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POST COVID-19 NATIONAL ICT ROADMAP OVERCOMING THE CHALLENGES AND LEVERAGING NEW OPPORTUNITIES FOR ICT INDUSTRY

Thematic Partners



Secretariat





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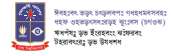
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ICT Roadmap Attributes

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Our deepest gratitude to the following organizations for their utmost support- Asif Imtiaz (Assistant Professor) from University of Dhaka, Md. Rakibul Hasan (Assistant Professor) of University of Dhaka, Omar Farhan Khan (Business Consultant) from LightCastle Partners. We would also like to thank Akhtar Mahmood (Lead Private Sector Specialist) from World Bank Group, Mr Syed Almas Kabir (President) of Bangladesh Association of Software and Information Services (BASIS), Abdul Wahed Tomal (General Secretary) of E-Commerce Association of Bangladesh (e-CAB), Khan Monirul Alam (Chairman) Public Relations Committee of Bangladesh Garments Manufacturers and Exporters Association (BGMEA) and SM Shaheen Anwar (Deputy Managing Director) from Small and Medium Enterprise Foundation (SMEF). Special thanks to Mridul Chowdhury (Founder and CEO) of MPower, Md Sadequul Arefeen (Rumman) (Managing Director and CEO) from Spellbound Leo Burnett & Founder of paikarisale.com, Nurul Amin Siddiquee- (Chief of Party) of LPIN, ACDI/VOCA, Dr. Salauddin Shakil (Senior Manager) of Aman Feeds, Abdur Rob (Former Head of Food and Agricultural Markets) from Practical Action. Additionally, contributions from Dr. Wasel Bin Shadat (Research Director) and Sabbir Ahmed Hemo, (Research Associate) from DataSense, Dr. Sayema Haque (Associate Professor), University of Dhaka and Honorary Research Director, SANEM, Tanjult Tasnuva (National Programme Officer) of ILO-Bangladesh, Md. Asadul Islam, (Member, Planning Commission, Former Secretary) from Ministry of Health, Dr. Syed Abdul Hamid (Professor & Director) from Institute of Health Economics, Dr. Kaosar Afsana (Professor) from BRAC James P Grant School of Public Health, BRAC University, Dr. Taufique Joarder (Public Health Expert & Research Director) of FHI360, Md. Humayun Kabir (Former Senior Secretary) MoH&FW, Senior Strategic and Technical Advisor, Measure Evaluation, Dr. Shah Monir (Former DG) of DGHS, Shafiun N Shimul (PhD Associate Professor), of Institute of Health Economics, DU, Dr. Khondaker A. Mamun, (CEO) CMED, Tawhida Shiropa (Founder) Moner Bondhu and Rubaiyat Khan (Founder) Jeeon were invaluable for the structuring the ICT Roadmap.

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Post COVID-19 ICT Roadmap for Bangladesh



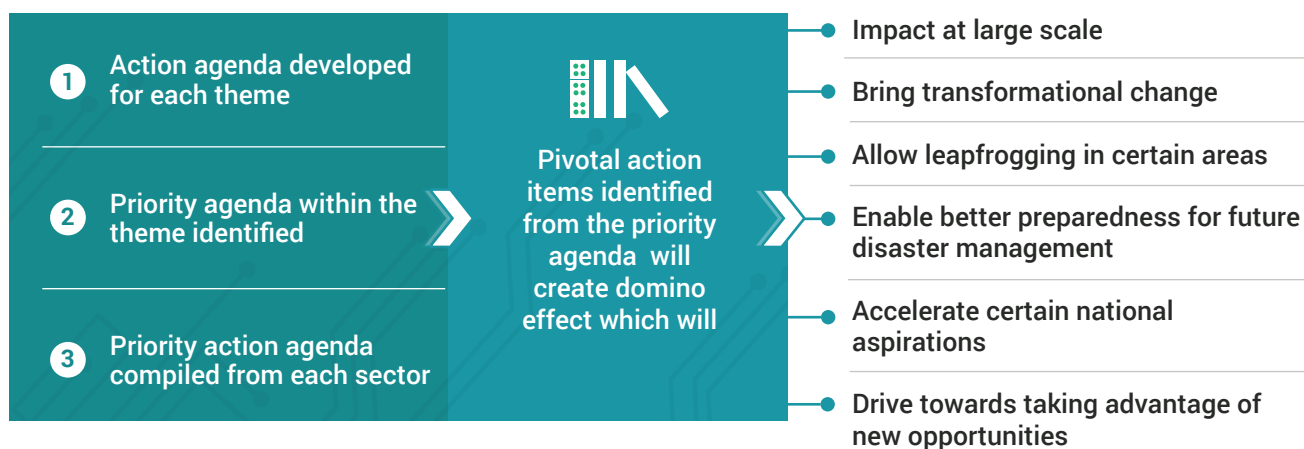
The ICT roadmap is an action document with a ‘whole of the government’ and ‘whole of the society’ approach. The roadmap presents 16 key action agenda, which will create domino effects within a sector and across the economy and society.

This is an initiative of the Government of the People’s Republic of Bangladesh | Coordinated by the ICT Division.

A. Background

COVID-19 has posed a challenge to all of us: should we only defend and mitigate or should we take it as an opportunity to reflect and overhaul our approach as a nation towards economy, society, governance, and prosperity. Bangladesh believes that COVID-19 is an opportunity to take Bangladesh to the next level of digitalisation and its streamlining into all aspects of our lives. It is also an opportunity to take ICT as an industry to the next level with an agenda of ‘Made in Bangladesh’. Learning from successes and failures, it is an opportunity for Bangladesh to become more inclusive, sustainable, and humane.

B. Journey towards Identifying Domino Effect Action Agenda



C. Approach towards Implementing the Action Agenda



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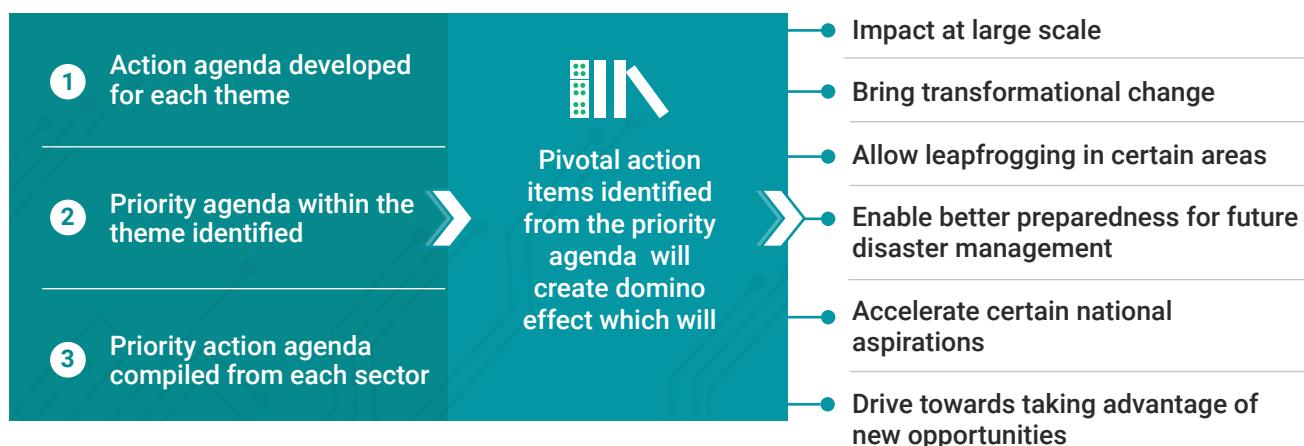
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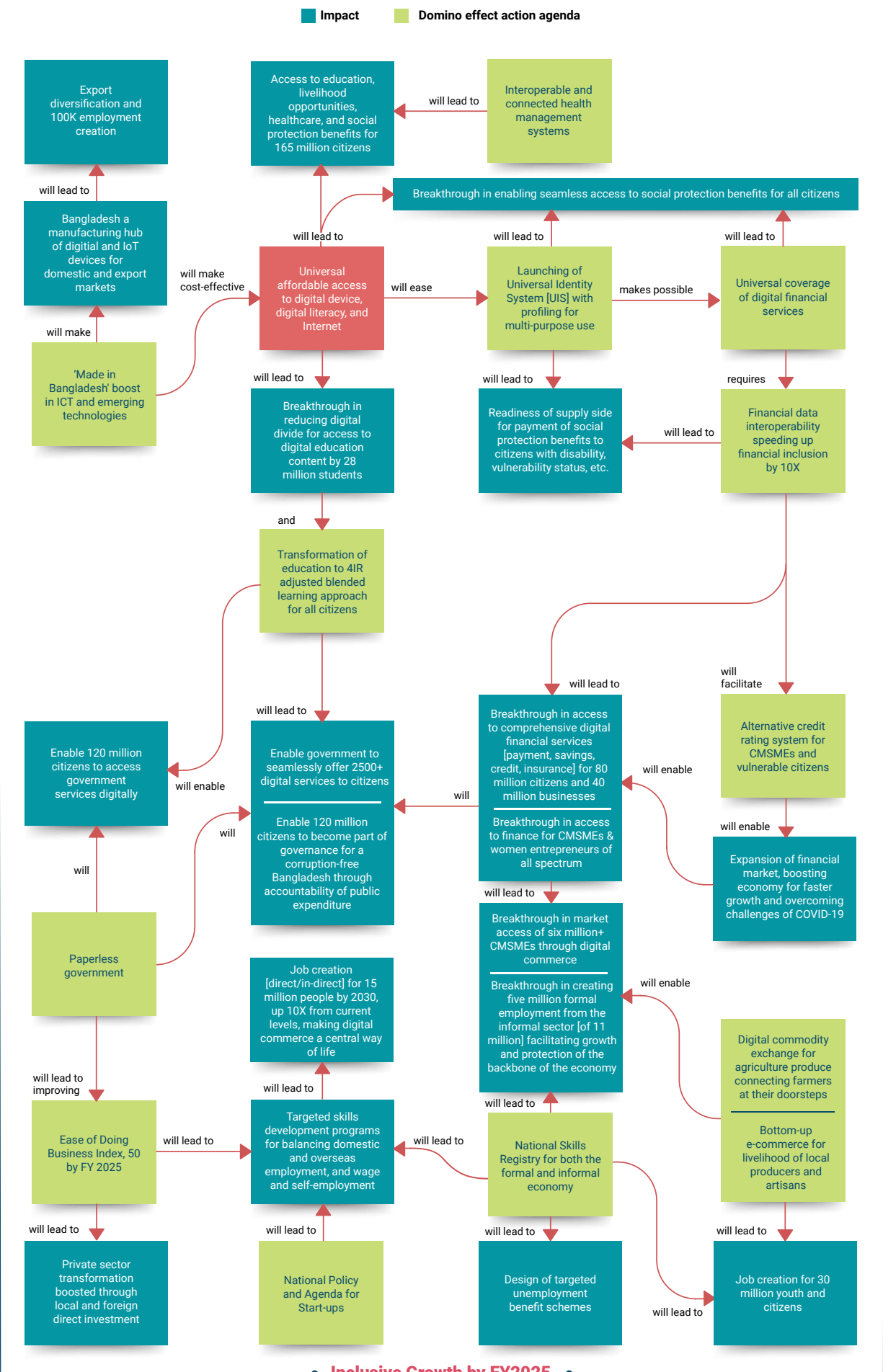
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C. Approach towards Implementing the Action Agenda

