Policy Brief on Gender and Youth Inclusiveness in Technology: Context analysis in Bangladesh
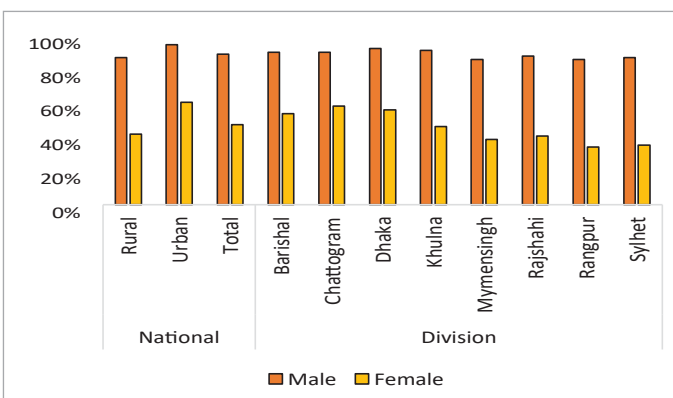
Background and objective:
In the context of the 21st Century, progress in technologies can be considered as a necessary condition for sustainable development. The world is now approaching to the fourth industrial revolution. Like the past three industrial revolutions, the Fourth Industrial Revolution is also expected to raise global economic growth or income levels and improve the quality of lives. However, there are fears that the introduction of the fourth industrial revolution may widen the existing inequality due to the emerging challenges of the labour markets. Those who have access and command over technology will enjoy the benefits of the revolution, and those who are lagging will suffer the most. With the existing gender gap in technology, such change in earnings will result in widened gender wage gaps between male and female. Therefore, the real difference or inequality in technological inclusivity needs to bridge. The societal split in case of technology is commonly referred to as the digital divide.

In this context, this study has been conducted to identify the key barrier to the technological inclusivity of young people and analyze the gendered digital divide. Technological inclusivity is closely related to access to ICT. The technological inclusiveness of youth has been analysed from two perspectives: (i) a demand-side narrative, and (ii) a supply-side narrative.

At the demand side, the technology inclusiveness has been analysed based on individual or households' access to technologies (such as computers, internet, or mobile phones). However the gendered digital divide has been analysed based on the access to mobile phone of the youth.

From the supply side the technical training opportunities for young men and women have been analysed.

Figure 1: Youth Profile in Bangladesh: Broad age-wise categorization (in million)

Source: Authors' calculation based on HIES (2016)

Figure 2: The digital gender divide in terms of per captia mobile holding of the youth at the household level prevails across the country. On an average 82% of the male youth in the urban households has a mobile phone compared to 57% female youths. In the rural, 78% of the male youth has a mobile phone compared to 42% females. This rate for females varies across regions as well.
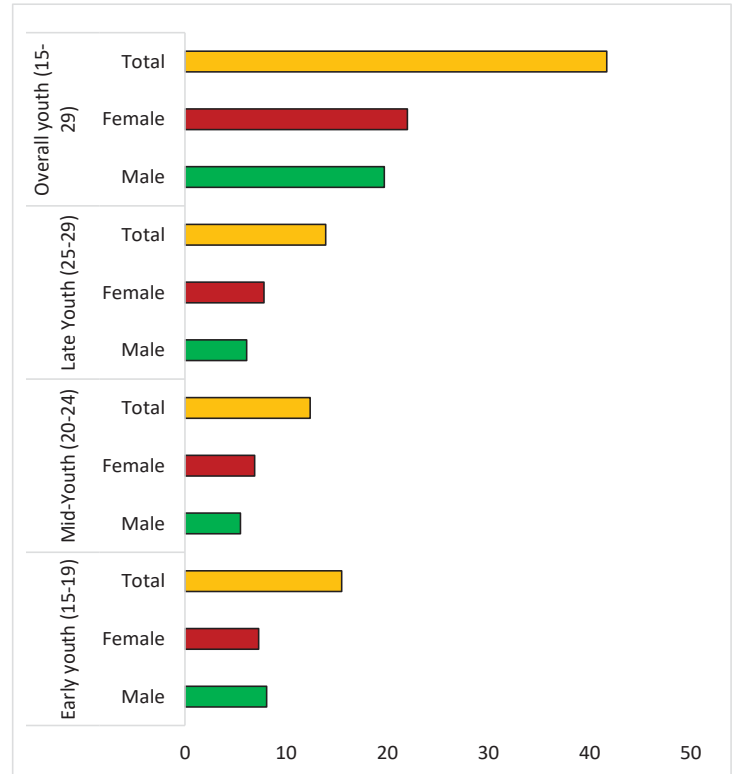
Figure 3: The digital gender divide in terms of per capita mobile holding significantly varies across income deciles. On average, only 26% of the female youths from the poorest income decile has a mobile phone compared to 70% of the male youth. In the case of richest income decile, this gap is only 11 percentage points (Male youth: 86%, female youth: 75%)

