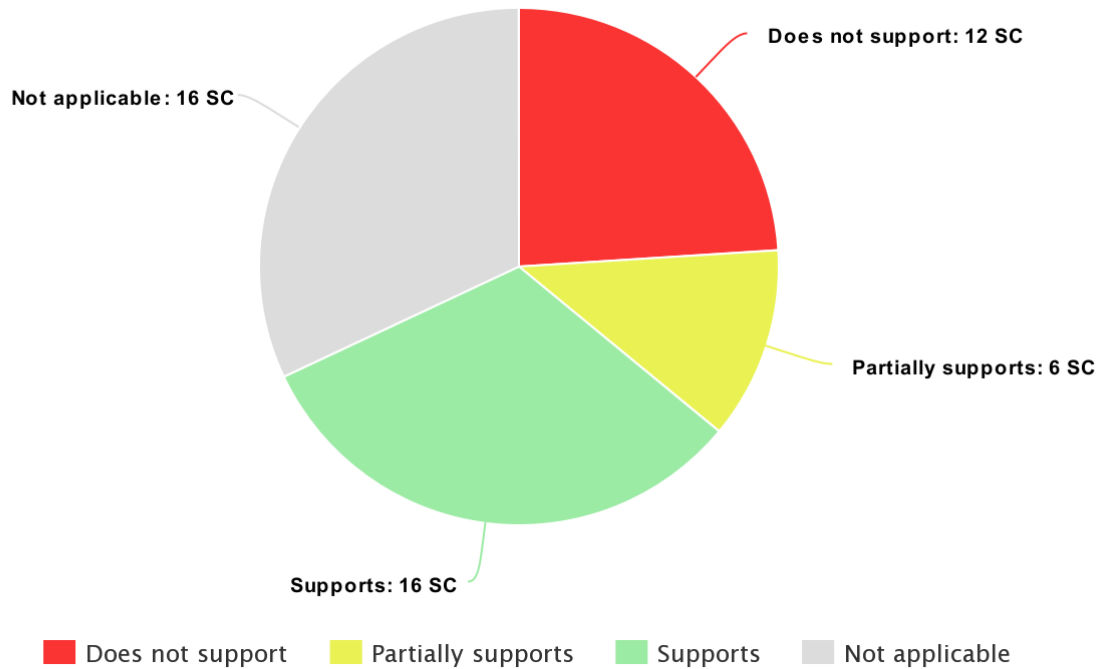
For the **Cabinet Division Website Ministers page**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

Cabinet Division Website Key Personnel page -

- Does not support = 12 out of 50 success criteria
- Partially supports = 6 out of 50 success criteria
- Supports = 16 out of 50 success criteria
- Not applicable = 16 out of 50 success criteria

Cabinet Division Minsters Page Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

The details of the accessibility assessment can be found as annexure.

2.5.4 How to make Accessible the Cabinet Division Website

See the following points:

1. To meet the WCAG 2.1 AA conformance level of the current scope/pages, all the issues mentioned in the annexure need to be resolved. Sometimes new issues evolve when fixing the current issues. Further accessibility assessment should be made after the current issues have been resolved and new issues should be reported if found any. This is an iterative process until all the issues have been solved.
2. After the iterative process and all the issues have been resolved, a close group UAT should be conducted with the persons with disabilities. If users report any issues, those should be identified in a constructive manner and solved accordingly.
3. This document only identifies accessibility issues on a few pages of the Cabinet Division website. Assessments should be made on the other pages of the Cabinet Division website and point 1 and 2 should be followed to make the entire Cabinet Division website accessible.

2.6 Finance Division Website Accessibility Assessment

2.6.1 Website Details

Name of Website: Finance Division (MOF)

Website Description: The mof.gov.bd is a web portal for the Ministry of Finance of Government of the People's Republic of Bangladesh. As a one stop online portal, this

web portal of the Bangladesh government has been launched to provide updated information about the finance division of government services.

2.6.2 Scope of the Finance Division Website Assessment

This is an accessibility assessment of the Finance Division website. The pages viewed are the Finance Division website homepage (<https://mof.gov.bd/>) as it is the main point of entry to the site, plus another important page chosen to be representative. In total, the following important web pages have been assessed from the Finance division website as representative for WCAG 2.1 AA conformance level:

1. <https://mof.gov.bd/> (Finance Division Website homepage)
2. https://mof.gov.bd/site/view/officer_list_category/সি.%20সচিব%20ও%20অনুবিভাগ%20প্রধান (Finance Division Officers List page)

The assessment is performed in August, 2021.