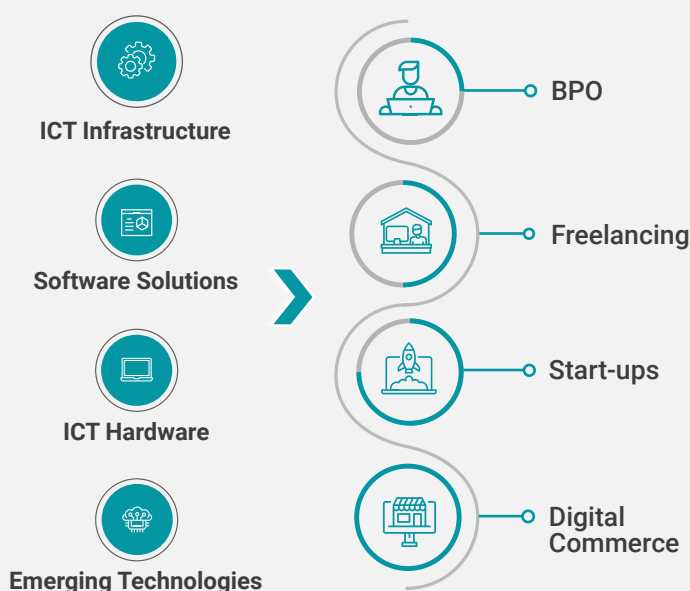


D. Domino Effect Action Agenda



E. Thematic Areas for Action Agenda

ICT and Emerging Technologies



Roadmap for Key Sectors catalysed by ICT

- Agriculture and Food Security
- Health and Well-being
- Education
- Employment and Skills
- Labour Migration and Remittance
- Social Protection
- Financial Inclusion
- Supply Chain
- Private Sector Transformation and Innovation
- Public Service Transformation and Innovation

F. Policy Agenda for Quick Win

Action Agenda

- 1 Interoperable and connected health management systems
- 2 'Made in Bangladesh' boost in ICT and emerging technologies
- 3-4 Universal affordable access to digital device and Internet broadband connectivity
- 5 Universal affordable access to digital literacy

Policy and Regulation

- Investment in human capability and capacity, especially health care management so that the health system is transformed from 'doctor-centric' to 'healthcare management centric'
- Development of an accountability framework for both public and private facilities
- Development and enforcement of a mandatory health data interoperability protocol
 - for connecting data system of all public and private health facilities
- Launching of universal health insurance system covering both public and private facilities
- Development and enactment of 'Made in Bangladesh' Policy for promoting local manufacturing of digital devices for domestic and foreign market. The policy needs to be foreign investment friendly and at the same time promote local capacity building
 - Development of guideline for utilisation of Social Obligation Funds so that it can be invested in covering all citizens under 'universal access to digital device and Internet' program
 - Upgrading National Broadband Policy, 2009 for:
 - Inviting districts and upazilla level investors and start-ups to offer broadband services
 - Revision of TAX, VAT, and Surcharge to decrease Internet price
 - Development of digital literacy curriculum guideline for each segment of learners for development of course materials by public and private agencies
 - Making curriculum and content for digital literacy open [creative commons licensing]

F. Policy Agenda for Quick Win

Action Agenda

- 6 Launching of Universal Identity System [UIS] with profiling for multi-purpose use
- 7 Universal coverage of digital financial services
- 8 Financial data interoperability speeding up financial inclusion by 10X
- 9 Alternative credit rating system for CMSMEs and vulnerable citizens
- 10 Digital commodity exchange for agriculture produce connecting farmers at their doorsteps
- 11 Facilitating bottom-up e-commerce for livelihood of local producers and artisans
- 12 Transformation of education to 4IR adjusted blended learning approach for all citizens
- 13 National Skills Registry for both the formal and informal economy
- 14 Paperless government
- 15 Ease of Doing Business Index, 50 by 2025
- 16 National Policy and Agenda for Start-ups

Policy and Regulation

- Inter-agency working group for appropriate design and roadmap for UIS
 - Enactment of Data Interoperability Law
 - Enactment of Data protection and Privacy Law [e.g., GDPR]
-
- Digital Financial Inclusion Policy to incentivise digital financial transactions across the population
-
- Enactment of Data Interoperability Law
 - Enactment of Data Protection and Privacy Law [e.g., GDPR]
 - Revision of Digital Security Act, 2018 to connect with independent law on data protection and privacy
-
- Enactment of a law for CMSME credit rating system with emphasis on credit bureau database under Bangladesh Bank Order, 1972
-
- National policy for quality standards for different agro-commodities in Bangladesh
 - National Agro-Commodity Exchange Policy
-
- Upgrading National Broadband Policy, 2009 for revision of TAX, VAT, and Surcharge to decrease Internet price
 - Upgrading National Digital Commerce Policy, 2018 for exemption of taxes imposed on digital commerce and advertising
-
- Digital Education Policy [in alignment with 8th Five-Year Plan]
 - Upgradation of Intellectual Property Rights [IPR] Policy to ensure appropriate encryption and to protect the providers of online education
-
- Introduction of National Skills Registry Policy
-
- Introduction of Paperless Government Act
-
- Introduction of Ease of Doing Business Policy catering to each of the 18 sectors identified
-
- Introduction of National Policy for Start-ups to promote growth of the ecosystem, while also attracting foreign investment

G. Implementation Powerhouse

Action Agenda	Lead	Co-Lead	Implementing Agency
Interoperable and connected health management systems	Ministry of Health and Family Welfare (MoHFW)	Local Government/ Ministry of Women and Children's Affairs	Directorate General of Health Services (DGHS)
'Made in Bangladesh' boost in ICT and emerging technologies	Ministry of Industries (Mol)	ICT Division/ Ministry of Commerce/ Internal Resources Division (IRD)	Bangladesh Hi-Tech Park Authority (BHTPA)/ Bangladesh Economic Zones Authority (BEZA)
Universal affordable access to digital device and Internet broadband connectivity	Posts and Telecommunications Division	ICT Division (ICTD)	BHTPA/ Bangladesh Telecommunication Regulatory Commission (BTRC)/ Bangladesh Computer Council (BCC)
Universal affordable access to digital literacy	ICT Division (ICTD)	Education Ministries (MoPME, MoE-SHED, MoE-TMED)/ National Skill Development Authority (NSDA)/ Ministry of Expatriate's Welfare and Overseas Employment	Bangladesh Technical Education Board (BTEB)/BCC/ Department of Information and Communication Technology (DoICT)/ Bureau of Manpower, Employment and Training (BMET)
Launching of Universal Identity System [UIS] with profiling for multi-purpose use	Cabinet Division	Local Government/ ICT Division	National Identity Registration Wing (NIDW)/ Controller of Certifying Authorities (CCA)
Universal coverage of digital financial services	Bank and Financial Institutions Division (BFID)	ICT Division/ Bangladesh Bank/ Insurance Development & Regulatory Authority (IDRA)	Aspire to Innovate Bangladesh (a2i)/ BCC
Financial data interoperability speeding up financial inclusion by 10X	Bank and Financial Institutions Division (BFID)	Bangladesh Bank/ Ministry of Finance/ ICT Division	Bangladesh Computer Council (BCC)
Alternative credit rating system for CMSMEs and vulnerable citizens	Bank and Financial Institutions Division (BFID)	Bangladesh Bank/ Microcredit Regulatory Authority (MRA)	SME Foundation/ Bangladesh Small and Cottage Industries Corporation (BSCIC)/ Palli Karma Sahayak Foundation (PKSF)/ NGO Affairs Bureau/ Department of Cooperatives
Digital commodity exchange for agriculture produce connecting farmers at their doorsteps	Ministry of Agriculture (MoA)	Ministry of Commerce (MoC)	Department of Agriculture Marketing/ Directorate of National Consumers' Right Protection
Facilitating bottom-up e-commerce for livelihood of local producers and artisans	Ministry of Commerce (MoC)	Ministry of Cultural Affairs/ Ministry of Textile and Jute/ Ministry of Youth and Sports (MoYS)/ ICT Division	a2i
Transformation of education to 4IR adjusted blended learning approach for all citizens	National Education Reform Commission (proposed)	All divisions of Education Ministries (MoPME/ MoE-SHED/ MoE-TMED)/ ICTD/ UGC/ Ministry of Textiles and Jute (MoTJ)/ MoYS	Bangladesh Technical Education Board (BTEB)/ NSDA/ BCC/ Directorate of Secondary and Higher Education (DSHE)/ Primary and Mass Education Division (PMED)/ DoICT
National Skills Registry for both the formal and informal economy	National Skill Development Authority (NSDA)	ICT Division/ Ministry of Labour and Employment (MoLE)/ University Grants Commission (UGC)/ Bangladesh Election Commission	a2i
Paperless government	Cabinet Division	Ministry of Public Administration (MoPA)/ ICT Division	a2i/ BCC
Ease of Doing Business Index, 50 by 2025	Bangladesh Investment Development Authority (BIDA)	ICT Division/ Bangladesh Securities Exchange Commission (BSEC)	List of Agencies under BIDA
National Policy and Agenda for Start-ups	ICT Division (ICTD)	BSEC/ BIDA/ Ministry of Foreign Affairs (MoFA)	Startup Bangladesh Limited

Partners	Coordination	Financing
DGHS/ Directorate General of Family Planning (DGFP)/ Community Health Care Provider (CHCP)/ HealthTech players and start-ups/ NGOs in healthcare	ICTD Coordination Unit	PPPA/ World Bank/ FDI
Public Private Partnership Authority (PPPA)/ BIDA	ICTD Coordination Unit	PPPA/ World Bank/ ADB/ IDB/ Development partners (e.g., EU, JICA, DFID)
Device manufacturing companies/ Private-sector players in Bottom of Pyramid (BoP)/ NGOs/ Internet Service Providers Association of Bangladesh (ISPAB)/ Connectivity start-ups for Bottom of Pyramid (BoP)	ICTD Coordination Unit	GoB Funding (e.g. Social Obligation Fund)/ World Bank/ PPPA/ Development partners (e.g., EU, JICA, DFID)
NSDA/ BTEB/ ILO Skills 21 project/ EdTech companies and start-ups/ NGOs/ Social enterprises	ICTD Coordination Unit	GoB Funding/ PPPA/ Development partners (e.g., EU, JICA, DFID)
Bangladesh Bureau of Statistics (BBS)/ BoP data start-ups/ NGOs	ICTD Coordination Unit	GoB Funding/ Development partners (e.g., EU, JICA, DFID)
Mobile Financial Services (MFS)/ Digital Financial Services (DFS)/ Fintech start-ups/ Investors	ICTD Coordination Unit	PPPA/ FDI
Ministry of Industry/ SME Foundation/ MRA/ Fintech companies and start-ups/ Micro Finance Institutions (MFIs)	ICTD Coordination Unit	GoB Funding
SME Foundation/ MRA/ Fintech companies and start-ups	ICTD Coordination Unit	GoB Funding
a2i/ MoA/ Ministry of Fisheries and Livestock (MoFL)/ Ministry of Local Government, Rural Development and Co-operatives (MoLGRD)/ PKSF/ Development partners (e.g. DFID, IFC)	ICTD Coordination Unit	PPPA/ World Bank/ FDI
e-Commerce Association of Bangladesh (e-CAB)	ICTD Coordination Unit	PPPA/ World Bank/ ADB/ IDB/ Development partners (e.g., EU, JICA, DFID)
UNESCO/ UNICEF/ NGOs/ EdTech start-ups	ICTD Coordination Unit	GoB Funding/ PPPA/ World Bank/ ADB/ Development partners (e.g., EU, JICA, DFID)
Bangladesh Employers Federation (BEF)/ Chambers/ BBS/ BTEB	ICTD Coordination Unit	GoB Funding/ World Bank/ Development partners (e.g., EU, JICA, DFID)
UNDP	ICTD Coordination Unit	GoB Funding/ Development partners (e.g., EU, JICA, DFID)
All Ministries and Agencies	ICTD Coordination Unit	GoB Funding/ World Bank/ Development partners (e.g., EU, JICA, DFID)
Startup supporting initiatives/ ventures	ICTD Coordination Unit	GoB Funding/ World Bank/ Development partners (e.g., EU, JICA, DFID)