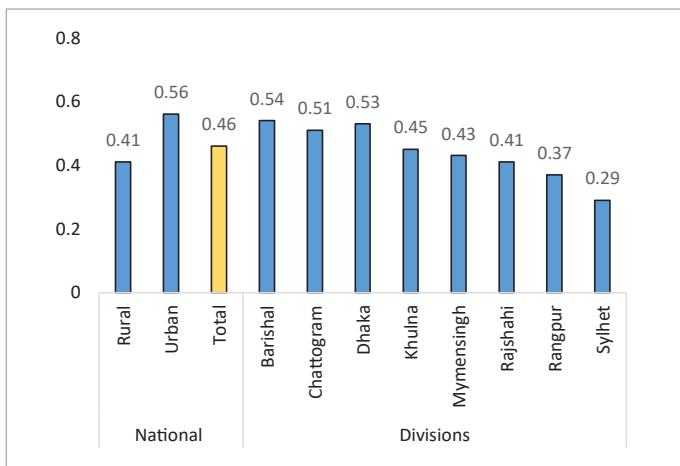Source: Authors' calculation based on HIES (2016)
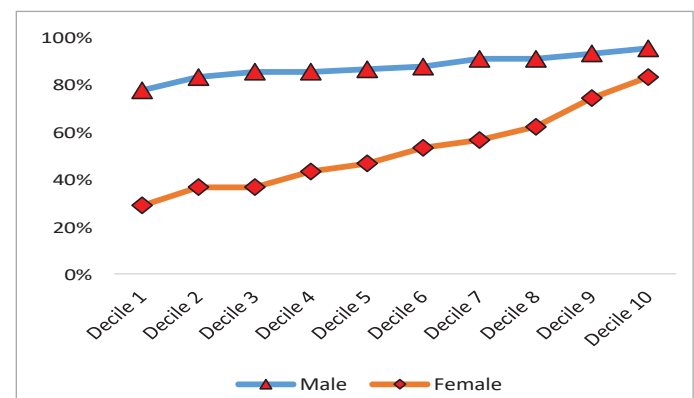
Source: Authors' calculation based on HIES (2016)

For understanding the intra-household gender disparity in terms of access to technology, an intrahousehold gender parity score is calculated as follows

$$= \frac{\frac{Number\ of\ female\ youth\ with\ mobile\ in\ a\ household}{Total\ number\ of\ female\ youth\ in\ that\ household}}{\frac{Number\ of\ male\ youth\ with\ mobile\ in\ a\ household}{Total\ number\ of\ male\ youth\ in\ that\ household}}$$

If in a typical household there are three female youth and three male youth members where only one female youth has a mobile phone, and all-male youth has a mobile phone, then the per capita mobile holding for female youth in that household will be 1/3 (0.33 or 33%), and for the male, it will be 1 (or 100%). The ratio of these two values (i.e. 0.33, in this case) would indicate the nature of intra-household gender parity with respect to access to ICT technology. A score of 1 would indicate perfect parity for a household and vice-versa.

Figure 4: Based on the constructed Gender Parity Score, it is observed that the gender parity in rural (0.41) is lower than urban (0.56). Sylhet has the highest disparity (0.29) followed by Rangpur (0.37), Rajshahi (0.41), Mymensigh (0.43) and Khulna (0.45).