2.6.3 Accessibility Overview of the Finance Division Website

The Finance Division website lacks many important features to meet WCAG 2.1 AA conformance level and is not accessible to a large number of persons of disabilities users. Some of the important features that are missing in the website are:

- Keyboard navigation is poor. Visually impaired users or Physically disabled users who solely rely on the keyboard while using a website will not be able to navigate fully with the keyboard.
- Where animation is present, there is no stop/pause button. Those who have problems in reading and can not read faster will not be able to read the paragraph / sentence and may feel disturbed with it.
- Color contrast is not good and is not in proper ratio. Those who are color blind or have visual problems will face difficulties in distinguishing colors and will not see clearly important text or features in the page.
- Page markup / structure is not appropriate.
- Image alt attribute missing in many places.

Under the A and AA conformance level, there are a total 50 success criterias (points).

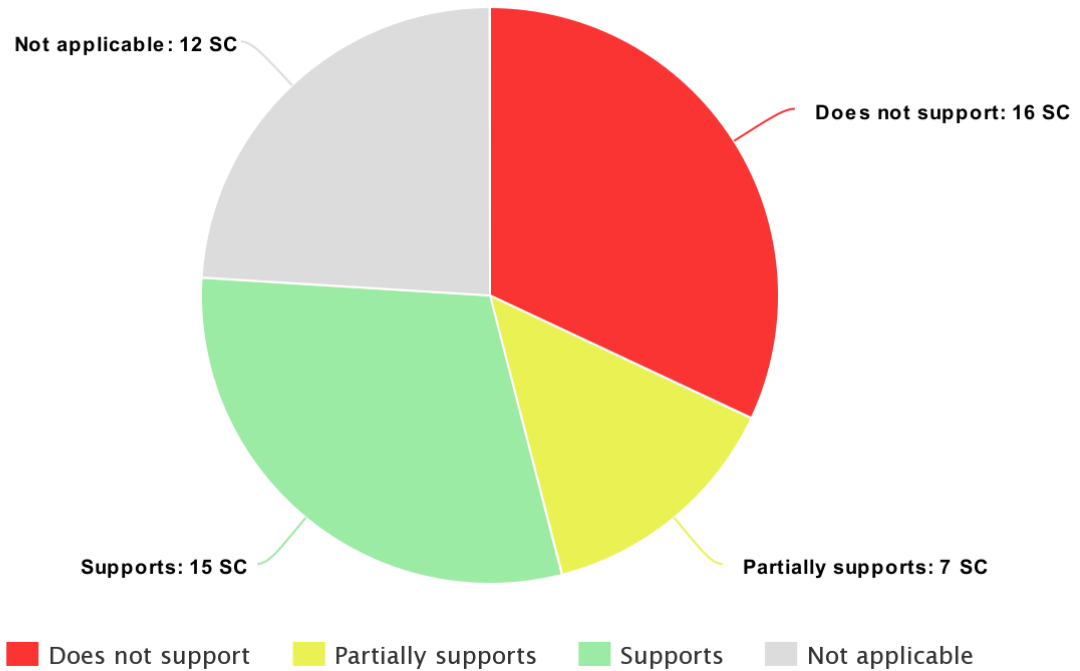
For the **Finance Division Website Homepage**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

Finance Division Website homepage -

- Does not support = 16 out of 50 success criteria
- Partially supports = 7 out of 50 success criteria
- Supports = 15 out of 50 success criteria
- Not applicable = 12 out of 50 success criteria

Finance Division Homepage Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

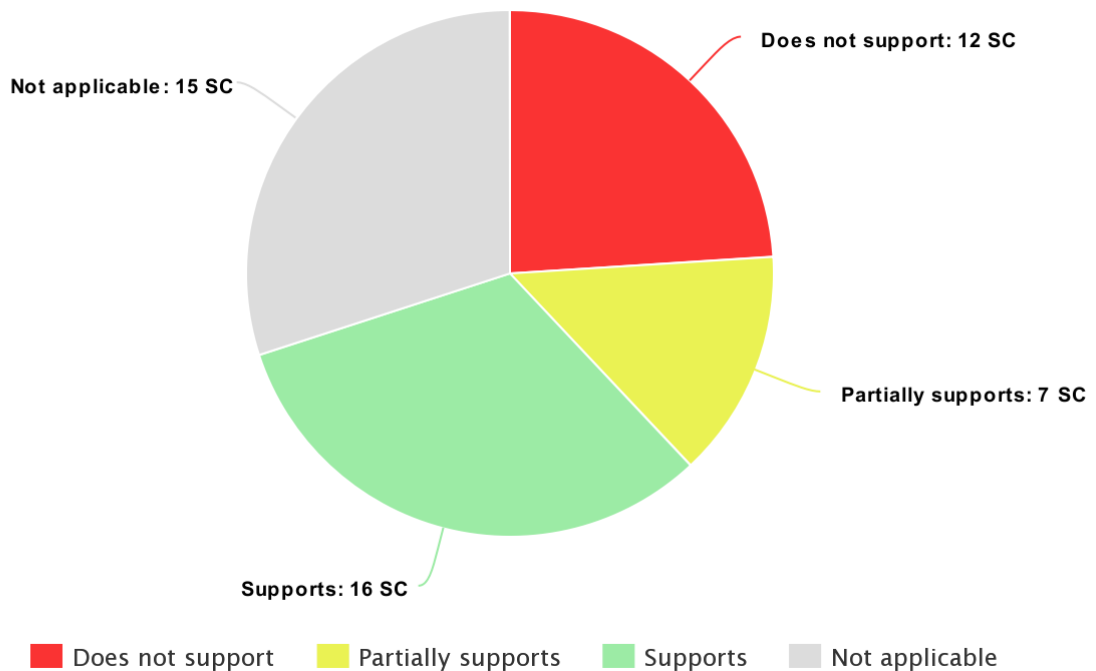
For the **Finance Division Website Officers List page**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