Expert team comprising national and international agencies/ experts for each agenda

H. Implementation Timeline

FY2021

- 'Made in Bangladesh' boost in ICT and emerging technologies
- National Policy and Agenda for Start-ups
- Financial data interoperability speeding up financial inclusion by 10X
- Universal affordable access to digital device

FY2022

- Universal affordable access to broadband Internet connectivity
- Interoperable and connected health management systems
- Paperless government
- Launching of Universal Identity System [UIS] with profiling for multi-purpose use
- Alternative credit rating system for CMSMEs and vulnerable citizens
- Facilitating bottom-up e-commerce for livelihood of local producers and artisans
- Digital commodity exchange for agriculture produce connecting farmers at their doorsteps
- National Skills Registry for both the formal and informal economy

FY2023

- Universal coverage of digital financial services
- Transformation of education to 4IR adjusted blended learning approach for all citizens

FY2025

- Universal affordable access to digital literacy
- Ease of Doing Business Index, 50 by 2025

ICT Roadmap attributes

Initiated by



In Association with

Thematic Partners



Secretariat



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Post COVID-19 ICT Roadmap for Bangladesh



A. Background

Bangladesh has been experiencing phenomenal growth in all aspects of economy since 2009 and became a lower-middle income country by 2017. Bangladesh has become the 39th largest economy in the world in nominal terms, and 30th largest in terms of purchasing power parity. Bangladesh is acknowledged as one of the Next Eleven emerging market middle income economies and a frontier market. In the first quarter of 2019, Bangladesh was the world's seventh fastest growing economy with a rate of 7.3% real GDP annual growth [IMF, 2019].

As of 2019, Bangladesh's GDP per capita income is US\$2,064 (nominal). More than 33 million Bangladeshi people have been lifted out of poverty since 2000. Bangladesh's poverty rate fell from 82% in 1972, to 18.5% in 2010, 13.8% in 2016, 8.3% in 2018, and below 4% in 2020 as measured by the percentage of people living on the equivalent of US\$1.90 or less per day in 2011 purchasing price parity terms [World Poverty Clock, Hill et al, 2019]. Bangladesh's social security program is one of the strongest among developing nations. The allocation for social security is USD 8.75 Billion, a 2.58% of the GDP. The overall balance payment of Bangladesh is positive with foreign exchange reserve of USD 32.38 Billion (2019-2020). Bangladesh was steady towards the roadmap of becoming a middle-income country by 2031 and high income country in 2041.

The Information Communication and Technology (ICT) sector has been at the forefront of Bangladesh's "Vision 2021" and "Digital Bangladesh" agenda. As a middle-income country, the importance of transitioning to a knowledge-based economy is very crucial for Bangladesh's future. The ICT as a sector of economy has also been growing fast. The total export from the sector touched the \$ 1.0 billion-mark in 2019, showing a 66 per cent growth over the last two years. The sector is poised to fetch US\$ 5.0 billion in export earnings by the year 2025 [GED, 2020].

To accelerate Bangladesh's GDP growth, focus needs to be given to raising total factor productivity (TFP) through increased application of digital technology. A 2018 OECD report finds that firms with ICT use had, on average, 197% of the total factor productivity (TFP) level of other businesses in Viet Nam, 153% in Indonesia, 139% in Myanmar, and 139% in China. Bangladesh's TFP growth was 0.3 for the period of 2005-2016. According to projections in the Perspective Plan (2021-2041), in order to achieve the high and sustained economic growth required to become an upper middle-income country (UMIC) by FY2031 and a high-income country (HIC) by FY2041, it is predicted that in addition to capital deepening TFP must grow at an average rate of 2.7% during 2021-2031 and 3.6% during 2032-2041 periods respectively. Increasing the average TFP from 0.3 observed in the last decade to 2.3%-4.5% range will necessitate a massive undertaking and will essentially require a paradigm shift for increasing the productivity of all factors of production. That is where ICT and the Digital Economy comes into play [GED, 2020: Part II, pg. 541].

In such a backdrop COVID-19 hit the world and Bangladesh. COVID-19 outbreak has impacted the economy and society across the globe and Bangladesh has not been an exception. Within a few weeks, all fundamentals of economy and society have been challenged in a way, which is unprecedented in human history. This is truly a global crisis. It is evident that the COVID-19 is not going away soon. We all have to fight it and be used to living with it so that the economy and human lives can survive through it and we can reorganize ourselves to thrive in 'new normal'.

The COVID-19, on the one hand, has exposed the vulnerabilities of our system, while on the other hand, is showing silver lining in many ways. The Digital Bangladesh achievements of the last decade facilitated Bangladesh mitigating some challenges, for others we are yet to leverage the full opportunity offered by ICT. ICT Division has built a coalition with participation of Aspire to Innovate (a2i), DataSense @ iSocial, Innovision Consulting, and LightCastle Partners for developing a roadmap for leveraging those potentials through a set of 'domino effect agenda' for the economy and society as a whole. A core group of experts and specialists have developed the roadmap with a thorough consultative process that included all key stakeholders.

B. Selection of thematic Areas

The selection of thematic areas for the roadmap followed a two-pronged approach: key impact areas of COVID-19 outbreak and key institutional buy-ins [Figure 1].

Figure 1. Factors for Heatmap Analysis and Selection of Themes

The Impact of COVID-19	Institutional buy-in
<ul style="list-style-type: none"> • Unemployment • Decline in economic • Activities Backward chain • Disruption Forward chain • Disruption Financial access disruption • Support system disruption 	<ul style="list-style-type: none"> • Influence of the government stimulus • Ministerial support received and planned • Support received/ planned from development partners • Support channeled by the private sector • Inclusiveness • Prior policy measures/ ongoing programs

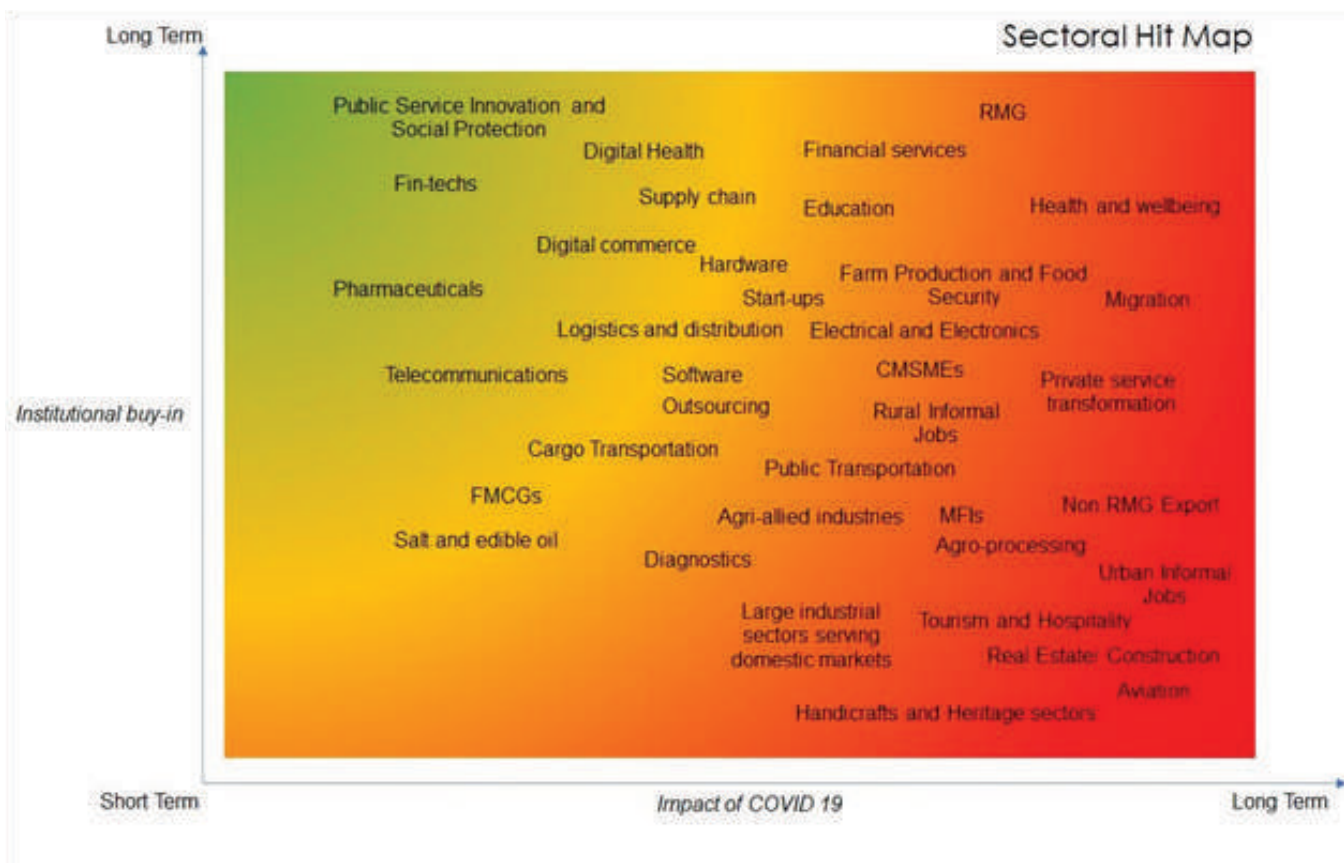
Using the factors mentioned above and impact data, two heatmaps have been developed: heat map of sectors and heat maps of the occupations in terms of impact [Figure 2]. The heatmaps indicate severity of impact through change of colors from green towards red, denoted higher severity with deeper red colors.

Based on the heatmap data and consultation process, thematic areas have been identified in two categories [see Figure 3]:

- Themes for ICT and emerging technologies as a sector
- Themes where ICT can play a role of catalyst for important sectors for transformation.