Figure 5: Gender parity increases with household income deciles. For the poorest income decile, if in a household, all male youths have a mobile phone, then on an average 28% of the females are likely to have a mobile phone. At the richest income decile, this rate would be 74%

Source: Authors' calculation based on HIES (2016)
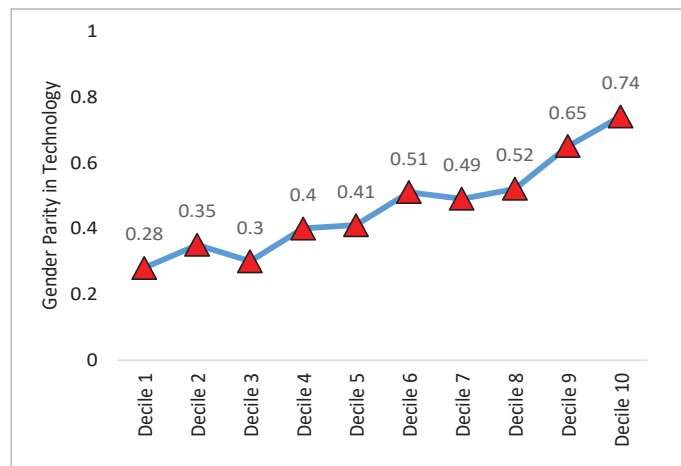
Source: Authors' calculation based on HIES (2016)

Map 1: High regional disparity in household computer holding by districts is evident. Out of the 64 districts, 45 districts has average household computer holding rate lower than the national average (6%).
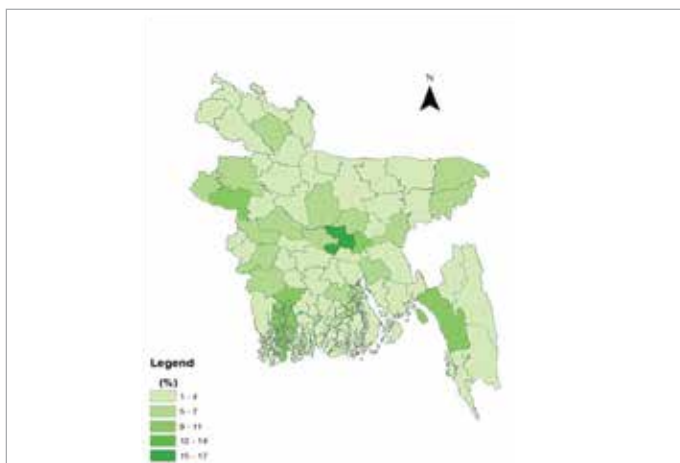
Map 2: Regional disparity in female youth ever used computer by districts is also evident. Female youth in Dhaka has more access to computers (21%) followed by Rajshahi (12.17 %),Chattogram (12.07 %), Jessore (12 %), Khulna (10%).

Source: Authors' representation based on MICS (2019)
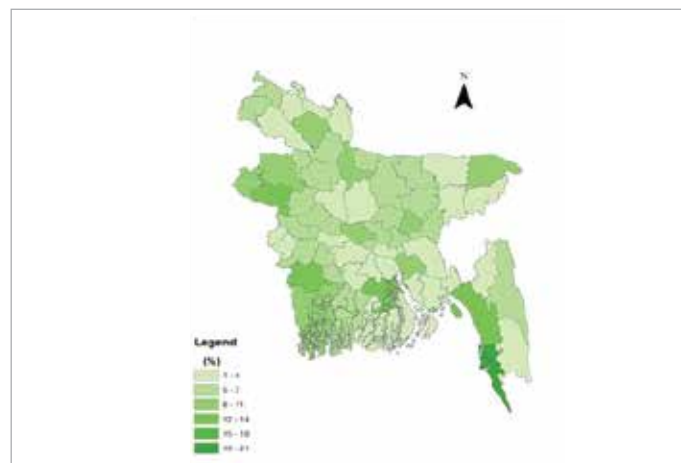
Source: Authors' representation based on MICS (2019)

Figure 6: Percentage of households having computer in Bangladesh is much lower (6%) relative to its comparator countries (India 17%, Vietnam 33%)

Source: Authors' representation based on Global Household indicator data (2019)

Figure 7: Percentage of population having internet access in Bangladeh (18.2%) is much lower than the comparator countries (India 29.5%, Sri Lanka 32%, Vietnam 47%)

Source: Authors' representation based on Global Household indicator data (2019)

Figure 8: There is a geographical digital divide in household access to internet.