Finance Division Website Officers List page -

- Does not support = 12 out of 50 success criteria
- Partially supports = 7 out of 50 success criteria
- Supports = 16 out of 50 success criteria
- Not applicable = 15 out of 50 success criteria

Finance Division Officers List Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

The details of the accessibility assessment can be found as annexure.

2.6.4 How to make Accessible the Finance Division Website

See the following points:

1. To meet the WCAG 2.1 AA conformance level of the current scope/pages, all the issues mentioned in the annexure need to be resolved. Sometimes new issues evolve when fixing the current issues. Further accessibility assessment should be made after the current issues have been resolved and new issues should be reported if found any. This is an iterative process until all the issues have been solved.
2. After the iterative process and all the issues have been resolved, a close group UAT should be conducted with the persons with disabilities. If users report any issues, those should be identified in a constructive manner and solved accordingly.
3. This document only identifies accessibility issues on a few pages of the Finance Division website. Assessments should be made on the other pages of the Finance Division website and point 1 and 2 should be followed to make the entire Finance Division website accessible.

2.7 PMO Website Accessibility Assessment

2.7.1 Website Details

Name of Website: PMO

Website Description: The pmo.gov.bd is a web portal for the Prime Minister Office of Government of the People's Republic of Bangladesh. As a one stop online portal, this

web portal of the Bangladesh government has been launched to provide updated information about government services.

2.7.2 Scope of the PMO Website Assessment

This is an accessibility assessment of the PMO website. The pages viewed are the PMO website homepage (<https://pmo.gov.bd/>) as it is the main point of entry to the site, plus another important page chosen to be representative. In total, the following important web pages have been assessed from the PMO website as representative for WCAG 2.1 AA conformance level:

1. <https://pmo.gov.bd/> (PMO Website homepage)
2. https://pmo.gov.bd/site/view/pmo_officer_list সাচিবিক অনুবিভাগ/কর্মকর্তাগণের তালিকা (PMO Website Officers List page)

The assessment is performed in August, 2021.

2.7.3 Accessibility Overview of the PMO Website

The PMO website lacks many important features to meet WCAG 2.1 AA conformance level and is not accessible to a large number of persons of disabilities users. Some of the important features that are missing in the website are:

- Keyboard navigation is poor. Visually impaired users or Physically disabled users who solely rely on the keyboard while using a website will not be able to navigate fully with the keyboard.
- Where animation is present, there is no stop/pause button. Those who have problems in reading and can not read faster will not be able to read the paragraph / sentence and may feel disturbed with it.
- Color contrast is not good and is not in proper ratio. Those who are color blind or have visual problems will face difficulties in distinguishing colors and will not see clearly important text or features in the page.
- Page markup / structure is not appropriate.
- Image alt attribute missing in many places.

Under the A and AA conformance level, there are a total 50 success criterias (points).

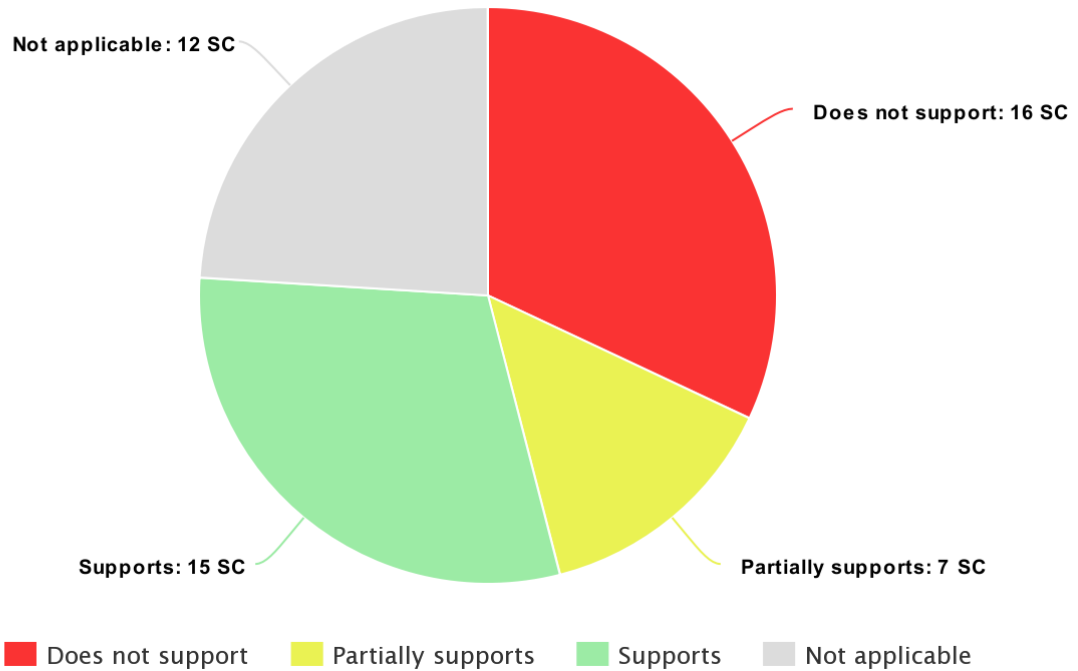
For the **PMO Website Homepage**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