Based on the heatmap analysis, eight themes for ICT industry and 10 sectors for greater economy and society have been identified for deeper analysis and identification of specific action agenda to be addressed during the period of Eighth Five Year Plan (8FYP, FY2021 - 25).

Figure 2. Heatmap for sectors and Occupations



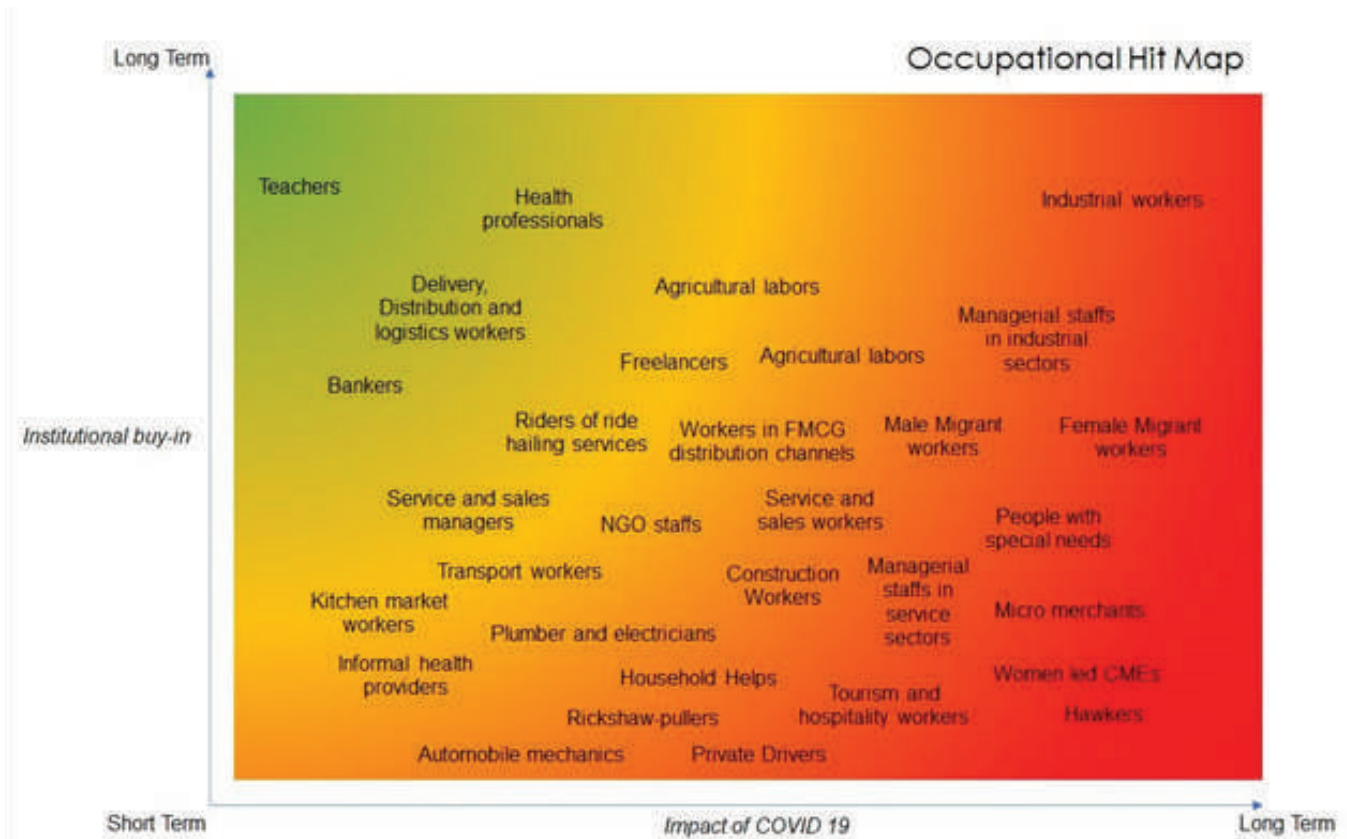
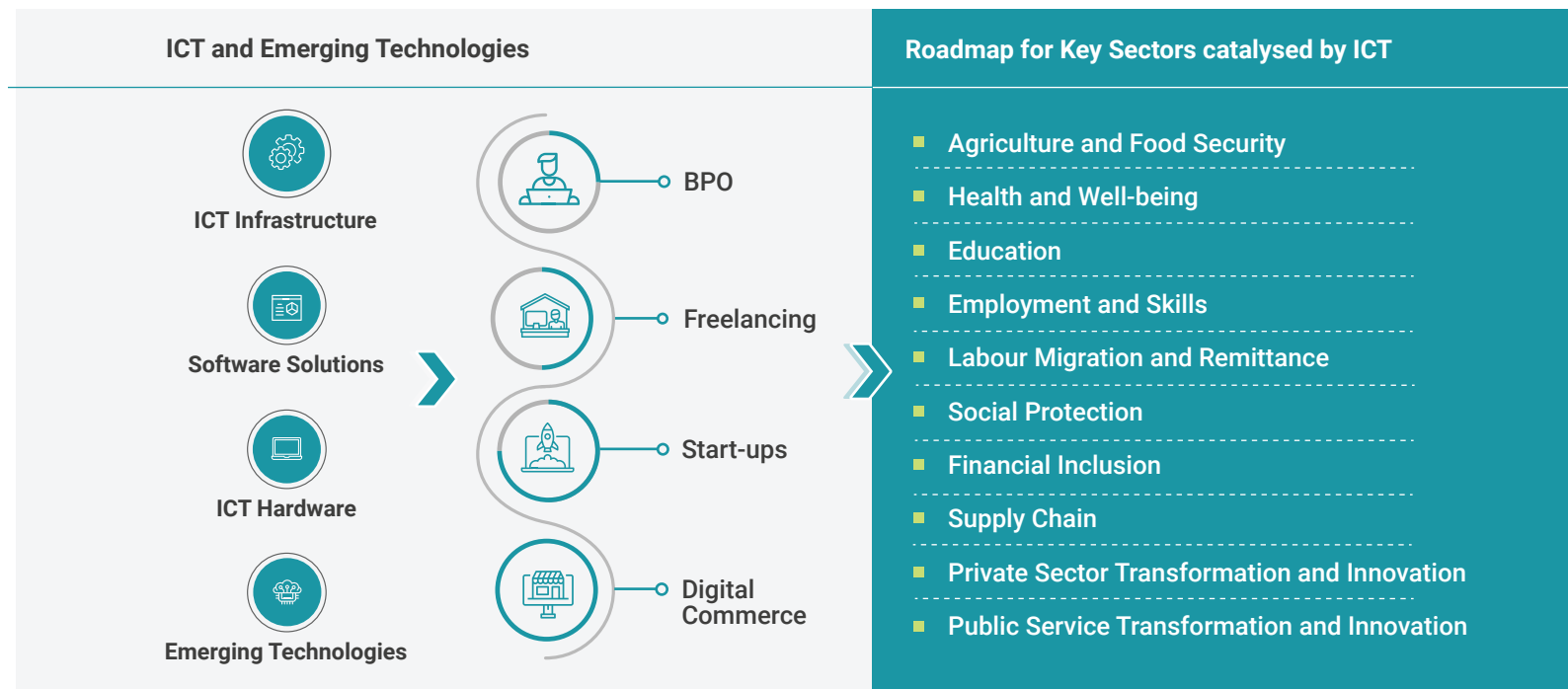


Figure 3. Thematic Areas for the Roadmap



C. Theory of Change

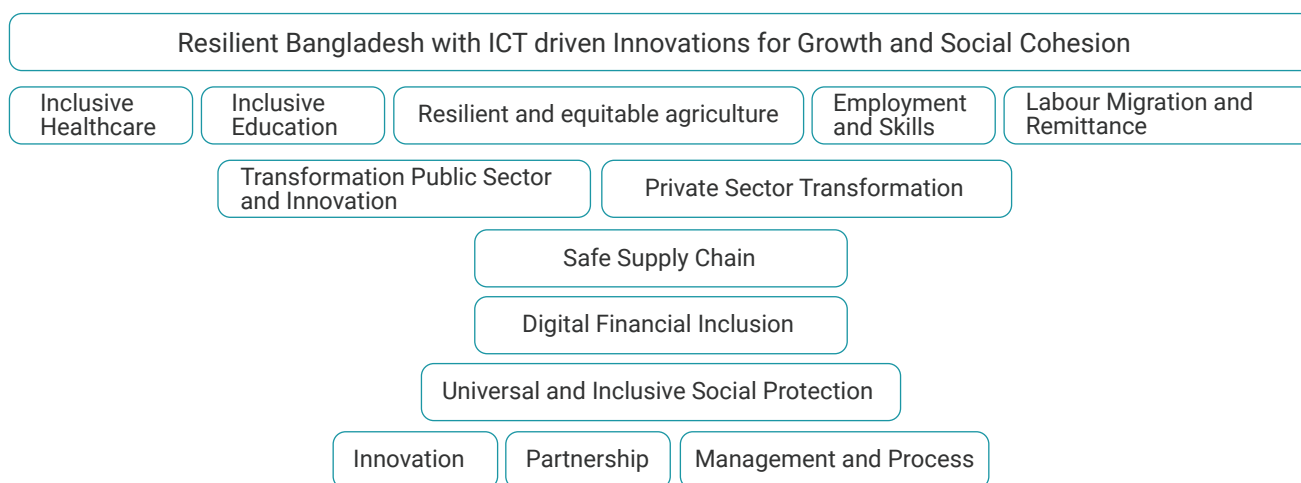
The COVID crisis showed us that domestic production, distribution, and finance system require further digitisation to manage operations remotely without human involvements. As the trends in supply, demand, and financing mechanisms are changing rapidly, the ICT industry can play a crucial role for Bangladesh in not only containing and responding to the impact of COVID-19 but also to build on the opportunities that are shaping up globally.

ICT-based development of any country is dependent primarily on innovation and ICT infrastructure, hardware, software, and essentially its human resources. To ensure that Bangladesh tops the ICT readiness index among South Asian countries by 2025, it is important to ensure that ICT penetration and its utilisation transpires for all citizens and for small and medium sized organisations across the country.

In the context of the current pandemic ICT interventions that can help mitigate the negative impact as well as create new business opportunities need to be identified. To reach that goal specific action items have been proposed in the mitigation strategy, the strategy for leveraging new opportunities, and the post COVID readiness strategies. These will ensure further investment in the economy as a whole and especially in the ICT sector, in the development of human resources, in policy formulation, and create the need for research and development resulting in the desired impact of reaching the ICT readiness goal by 2025.

Major components of the Roadmap are its strategy and the subsequent action items that will contribute to transformation of economy and society as a whole and to certain specific priority areas. It is to be noted that the overarching theme of the Eighth Five Year Plan is inclusiveness. In the priority thematic areas, inclusion is the overarching goal in line with the Eighth Five Year plan.