Source: Authors' calculation from MICS 2019

Figure 9: Percentage of female youth ever used internet is very low across the country and a regional pattern is evident

Source: Authors' calculation from MICS 2019

Map 3: Regional disparity in household internet access is evident. On average, the North-western and Chattogram hill tract districts have less access to the internet than other parts of the country.
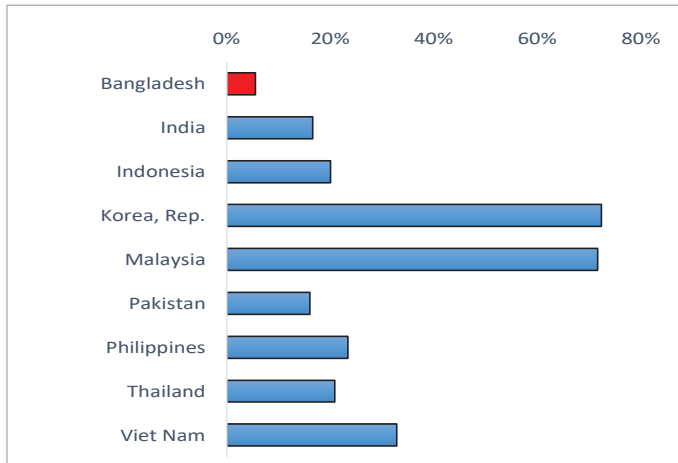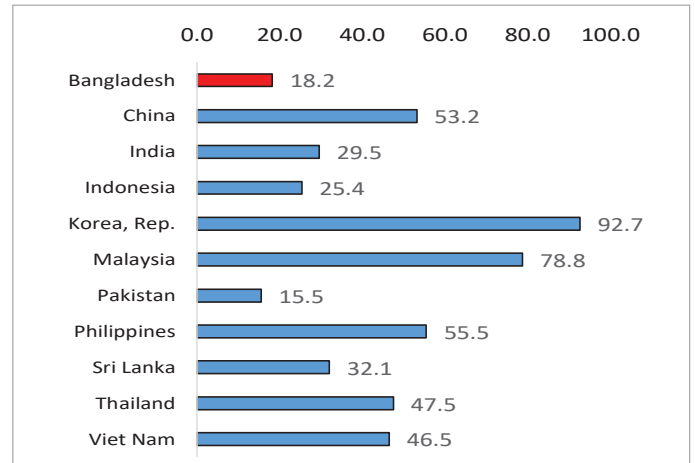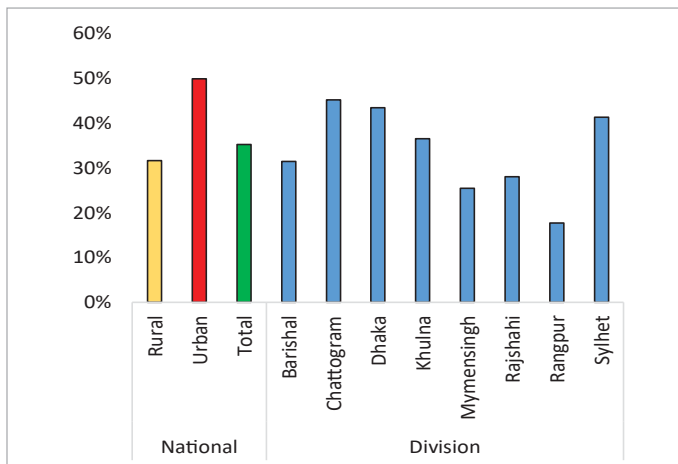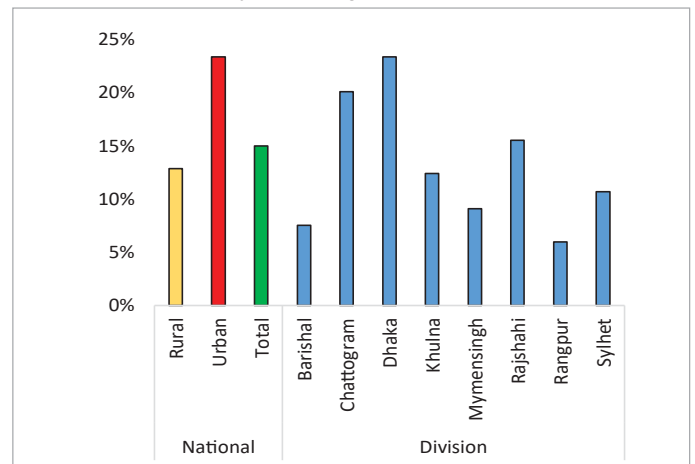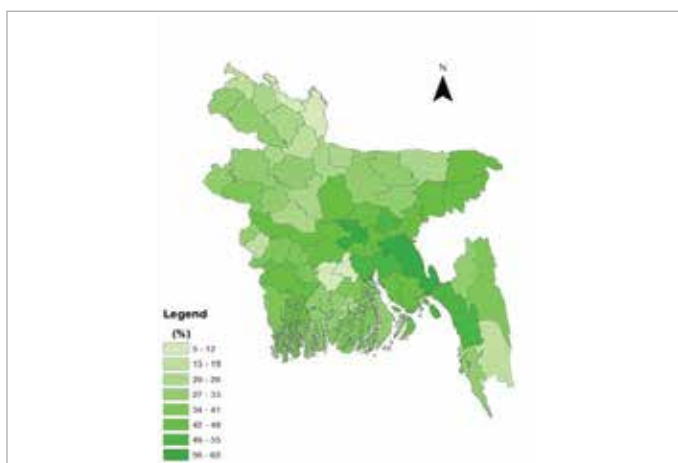