PMO Website homepage -

- Does not support = 16 out of 50 success criteria
- Partially supports = 7 out of 50 success criteria
- Supports = 15 out of 50 success criteria
- Not applicable = 12 out of 50 success criteria

PMO Website Homepage Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

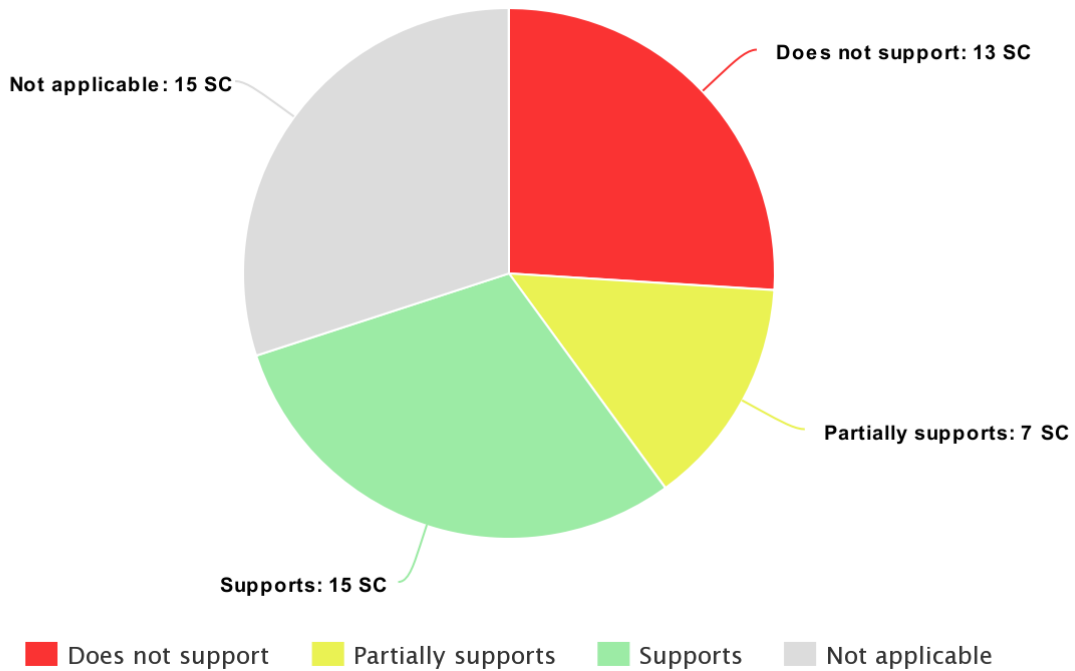
For the **PMO Website Officers List page**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

PMO Website Officers List page -

- Does not support = 13 out of 50 success criteria
- Partially supports = 7 out of 50 success criteria
- Supports = 15 out of 50 success criteria
- Not applicable = 15 out of 50 success criteria

PMO Website Officers List Page Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

The details of the accessibility assessment can be found as annexure.

2.7.4 How to make Accessible the PMO Website

See the following points:

1. To meet the WCAG 2.1 AA conformance level of the current scope/pages, all the issues mentioned in the annexure need to be resolved. Sometimes new issues evolve when fixing the current issues. Further accessibility assessment should be made after the current issues have been resolved and new issues should be reported if found any. This is an iterative process until all the issues have been solved.
2. After the iterative process and all the issues have been resolved, a close group UAT should be conducted with the persons with disabilities. If users report any issues, those should be identified in a constructive manner and solved accordingly.
3. This document only identifies accessibility issues on a few pages of the PMO website. Assessments should be made on the other pages of the PMO website and point 1 and 2 should be followed to make the entire PMO website accessible.

2.8 ICT Division Website Accessibility Assessment

2.8.1 Website Details

Name of Website: ICT Division

Website Description: The ictd.gov.bd is a web portal for the ICT Division Office of Government of the People's Republic of Bangladesh. As a one stop online portal, this

web portal of the Bangladesh government has been launched to provide updated information about ICT related services.