Figure 4 Theory of Change: ICT as an Accelerator for Economy and Society

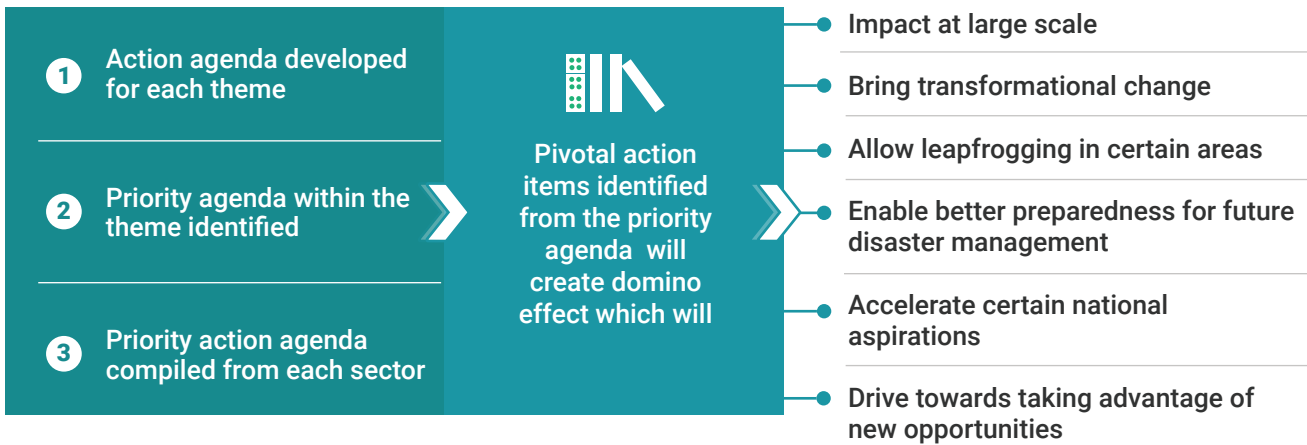


The role of ICT as an accelerator has been designed in the strategic roadmap to foster innovation, which is what our ecosystem has been gearing itself for. Partnership among stakeholders is paramount and collaboration is the key to achieve the bold targets. Prudent investment in infrastructure, management system and process will further contribute to delivering the desired goals. These elements have been the fundamental focus of the ICT roadmap and its proposed solutions.

D. Journey towards Domino Effect Agenda

Total 90 action agenda have been identified by the team, 5 for each thematic area. For each sector/sub-sector or theme, they have been identified as crucial for transformative change. The research team further researched and identified top 16 action agenda from those 90, which are going to create domino effect within each sector and on other sectors. Domino effect agenda it is defined as the agenda which is going to affect multiple areas across economy and society. Figure 5 depicts the steps towards identification of domino effect agenda.

Figure 5. Journey Towards Domino Effect Agenda



First, independent teams for each theme identified action agenda for that specific sector, sub-sector, or theme. From the identified agenda, top five agenda were filtered out for each sector, sub-sector, or theme. Upon compilation of all 90 action agenda, it was found that some agenda are repeated in different themes and there are causal relationships among some action agenda and outcomes of other agenda. These were recognised as the domino effect agenda, 16 of which were pinpointed. Analysis of those action agenda was done using the following criteria:

- a. Agenda which have impact at large scale
- b. Agenda that brings transformational changes
- c. Agenda that allow leapfrogging in certain areas
- d. Agenda that enable Bangladesh to be better prepared for future disaster management
- e. Agenda that accelerate realisation of certain national aspirations
- f. Agenda that drive towards taking advantage of new opportunities.

E. Foundation of Post-COVID-19 Roadmap

Digital Bangladesh is an integral part of the government’s Vision 2041. The Digital Bangladesh initiative consists of four key priorities, viz. :

- Developing human resources and making ready for the twenty first century
- Connecting citizens in ways which are most meaningful to them
- Taking services to citizens’ doorsteps
- Making the private sector and market more productive and competitive through the use of digital technology

The roadmap has been developed taking into consideration the above-mentioned priorities. The roadmap is also aligned with the 8FYP. The strategy document in 8FYP identifies the following critical success factors for achieving the goals of transformation and inclusion:

- a. ICT infrastructure
- b. R&D and innovation
- c. Policies for creating demand to scale up this model by the private sector

The overall strategy laid out in the 8FYP document is to:

- (i) Make the Government smart lead user of digital innovations in meeting line ministries’ targets
- (ii) Strengthen the supply side of physical infrastructure
- (iii) Develop human resources and prime the knowledge creation and exploitation through R&D
- (iv) Encourage private sector to leverage ICT innovations in addressing competitiveness
- (v) Empower ICT industry to scale up investment and innovations to create global success stories by taking home market as the stepping-stone
- (vi) Attain redesign capability out of digital technologies so that material and energy need as well as wastage decreases, and yield increases in whatever Bangladesh produces
- (vii) Leverage digital economy for harnessing the potential of fourth industrial revolution and attaining SDGs
- (viii) Cope up as well as take the advantage from the unfolding fourth industrial revolution

Some strategic areas in which interventions are going to be designed during the 8FYP [GED, 2020: Part II, pg. 548]:

1. Leveraging Line Ministry Centric Digital Economy Opportunities
2. Adopting the Five Helix Approach
3. Establishing cooperation between Industry, Academia, and Government
4. Intellectual Asset and Local Market Centric Start-up Success Creation and Youth Empowerment
5. Leveraging of Redesign Capability for Creating Success in High-tech Devices and Innovation
6. Turning high-tech Parks into Nucleus of Digital, Knowledge and Innovation Economy
7. Productive Knowledge Acquisition for meeting the challenges of fourth industrial revolution (4IR)
8. Digital Economy for Leveraging Fourth Industrial Revolution
9. ICT for Greater Transparency, Good Governance, and Service Delivery
10. Ensuring Equitable and Fair Share of Bangladesh in Global Digital Value Chain
11. Leveraging Digital Economy for Attaining Sustainable Development Goals
12. Intensifying Effectiveness and Efficiency, and Encouraging Private Investment
13. Developing the Culture and National Innovation System for Leveraging Knowledge Economy

F. Domino Effect Agenda

A. Universal affordable Access to Digital Device, digital literacy and Internet [Universal Access]: COVID-19 revealed that because of digital divide Bangladesh was unable to take full benefit of ICT for all its citizens and businesses. There were massive initiatives undertaken to make education available to children and students through digital platforms during COVID-19. However, due to inadequate of access to television, smartphones or computers, uninterrupted, high-speed and affordable Internet, and lack of digital literacy of children and parents, it was not possible to ensure 100% coverage of digital education despite the efforts made by the government, private sector and NGOs.

The growth and coverage of Internet, mobile phones, mobile financial services in recent times have created an opportunity for utilisation of ICT to initiate a paradigm shift to revamp the social protection programs. The COVID-19 crisis also opened our eyes to how important it is that all citizens have access to digital devices with reliable internet connection and access to digital financial services. The basics are there thanks to relentless efforts of the last one decade. Access to education and learning, access to healthcare, access to market and income opportunities, and most importantly, access to financial services are now at our doorstep, waiting for us to open the door with a big push. Imagine that all households have access to reliable electricity connection, smartphone with reliable Internet connection, and access to digital financial services. Access to these four essential items would enable us to provide sustained education for our children, access to essential health services for COVID-19 affected citizens, access to credit, and access to market. The women and girls who are lagging can also avail the digital opportunities. Bangladesh now has the resources and the readiness to ensure these four essential items within the next two years. This set of agenda under universal access will allow for the development of a universal identity system for all citizens, adults and children alike, which will allow identification of right beneficiaries for all social protection benefits and deliver them to the citizens without delay and with minimum targeting error. Bangladesh's agenda for prosperity and inclusiveness can be an example to the whole world. Implementation of these agenda will generate investment from home and abroad, will create new employment, and will also create multiplier effects in the economy through greater participation of players from the informal economy.

Although Bangladesh's Internet infrastructure improved significantly in terms of both spread of connectivity and speed, last-mile access to quality Internet at affordable price is yet to be ensured for our citizens. This is possible with a few administrative decisions and policy interventions. The number of Internet users in Bangladesh surpassed the 100 million mark to reach 103.253 million users for the first time, as recently stated by the Bangladesh Telecommunication Regulatory Commission (BTRC). More than 95 million out of the 103 million people using Internet services access it through the web or cellular network. However, this access is heavily dependent on mobile Internet, which does not ensure the high-speed connectivity that is essential for advanced use of the Internet for business and other activities requiring rich data exchange. Access to livelihood opportunities and access to social protection benefits by participants of the informal economy and marginalised population through mobile banking service was not possible because of these constraints. Identification of individuals for various benefits and services by eliminating the problem of mis-targeting and corruption was also not possible due to lack of universal access. Implementation of universal identity system (UIS) is also dependent on the universal access.

The goal of the ongoing Info-Sarker Phase-3 project is to establish broadband Internet infrastructure in 2600 unions across the country through the optical fiber cable. 2400 unions have already been connected. The Connected Bangladesh project is working to establish connectivity in 772 remote unions of the country.

It is expected that this connectivity will reach marginalised households and facilitate implementation of the universal access action agenda. It is important that this broadband connectivity is available to citizens of those unions. This can be possible by enabling small scale Internet service providers in all those 2600 unions who will use the bandwidth for providing services to every household. This will create economic opportunities for the youth in those unions and accelerate economic activities significantly. An Info-Sarkar Phase-4 may be undertaken to cover all other unions within 2025.

B. Launching of Universal Identity System (UIS) with profiling for multi-purpose use: Bangladesh has made significant progress in digital verification of citizens' identity using voter ID database. However, this database is not adequate for identification of individuals for many important service deliveries, especially for the delivery of social protection benefits since other demographic variables are missing. Moreover, voter ID is given to citizens after adulthood, thus citizens below 18 years of age are left out of the NID system. The universal identity system (UIS) would resolve this problem. Availability of data on certain parameters would make it possible to offer individual credit ratings for accessing credit through digital means for the unbanked population. The UIS is also essential for ensuring that all citizens have digital bank account and access to financial services.

The UIS has strong linkage to improving efficiency of the social protection distribution. The World Bank has projected that the extreme poverty rate in Bangladesh will increase from 12.8% last year to 21.8% in 2020.¹ PPRC and BRAC Institute of Governance and Development (BIGD) jointly conducted a quick sample survey including 50% poor and 40% vulnerable non-poor covering both rural and urban areas (71% respondents in urban areas and 55% in rural areas). Social protection has now become more important than ever since independence.

C. Universal access to Digital Financial Services (UDFS): Bangladesh has made phenomenal progress in expanding mobile financial service coverage. When citizens have universal access to digital device, Internet and digital literacy with universal identity system, implementation of universal digital financial services (UDFS) would be easier and quicker to ensure a true inclusive economy and society. However, quick implementation of universal coverage of digital financial service will require another action agenda to be implemented, which is **(financial) data interoperability** among the financial institutions, DFS providers, and telecom operators in conjunction with UIS. This is specifically important for launching of alternative credit rating system for individuals and the informal economy. The combination of universal access, UIS, and universal access to UDFS can create a paradigm shift in the inclusion agenda under 8FYP and Bangladesh can become a global example of social and economic inclusion. This trio domino effect agenda will ensure high multiplier effect in the economy.