Source: Authors' representation based on MICS (2019)

Map 4: Regional disparity in female youth ever used internet is also evident. The lowest rates are observed in Rangamati, Panchagarh, Bhola, Thakurgaon, and Lalmonirhat (each less than 5%).
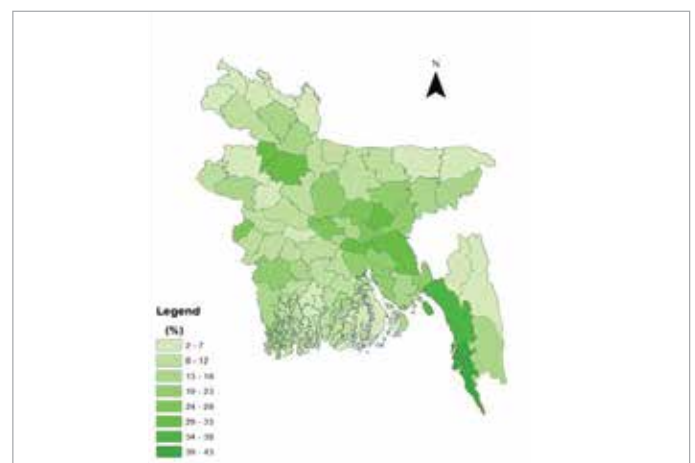
Source: Authors' representation based on MICS (2019)