2.8.2 Scope of the ICT Division Website Assessment

This is an accessibility assessment of the ICT Division website. The pages viewed are the ICT Division website homepage (<https://ictd.gov.bd/>) as it is the main point of entry to the site, plus another important page chosen to be representative. In total, the following important web pages have been assessed from the ICT Division website as representative for WCAG 2.1 AA conformance level:

1. <https://ictd.gov.bd/> (ICT Division Website Homepage)
2. https://ictd.gov.bd/site/view/officer_list_category/কর্মকর্তাবৃন্দ (ICT Division Website Officers List page)

The assessment is performed in August, 2021.

2.8.3 Accessibility Overview of the ICT Division Website

The ICT Division website lacks many important features to meet WCAG 2.1 AA conformance level and is not accessible to a large number of persons of disabilities users. Some of the important features that are missing in the website are:

- Keyboard navigation is poor. Visually impaired users or Physically disabled users who solely rely on the keyboard while using a website will not be able to navigate fully with the keyboard.
- Where animation is present, there is no stop/pause button. Those who have problems in reading and can not read faster will not be able to read the paragraph / sentence and may feel disturbed with it.
- Color contrast is not good and is not in proper ratio. Those who are color blind or have visual problems will face difficulties in distinguishing colors and will not see clearly important text or features in the page.
- Page markup / structure is not appropriate.
- Image alt attribute missing in many places.

Under the A and AA conformance level, there are a total 50 success criterias (points).

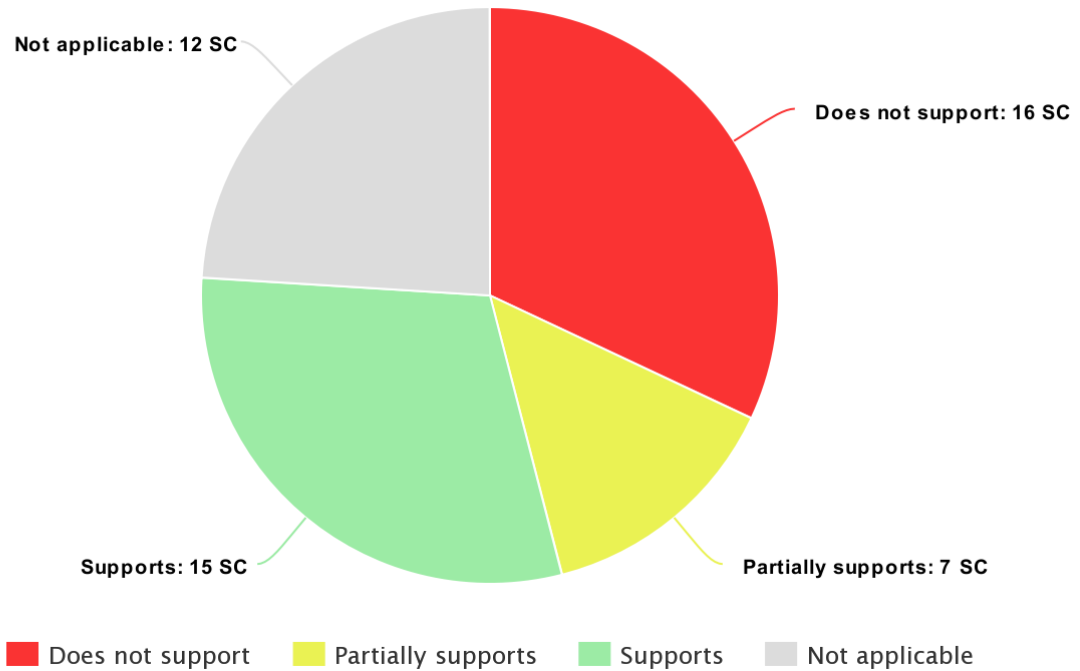
For the **ICT Division Website Homepage**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

ICT Division Website homepage -

- Does not support = 16 out of 50 success criteria
- Partially supports = 7 out of 50 success criteria
- Supports = 15 out of 50 success criteria
- Not applicable = 12 out of 50 success criteria