D. Made in Bangladesh Roadmap: From the perspective of ICT industry, implementation of 'Made in Bangladesh' action agenda will make Bangladesh a major hub of ICT and IoT devices manufacturing. This action agenda will also foster the agenda of universal access. The ICT industry will be able to create 100,000 jobs in the device manufacturing sector. The reason behind such aspiration is based on data on digital device import. Increasing consumption of digital devices and consumer gadgets by the emerging middle and affluent class (MAC) has built the foundation for assisting the entry of Bangladesh into the international high-tech manufacturing industry. Corresponding to International Data Corporation (IDC), 34 million phones worth US\$1.18 billion were imported in 2017, and the laptop market was valued to be at US\$300 million in 2018.²

Bangladesh has already undertaken a number of ground-breaking policy measures for facilitating 'Made in Bangladesh' agenda. The establishment of High-tech Park Authority (BHTPA) with a set of preferential treatments is a breakthrough in this context. The following are the policy measures for 'Made in Bangladesh' agenda:

1. 12 years exemption of Income Tax for park developers
2. 10 years exemption of Income Tax for investors
3. Exemption of Import Duty, Regularity Duty, and Supplementary Duty for local production of ATM machine and CC camera
4. Exemption of Duties on importing Capital Equipment and Construction Materials by the Investors
5. Hi-Tech Parks are declared as Bonded Warehousing Stations
6. Exemption of Income Tax on Dividend, Share Transfer, Royalty, Technical Fees for investors
7. Exemptions of Income Tax for Foreign Employees
8. Exemption of Income Tax on declared Dividend by Park Developers
9. Exemption of VAT during production level of goods by the Investors
10. Exemption of Duties on importing Goods/Materials to be used for the development of Hi-Tech Parks by the Park Developers
11. Exemption of Duties on importing Transport by the investor
12. Exemption of stamp duty on the deed registration/ mortgage deed registration.

1. World Bank. 2020. South Asia Economic Focus, Spring 2020 : The Cursed Blessing of Public Banks. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/33478> License: CC BY 3.0 IGO

2. IDC Market Note's Driving a Digital Bangladesh Through High-Tech Manufacturing, Sampath Kumar Venkataswamy

Bangladesh has also established various back-end capacity for becoming a manufacturing hub of ICT devices and software. To ascertain the proper applicability of the software and hardware produced, developed, or purchased by different government departments or agencies and to maintain its quality, Bangladesh Computer Council (BCC) has established Software and Hardware Quality Testing & Certification Centre. Based on leading standards, practices, and frameworks and aligned and tailored as per Bangladesh requirements and strategic objectives, Bangladesh National Digital Architecture (BNDA) project has created Bangladesh National Digital Architecture framework. Design, development, and implementation of interoperability framework across the GoB has been developed through this project.

The success of 'Made in Bangladesh' roadmap will also depend on restriction of 100% FDI in device manufacturing. The participation of local industry will ensure establishment of factories of world class device manufacturers.

E. Transformation of Education to 4IR adjusted blended learning for all citizens: This is the domino effect agenda concerning the future of education, skills acquisition, and market adaptability. The COVID-19 fast-forwarded the thoughts behind blended learning by at least a decade. The advantage of face-to-face learning and self (digital) learning including distance learning needs to be accrued by Bangladesh. This agenda will be possible when agenda for universal access is implemented.

The universal access along with blended learning will enable 120 million citizens to access government service digitally. Implementation of digital learning with blended learning will enable government to offer seamlessly 2500+ digital services to citizens. Citizens' engagement in building corruption-free Bangladesh will be possible through implementation of this action agenda.

F. Alternative credit rating system for CMSMEs and vulnerable citizens: Access to finance is a major challenge for CMSMEs and for citizens working in the informal economy. The emergence of digital financial services allows us to think of implementation of alternative credit rating system for CMSMEs and vulnerable citizens, who are traditionally considered unbankable. The implementation of stimulus packages for the CMSMEs is much slower than packages for the mainstream economic sectors including RMG. The reason behind such slow implementation is that the traditional credit rating system is designed in a way that most of the CMSMEs are unable to fulfil the criteria of the scheduled banks. This implementation of one single agenda will lead to expansion of the financial market boosting the economy for fostering growth and overcoming challenges of COVID-19. This will allow Bangladesh to enter into the era of full-fledged digital banking services for all citizens (payment, savings, credit, insurance). Having access to digital device and digital banking account, citizens of informal economy, CMSMEs, and women entrepreneurs will benefit.

G. Digital Agri-commodity Exchange: Agriculture sector suffers not due to disruption of production, rather challenges in harvesting and broken supply chain. Bangladesh needs a digital commodity exchange, especially for the agriculture sector, which will connect farmers at their doorsteps with agricultural produce market. The farmers and agricultural value-added producers will be protected from price fluctuations and it will stabilise in rural economy.

H. Bottom-up e-commerce for livelihood of local producers and artisans: This will facilitate transforming 5 million informal jobs into formal jobs and protect the backbone of the economy.

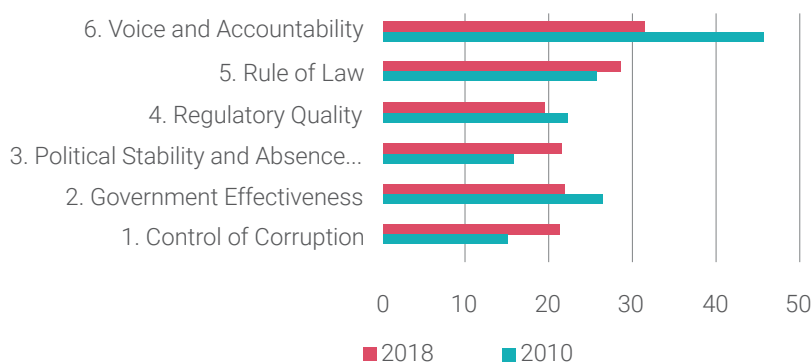
I. National Skills Registry: Youth unemployment is a major ongoing challenge for Bangladesh and job-less growth compounds that challenge. COVID-19 has further aggravated the situation. For ensuring planned skills development and facilitating employment at home or abroad a **national skills registry for both formal and informal economy** will be developed as a domino effect agenda. This will facilitate demand-supply gap mitigation at home and overseas job market, as well as facilitate designing of targeted unemployment benefit schemes. Under this agenda of skills registry, a digital record keeping hub will be developed, where any and all individual of employable age, irrespective of sex and social class, can register covering the 85% of the informal sector. Additionally, employers from all sectors will mandatorily register their employee database, new job postings, etc., helping those registered as unemployed to seek opportunities, giving the entire ecosystem a realistic overview of the demand and supply situation. This can serve as a basis for national level strategic decision-making and policy reforms.

J. National Start-up Policy: While Bangladesh wage employment situation will change through the above-mentioned domino-effect action agenda, it is important to focus on self-employment generation, which in turn will create more jobs in the new enterprises. Moreover, a culture of innovation will be mainstreamed through the nurturing of start-ups in all economic sectors. This will also facilitate self-employment and innovation-based job creation.

K. Paperless Government: Public Sector transformation: Implementation of e-nothi, digital connectivity across the country, massive training of government officials for innovations and digital management set the ground for paperless government, which is one of the most important domino-effect agenda.

The most prominent cross-country comparison of progress in institutional performance and governance is “World Governance Indicators”. Figure 6 shows that Bangladesh’s relative position has only moderately improved in three indicators – namely, ‘Control of Corruption’, ‘Rule of Law’, and ‘Political Stability and Absence of Violence/Terrorism’ – while remaining below par in other key areas such as ‘Voice and Accountability’, ‘Government Effectiveness’ and ‘Regulatory Quality’ [GED, 2020].

Figure 6. Bangladesh in The Worldwide Governance Indicators



Source: WGI, World Bank, 2019 in GED [2020]

Bangladesh has become a global example for digital transformation of government services thanks to Digital Bangladesh agenda launched in 2009. The Government has made all necessary information of the Ministries and other relevant notifications available through various websites which are accessible to the public. In addition, the Government has trained more than 50,000 public officials to maintain these websites and update data and information regularly. The Government of Bangladesh (GoB) has also introduced a national portal containing information from all the Ministries, while e-Service centres were introduced at the district level enabling the districts to share information online. Moreover, a National Data Centre facilitating the dissemination of citizens’ National Identification (NID) Cards and voter lists has been established and made operational.

The Government has also established the National ICT Infra-Network for Bangladesh Government Phase II, and implemented 800 video conferencing systems at different Ministries, departments and upazila offices. Additionally, successful implementation of the project will ensure 10Gbps capacity network at the upazila levels and 100 Gbps capacity networks at the district levels. In key institutions such as the former Board of Investment (BoI) now renamed as the Bangladesh Investment Development Authority (BIDA), the Government has introduced the system of online registration and work permits for foreign nationals and investors, while the National Board of Revenue (NBR) has introduced a system allowing the filing of tax returns online, using an online tax calculator.

The digitisation of government services has expanded and improved significantly. The government’s e-governance initiative comprises of five components i.e., Service Process Simplification (SPS), ‘less paper office,’ government services portal, land information services, and government forms portal. The SPS aims to simplify processes involved in public service delivery and reduce the time required to deliver them. A total of 424 public services were included in this programme till early 2020. “Seba Kunjo,” a government services portal initiated in 2014 to provide access to the major services, has expanded significantly to include more services during the 7th Plan period. The government is committed to strengthening e-governance further by including more services under SPS.