From the above analysis, it is clear that there is a regional and gender disparity in case of technological inclusivity of youth. while overall scenario for computer and internet access is not satisfactory, youth from some districts have more access to technology while those from margianlized areas are lagging behind. Moreover Bangladesh is lagging behind to its comparator countries in case of technological inclusiveness. Although the digital gender divide is prevalent all over the country, it is more severe in those marginalized regions.
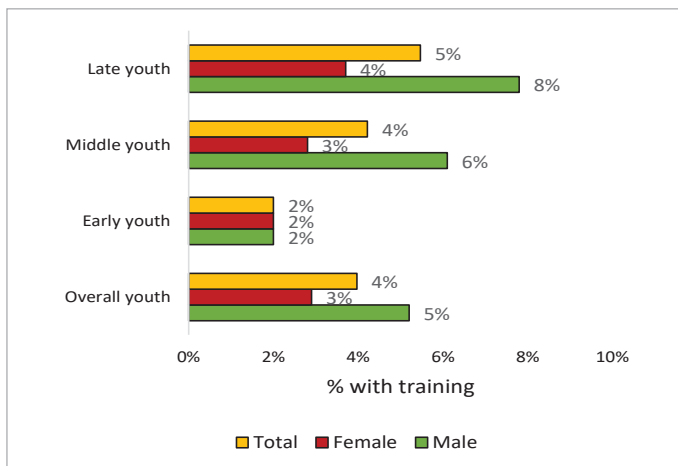
However, the supply-side perspectives of technology inclusiveness are different than the demand side. It is noteworthy that, even if someone lacks access to technology due to demand-side constraints (such as income barriers), in the existence of a well supply of training on technical education (such as on the computer) the challenges originating from the demand side constraints can be mitigated to a large extent. Moreover, such training in technical trades also helps to cope-up with the notion commonly referred to as 'second-level digital divide' (Hargittai, 2004). The government has already taken steps to boost up technical or vocational education and training programmes in the country. There are 71 Technical Training Centres(TTCs), 49 Government polytechnic institutes, 64 technical schools and colleges, and 511 private polytechnic institutes. Despite the commitments from the government, there are still many loopholes in the existing vocational education and training in Bangladesh. The key challenges of TVET sector in Bangladesh are: (i) low quality of training and trainers (ii) gender and regional disparity in participation (iii) a mismatch between demand and supply (iv) lack of awareness of the training programmes (v) bleaker job market prospect of the trained (vi) lack of credibility and international accreditation to the training programmes and (vii) lack of governance in the TVET operation.

Figure 10: For all age categories, the participation of youth in training is very low and there is also a gender difference: female youth are lagging behind

Source: Authors' calculation from LFS 2017

Figure 11: Regional divide in case of youth participation in technical training is evident

Source: Authors' calculation from LFS 2017

Figure 12: Bangladesh is lagging behind to its comparator countries in terms of quality of TVET (ranks 124 among 141 countries)
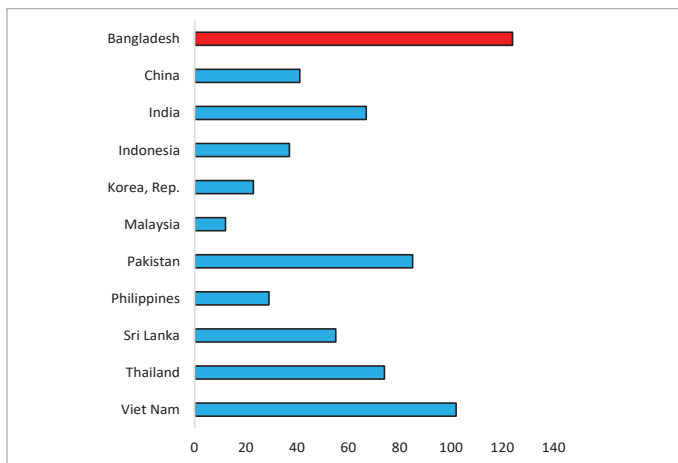
Source: Authors' representation based on data from WEF (2019)
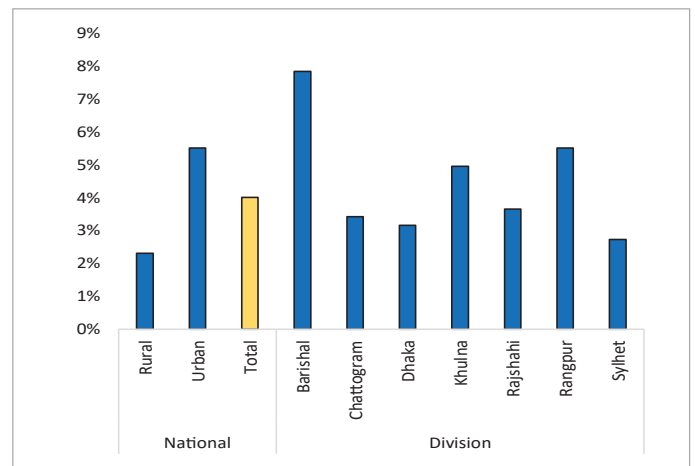
Map 5: A regional pattern in case of youth participation in training is evident. The rate is lowest for Gopalganj (0.49%), Brahmanbaria (0.58%), Maulivibazar (0.74%), Cox's Bazar (0.83%), and Shariatpur (0.89%).