ICT Division Website Homepage Success Criteria(SC) WCAG 2.1 AA



meta-chart.com

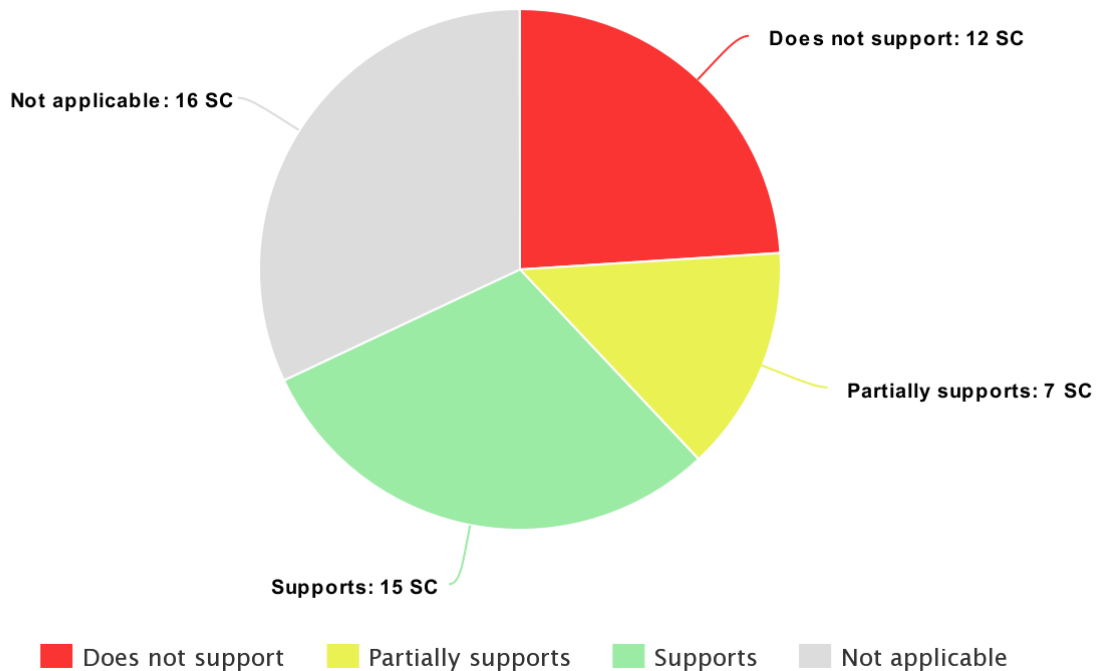
For the **ICT Division Website Officers List page**, the following details have been found.

Total A and AA conformance level success criteria(sc) = 50

ICT Division Website Officers List page -

- Does not support = 12 out of 50 success criteria
- Partially supports = 7 out of 50 success criteria
- Supports = 15 out of 50 success criteria
- Not applicable = 16 out of 50 success criteria

ICT Division Website Officers List Success Criteria(SC) WCAG 2.1 AA



The details of the accessibility assessment can be found as annexure.

2.8.4 How to make Accessible the ICT Division Website

See the following points:

1. To meet the WCAG 2.1 AA conformance level of the current scope/pages, all the issues mentioned in the annexure need to be resolved. Sometimes new issues evolve when fixing the current issues. Further accessibility assessment should be made after the current issues have been resolved and new issues should be reported if found any. This is an iterative process until all the issues have been solved.
2. After the iterative process and all the issues have been resolved, a close group UAT should be conducted with the persons with disabilities. If users report any issues, those should be identified in a constructive manner and solved accordingly.
3. This document only identifies accessibility issues on a few pages of the ICT Division website. Assessments should be made on the other pages of the ICT Division website and point 1 and 2 should be followed to make the entire ICT Division website accessible.

3. Methodologies and Approaches for the Accessibility Conformance

3.1 Web Accessibility

The Web is fundamentally designed to work for all people, whatever their hardware, software, language, location, or ability. When the Web meets this goal, it is accessible to people with a diverse range of hearing, movement, sight, and cognitive ability.

Thus the impact of disability is radically changed on the Web because the Web removes barriers to communication and interaction that many people face in the physical world. However, when websites, applications, technologies, or tools are badly designed, they can create barriers that exclude people from using the Web.

Web accessibility means that websites, tools, and technologies are designed and developed so that people with disabilities can use them. More specifically, people can:

- perceive, understand, navigate, and interact with the Web
- contribute to the Web

Web accessibility encompasses all disabilities that affect access to the Web, including:

- Visually Impaired
- Physical Disability
- Hearing and Speech Disability
- Neuro Developmental Disorder Disability (NDD)

Web accessibility also benefits people without disabilities, for example:

- people using mobile phones, smart watches, smart TVs, and other devices with small screens, different input modes, etc.
- older people with changing abilities due to ageing
- people with “temporary disabilities” such as a broken arm or lost glasses
- people with “situational limitations” such as in bright sunlight or in an environment where they cannot listen to audio
- people using a slow Internet connection, or who have limited or expensive bandwidth

3.2 Components of Web Accessibility

Several different components of web development and interaction work together in order for the web to be accessible to people with disabilities. These components include:

- content - the information in a web page or web application, including:
 - natural information such as text, images, and sounds
 - code or markup that defines structure, presentation, etc.
 - web browsers, media players, and other “user agents”
 - assistive technology, in some cases - screen readers, alternative keyboards, switches, scanning software, etc.
- users’ knowledge, experiences, and in some cases, adaptive strategies using the web
- developers - designers, coders, authors, etc., including developers with disabilities and users who contribute content
- authoring tools - software that creates websites
- evaluation tools - web accessibility evaluation tools, HTML validators, CSS validators, etc.