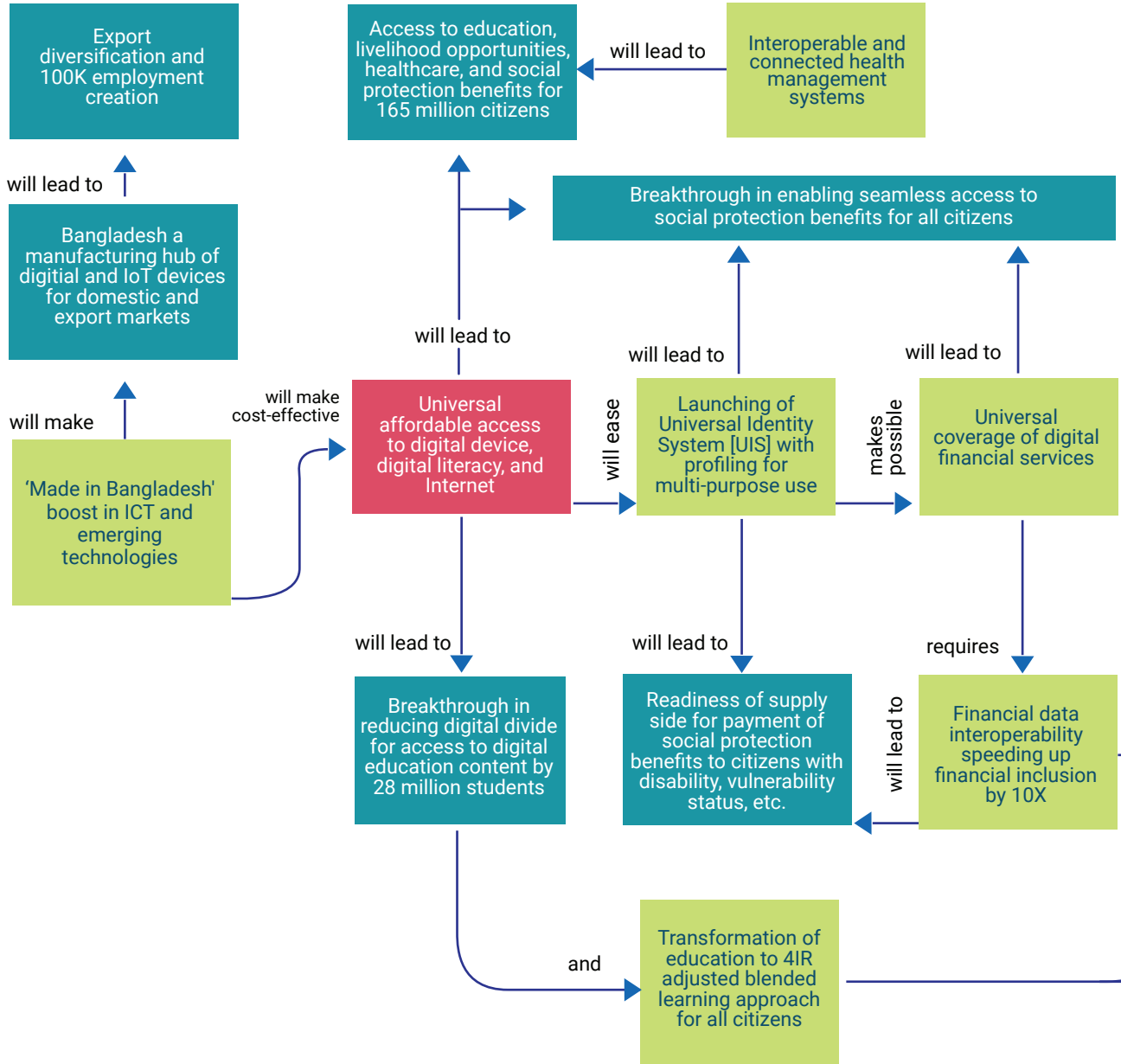
One important issue requires special mention, which is data availability. There is serious scarcity of data; data is not also made available in a timely fashion, for example websites are not regularly updated. Availability of data and information needs to be given top priority to improve transparency and for conducting independent evaluation and assessment of government strategies, policies, and activities. In many instances, the data provided in government websites are not user friendly (in pdf form). All public data collecting agencies, including BBS, needs to be strengthened to address this vital concern.

The action agenda for ‘Paperless Government’ includes, inter alia, expansion of e-Nothi across all government offices by 2021. Simplification of decision-making process and automation, introduction of advanced digital literacy of all government officials, universal access to mobile digital device for all government officials, launching of KPI for each institution and official. integration of national planning documents, APA and KPI, completion of digital infrastructure (connectivity, data centre and data security) are sll benefits of these tools.

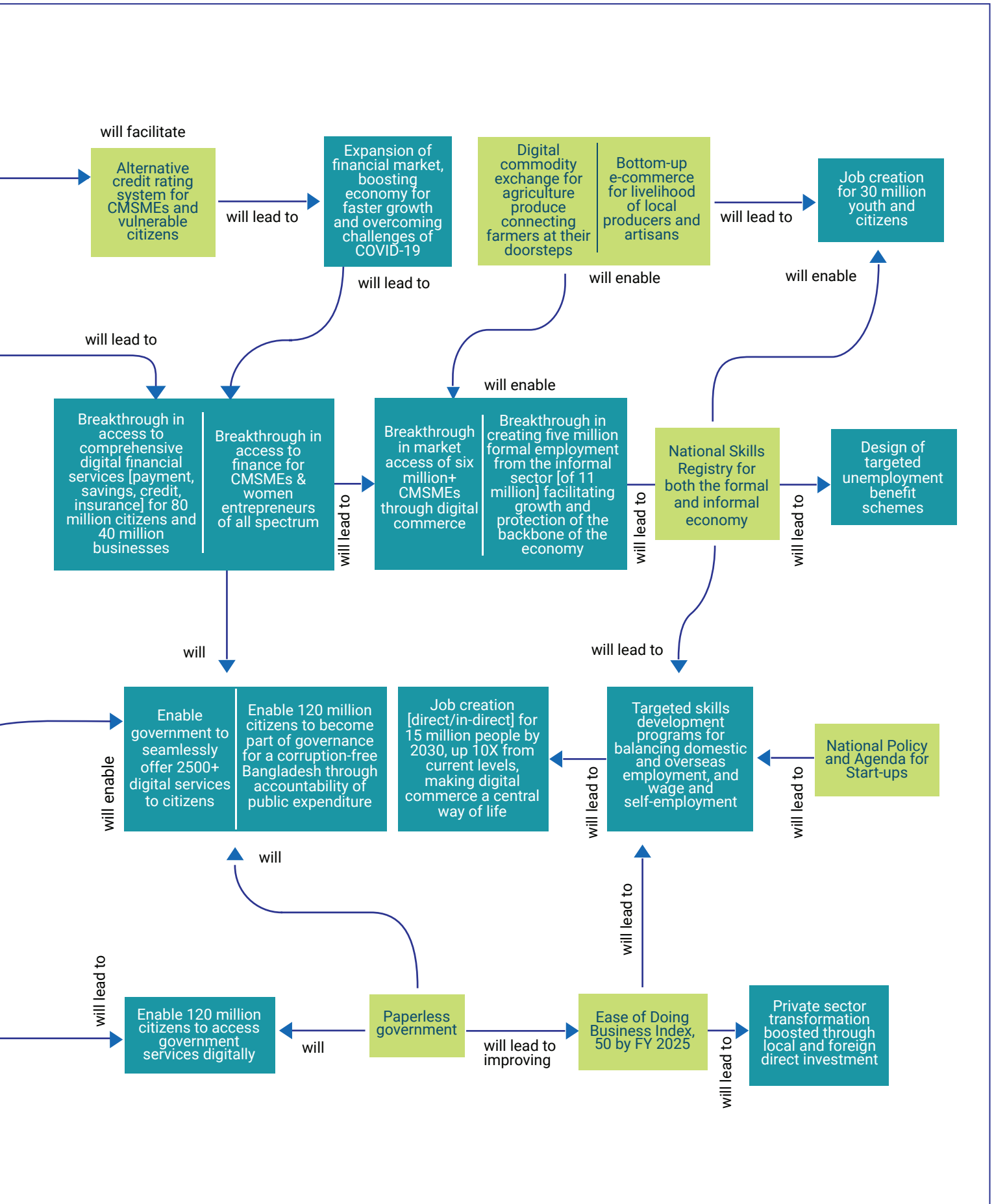
L. Ease of Doing Business Index to 50 by 2025: Bangladesh’s performance in ease of doing index is mixed. This is a very critical area for private sector-led and start-up led growth for Bangladesh. Thus, the 16 domino-effect action agenda includes improving **Ease of Doing Business Index to 50 by 2025**.

D. Domino Effect Action Agenda

Impact **Domino effect action agenda**



• **Inclusive Growth by FY2025** •



G. Policy and Regulation connected to the Action Agenda

During last decade several policy barriers have been removed for ensuring catalytic role of ICT in digital transformation of the economy and society. A short list of them is presented below :

- a2i Bangladesh Innovation Agency Act
- Innovation Guideline Strategy & Policy
- Big Data Strategy
- E-Service Strategy
- Digital Service Design Guideline & Strategy
- Educational Technology Portal Framework
- E-Learning Guideline & Strategy
- Critical Thinking & Problem-Solving Skills Strategy
- Integrated Service Delivery Platform Strategy
- Integrated Payment Policy
- National Integrity Strategy (NIS)
- Government to Person Strategy
- Digital Financial Ecosystem Strategy
- R&D Equipment Import Policy
- R&D Products Raw Materials Import Policy
- R&D Products Standardisation Strategy & Policy
- Amendment of IP Policy
- National Hotline Policy
- E-Nothi Guideline
- Amendment of Digital Government Act for e-Nothi
- E-Nothi Implementation Roadmap
- Amendment in Secretariat Instructions & Rules of Business
- 4IR-Based Future Skills Policy
- Conceptual Framework for Future of Work for Bangladesh

The required additional policy measures for each of the action agenda are presented as follows:

- A. Interoperable and connected health management systems
 - a. Investment in human capability and capacity, especially health care management so that the health system is transformed from 'doctor-centric' to 'healthcare management centric'
 - b. Development of an accountability framework for both public and private facilities
 - c. Development and enforcement of a mandatory health data interoperability protocol for connecting data system of all public and private health facilities
 - d. Launching of universal health insurance system covering both public and private facilities
- B. 'Made in Bangladesh' boost in ICT and emerging technologies: Development and enactment of 'Made in Bangladesh' Policy for promoting local manufacturing of digital devices for domestic and foreign markets. The policy needs to be foreign investment friendly and at the same time promote local capacity building
- C. Universal affordable access to digital device and Internet broadband connectivity:
 - a. Development of guideline for utilisation of Social Obligation Funds so that it can be invested in covering all citizens under 'universal access to digital device and Internet' program
 - b. Upgrading National Broadband Policy, 2009 for:
 - i. Inviting district and upazilla level investors and start-ups to offer broadband services
 - ii. Revision of TAX, VAT, and Surcharge to decrease Internet price.
- D. Universal affordable access to digital literacy:
 - a. Development of digital literacy curriculum guideline for each segment of learners for development of course materials by public and private agencies
 - b. Making curriculum and content for digital literacy open [creative commons licensing].
- E. Launching of Universal Identity System [UIS] with profiling for multi-purpose use:
 - a. Inter-agency working group for appropriate design and roadmap for UIS
 - b. Enactment of Data Interoperability Law
 - c. Enactment of Data protection and Privacy law [e.g., GDPR]

- F. Universal coverage of digital financial services: Digital Financial Inclusion Policy to incentivise digital financial transactions across the population.
- G. Financial data interoperability speeding up financial inclusion by 10X:
 - a. Enactment of Data Interoperability Law
 - b. Enactment of Data protection and Privacy Law [e.g., GDPR]
 - c. Revision of Digital Security Act, 2018 to connect with independent law on data protection and privacy
- H. Alternative credit rating system for CMSMEs and vulnerable citizens: Enactment of a law for CMSME credit rating system with emphasis of credit bureau database under Bangladesh Bank Order, 1972
- I. Digital commodity exchange for agriculture produce connecting farmers at their doorsteps:
 - i. National policy for quality standards for different agro-commodities in Bangladesh
 - ii. National Agro-Commodity Exchange Policy
- J. Facilitating bottom-up e-commerce for livelihood of local producers and artisans :
 - i. Upgrading National Broadband Policy, 2009 for revision of TAX, VAT, and Surcharge to decrease Internet price
 - ii. Upgrading National Digital Commerce Policy, 2018 for exemption of some taxes imposed on digital commerce and advertising
- K. Transformation of education to 4IR adjusted blended learning approach for all citizens:
 - i. Digital Education Policy [in alignment with 8th Five-Year Plan]
 - ii. Upgradation of Intellectual Property Rights [IPR] Policy to ensure appropriate encryption and to protect the providers of online education
- L. National Skills Registry for both the formal and informal economy: Introduction of National Skills Registry Policy
- M. Paperless government: Introduction of Paperless Government Act
- N. Ease of Doing Business Index 50 by 2025: Introduction of Ease of Doing Business Policy catering to each of the 18 sectors identified
- O. National Policy and Agenda for Start-ups: National Policy for Start-ups to promote growth of the ecosystem, while also attracting foreign investment

H. Approach for Implementation of the 16 Domino-effect Agenda

The most important lesson learned from the COVID-19 is that challenges of the magnitude like this is not possible to overcome without coordinated approach among all the stakeholders. First of all, it is important that whole of the government approach (WOGA) is ensured by ensuring ownership of each of the relevant government entities with appropriate delegation of authority and allocation of resources [Figure 8]. It is envisioned that there will one lead agency, with co-lead where necessary, for spearheading each of the domino-effect action agenda. There will be partnership with other government entities, including those at the grassroots level, as required. The resources for implementation will be mobilised from the national budget, development partners, national and foreign investment, and through public-private partnerships. For each action agenda there will be an expert advisory group, comprising of national and international experts and agencies, who do not have any vested interest in any of the agenda.