Source: Authors' representation based on LFS (2017)

Figure 13: Empirical findings: Significant discriminatory behavior against female youth in technology inclusiveness in Bangladesh

The Blinder-Oaxaca Decomposition technique has been applied to see the gender discrimination against women in Technology inclusiveness where the Outcome variable is the household per capita mobile holding of youth.

The technological differential between male and female is 0.321, or 32 percentage points of which 0.7 percentage points is explained endowment effect and 31.4 percentage points is due to discrimination.
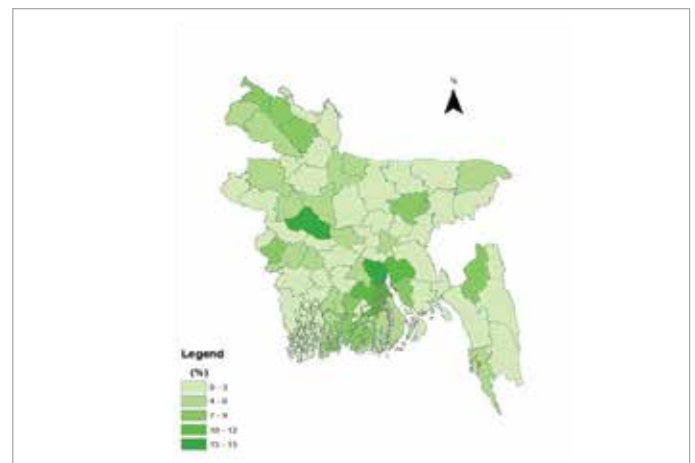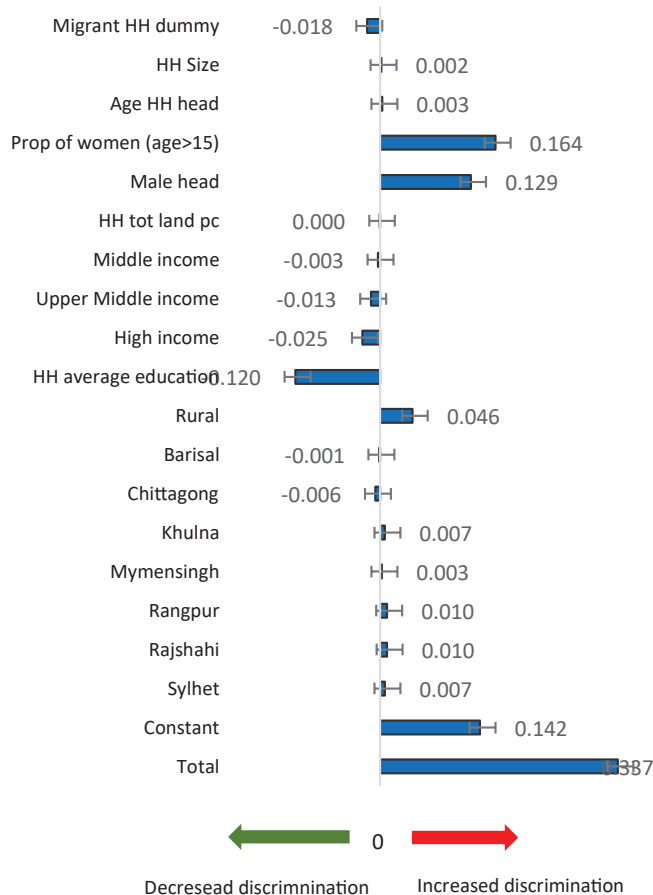
Female youth belonging to a household in Rajshahi, Rangpur and Sylhet division and rural areas face more discrimination than those of Dhaka division and urban areas respectively. Moreover, the discrimination increases if the proportion of female members in the household is higher and the head of the household is male.

The discrimination faced by the female youth decreases with household income and average education of the household members. Moreover the discrimination against female youth is lower in households with an external migrant member and households in Dhaka, Chittagong, Barishal divisions.