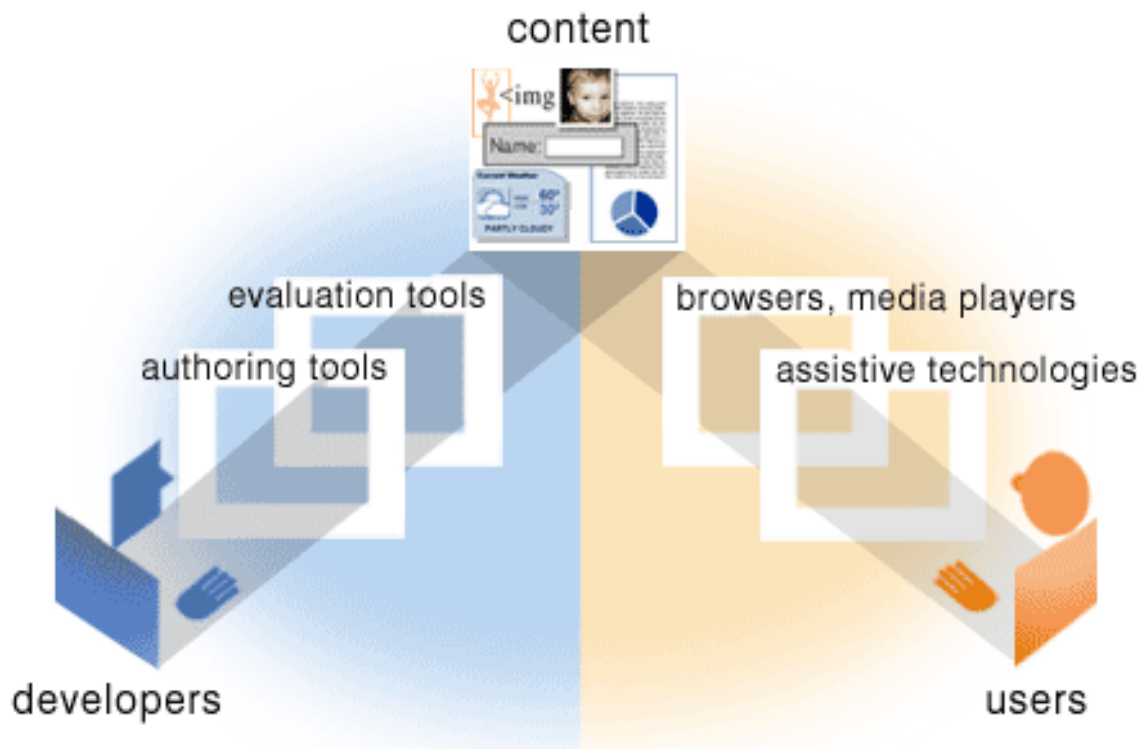


Fig: Components Relation

Web developers usually use authoring tools and evaluation tools to create web content.

People ("users") use web browsers, media players, assistive technologies, or other "user agents" to get and interact with the content.

There are significant interdependencies between the components; that is, the components must work together in order for the web to be accessible. For example, for alternative text on images:

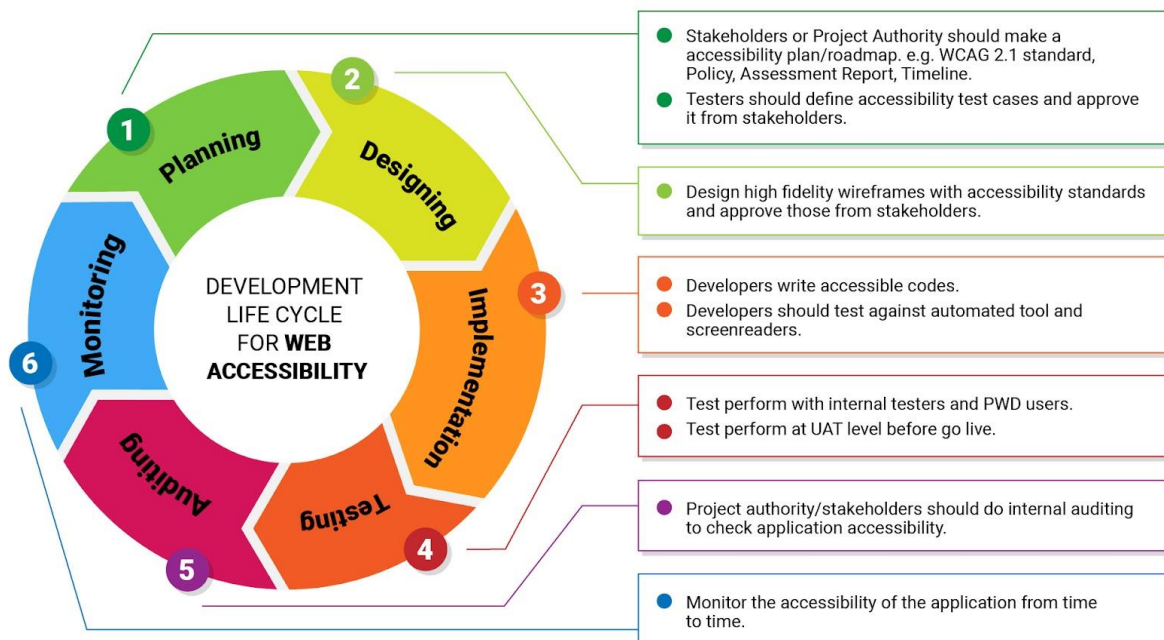
- technical specifications address alternative text (for example, HTML defines the alternative text attribute (alt) of the image element (img))
- WAI guidelines (WCAG, ATAG, UAAG described below) - define how to implement alternative text for accessibility in the different components
- developers provide the appropriate alternative text wording
- authoring tools enable, facilitate, and promote providing alternative text in a web page
- evaluation tools are used to help check that alternative text exists
- user agents provide human and machine interface to the alternative text
- assistive technologies provide human interface to the alternative text in various modalities
- users know how to get the alternative text from their user agent and/or assistive technology as needed