Variable	Value
Migrant HH dummy	-0.018
HH Size	0.002
Age HH head	0.003
Prop of women (age>15)	0.164
Male head	0.129
HH tot land pc	0.000
Middle income	-0.003
Upper Middle income	-0.013
High income	-0.025
HH average education	0.120
Rural	0.046
Barisal	-0.001
Chittagong	-0.006
Khulna	0.007
Mymensingh	0.003
Rangpur	0.010
Rajshahi	0.010
Sylhet	0.007
Constant	0.142
Total	0.337

0

Decresead discrimnination   Increased discrimination

Recommendations:

A revamped focus is needed in formulating a Gender Inclusive ICT Policy and Action Plan: There is a need for revamped action for formulating a **Gender Inclusive ICT Policy** and **Gender Inclusive ICT Action Plan.**

ICT-friendly fiscal policy should be considered with priority: As women are lagging behind, some special packages can be offered to them such as offering tax rebate on purchasing a technological device (such as a computer or mobile phones) or offering internet at a subsidized price. Female students can be made eligible for VAT refund while purchasing computers or mobile phones. If required, the Government can think of tax rebates or reductions in the existing tariffs for the telecommunication industry while importing ICT equipment.

Raising awareness among people on the benefits of technology and training for alieneating social stigma: Social stigma on using technological devices by the female youth and negative perception on TVET has been identified as one of the stumbling blocks for the technological inclusiveness of female as well as for the development of vocational education and training. The ICT division of the Government should undertake aggressive social campaigns through print and electronic media as well as social media to raise social awareness on the benefits of technology and vocational education and training. In rural areas, the government can train local school teachers as well as Imams on the possible benefits of using technology and TVETs.

Improving the quality of internet services : Bangladesh has one of the lowest internet bandwidths compared to other comparing countries. Moreover, internet bandwidth is not symmetric across all parts of the nation. Although Bangladesh launched 4G internet in 2018, 4G connectivity has not reached all parts of the country yet. The broadband internet connection is relatively more expensive in rural areas because of fixed costs associated with drawing internet ware lines. To ensure that the broadband internet connection reach all regions and to make more people enjoy its benefits the price can be subsidized through charging a lower tax on the devices or cables used for broadband connection for internet service providers at the rural areas.

Special focus for the marginalized group of people and lagged regions: The policy needs to focus on people from the lagged regions and disadvanced population. In addition to rural-centric policies, emphasis should be put on people from ethnic minorities and marginalized communities (such as Bede, Harijan, Dalits, etc.). The policy should consider access to ICT as a basic right than a privilege.

The ICT course in the secondary and higher secondary education needs proper delivery along with ensured practical classes: To make the students understand the practical use of the computer more emphasis should be placed on the practical part of the ICT course. To ensure proper delivery of this course and to make the best use of the multimedia classrooms the Government must ensure training for the teachers. Moreover, the number of computers in public schools needs to increase. If it is not feasible to increase the number at a time, the government should prioritize the areas from the lagging regions first than the schools from the urban areas.

Upgrade the training modules at the technical training centres and strengthen the training capacities: The existing training modules at the technical training centres (TTCs) needs to be upgraded so that the demand for 'skills' in the industry is reflected in the courses offered in the TTCs. The quality of the training needs to be improved. It would require upgrading the existing training equipment, re-training of the instructors, as well as campaigning on the existing training programmes in offer.

Special government schemes are needed to comprehend the COVID-19 crisis: The government can initiate differentiated prices for internet for metropolitan and nonmetropolitan areas. The internet prices charged at the non-metropolitan areas could be lowered. Moreover, institutional supports to the students from poor families could be increased. The support may include stipends, education loans, loans for purchasing technological devices for the students, amongst others.

Conclusion:

This research applies both qualitative and quantitative methods in identifying the gender and youth inclusiveness in technology. Considering data availability issues, this paper defines technology inclusivity in terms of mobile holding status of the youth. The findings from the study show that households from richer income deciles have more technological inclusivity than households from poorer income deciles. Youths from regions with higher economic activities have more access to technologies than the lagging regions. Moreover, in all the cases, female youth's inclusiveness to technology has been found to be significantly lower than the male youth's inclusiveness to technology. The econometric analysis shows that a significant part of the gender differences observed in terms of mobile holding originates from discriminatory behaviour towards female youth.

(This policy brief is based on a research paper authored by Selim Raihan, Mahtab Uddin and Sakil Ahmmed)