The World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI) develops web accessibility standards for the different components:

- Authoring Tool Accessibility Guidelines (ATAG) Overview addresses authoring tools
- Web Content Accessibility Guidelines (WCAG) Overview addresses web content, and is used by developers, authoring tools, and accessibility evaluation tools
- User Agent Accessibility Guidelines (UAAG) addresses web browsers and media players, including some aspects of assistive technologies

These accessibility guidelines are based on the fundamental technical specifications of the web, and are developed in coordination with all W3C technical specifications (HTML, CSS, SVG, SMIL, etc.).

3.3 Development Lifecycle of Web Accessibility



3.4 Web Content Accessibility Guidelines (WCAG) 2.1

Web Content Accessibility Guidelines (WCAG) is developed through the W3C process in cooperation with individuals and organizations around the world, with a goal of providing a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments internationally.

The WCAG documents explain how to make web content more accessible to people with disabilities. Web “content” generally refers to the information in a web page or web application, including:

- natural information such as text, images, and sounds
- code or markup that defines structure, presentation, etc.

WCAG is primarily intended for:

- Web content developers (page authors, site designers, etc.)

- Web authoring tool developers
- Web accessibility evaluation tool developers
- Others who want or need a standard for web accessibility, including for mobile accessibility

Current stable, referenceable technical standard version is WCAG 2.1. Web Content Accessibility Guidelines (WCAG) 2.1 have four principles: Perceivable, Operable, Understandable, Robust.

Perceivable

Information and user interface components must be presentable to users in ways they can perceive. [Ensuring content is accessible to people who are blind and/or deaf]

- Provide text alternatives for non-text content.
- Provide captions and other alternatives for multimedia.
- Create content that can be presented in different ways, including by assistive technologies, without losing meaning.
- Make it easier for users to see and hear content.

Operable

User interface components and navigation must be operable. [Making sure all features are accessible by keyboard; not just by mouse.]

- Make all functionality available from a keyboard.
- Give users enough time to read and use content.
- Do not use content that causes seizures or physical reactions.
- Help users navigate and find content.
- Make it easier to use inputs other than keyboard.

Understandable

Information and the operation of the user interface must be understandable.

- Make text readable and understandable.
- Make content appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

- Maximize compatibility with current and future user tools.

WCAG 2.1 Layers of Guidance

Several layers of guidance are provided including overall principles, general guidelines, testable success criteria and a rich collection of sufficient techniques, advisory techniques have been developed as part of WCAG 2.1 guideline .

- Principles - At the top are four principles that provide the foundation for Web accessibility: perceivable, operable, understandable, and robust.
- Guidelines - Under the principles are guidelines. The 13 guidelines provide the basic goals that one should work toward in order to make content more accessible to users with different disabilities. The guidelines are not testable, but provide the framework and overall objectives to help authors understand the success criteria and better implement the techniques.
- Success Criteria - For each guideline, testable success criteria are provided to allow WCAG 2.1 to be used where requirements and conformance testing are necessary such as in design specification, purchasing, regulation, and contractual agreements. In order to meet the needs of different groups and different situations, three levels of conformance are defined: A (lowest), AA, and AAA (highest).
- Sufficient and Advisory Techniques - For each of the guidelines and success criteria in the WCAG 2.1 document itself, the WAI working group has also documented a wide variety of techniques. The techniques are informative and fall into two categories: those that are sufficient for meeting the success criteria and those that are advisory. The advisory techniques go beyond what is required by the individual success criteria and allow authors to better address the guidelines. Some advisory techniques address accessibility barriers that are not covered by the testable success criteria. Where common failures are known, these are also documented.

All of these layers of guidance (principles, guidelines, success criteria, and sufficient and advisory techniques) work together to provide guidance on how to make content more accessible.