The whole of the society approach is built on the partnership of five stakeholders: government, private sector, NGOs, development partners, and community or citizens [Figure 9]. Participation and contribution of these groups will make the 16 action agenda possible within the span of the 8FYP. The experience of last one decade shows that participation of stakeholders can make many seemingly unachievable tasks achievable. Building of close to 5,000 union digital centres was possible due to the collaboration and belief in the big-bang approach. As some of the domino-effect agenda may seem overambitious, the team believes that they are very much achievable with coordinated partnerships.

Figure 8. Whole of the Government Approach

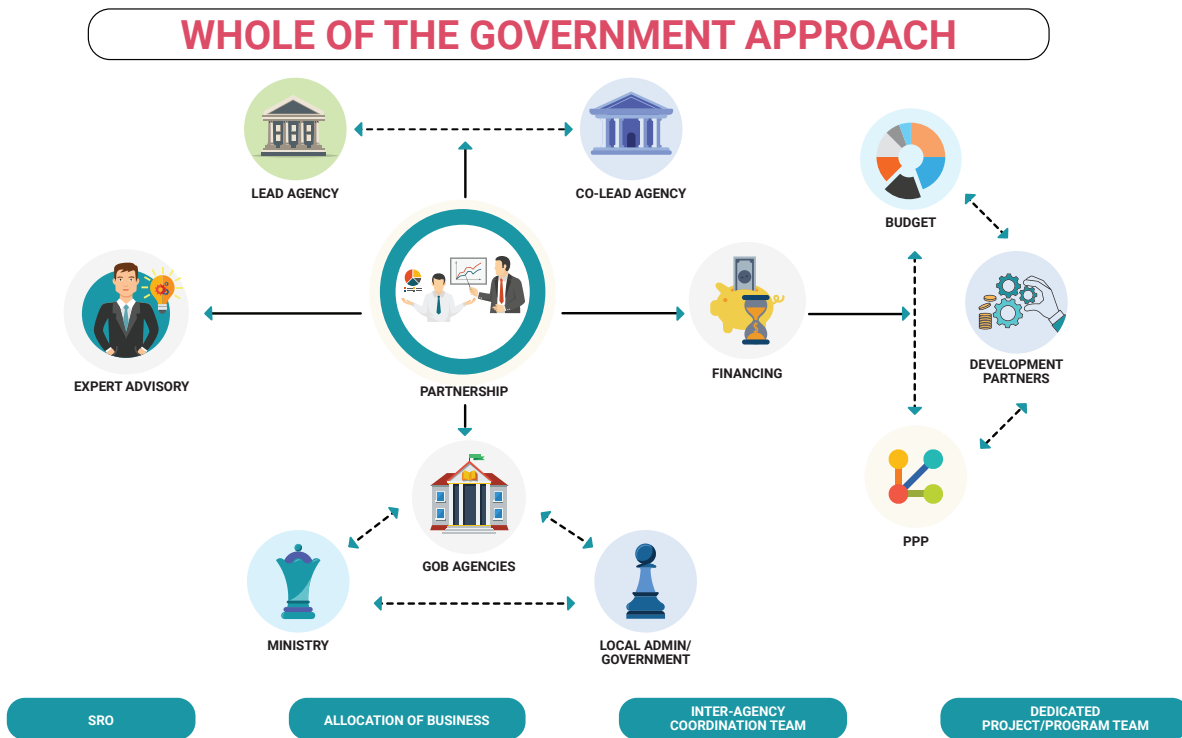
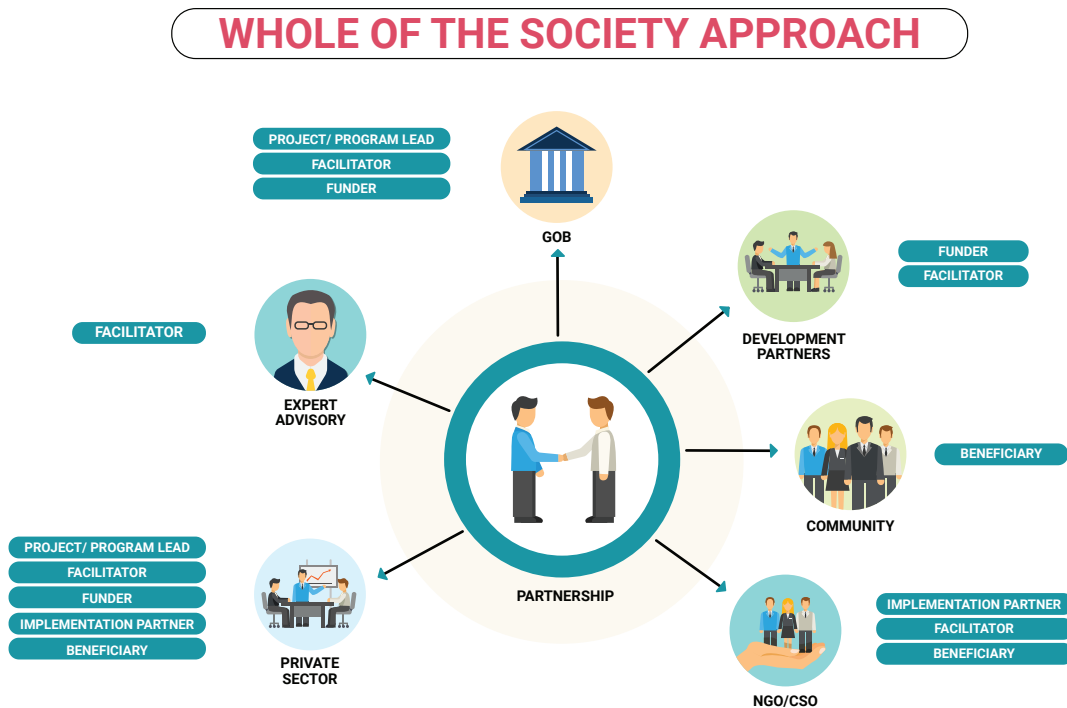


Figure 9. Whole of the Society Approach

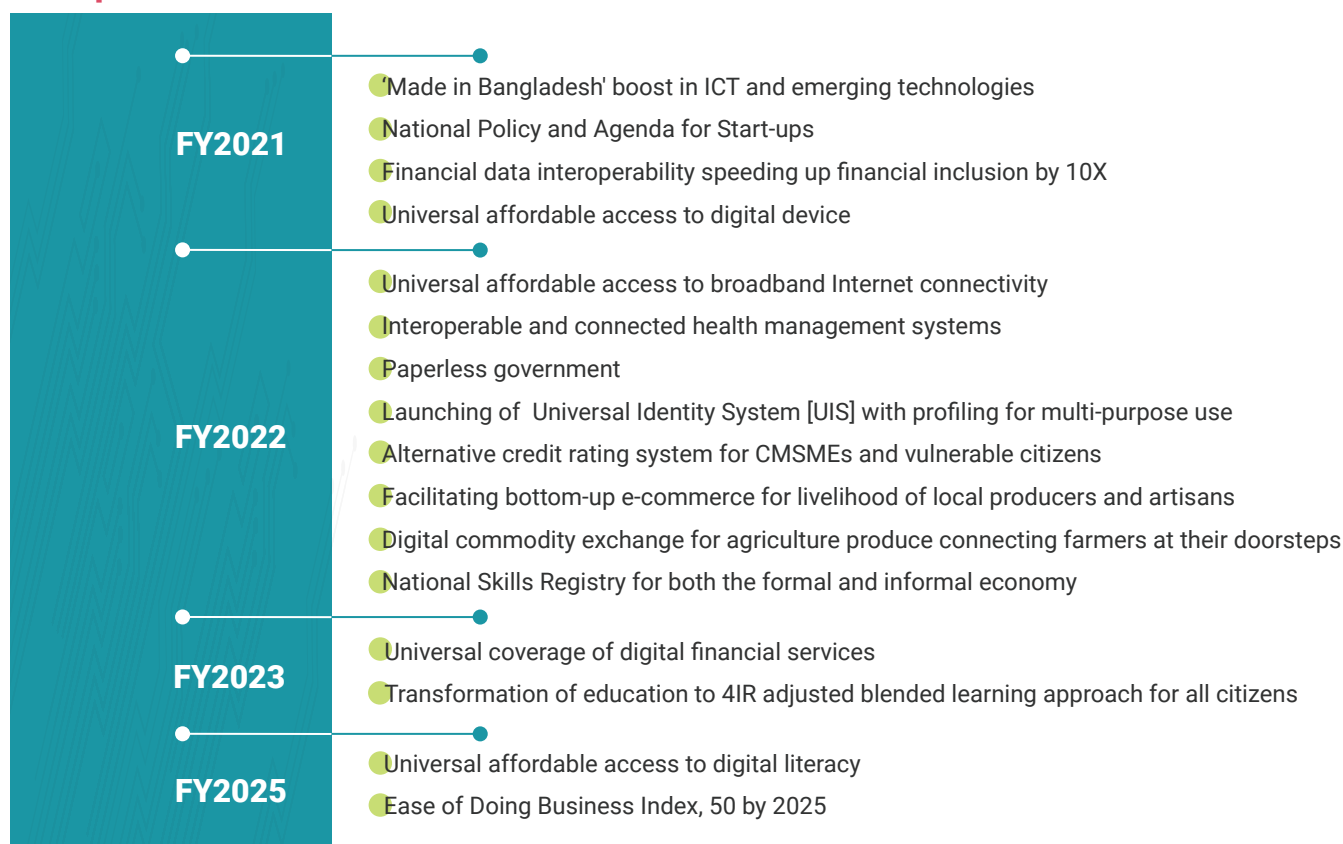


I. Timeline for Domino Effect Agenda

The 16 domino-effect agenda are designed for implementation under the 8FYP. Some of the agenda are of immediate term and are designed for implementation within FY 2021. Four agenda are identified for FY 2021 [see Figure 10]. Eight action agenda are for implementation by the end of FY2022. There are two agenda for FY2023 and the other two by 2025. It is to be clarified that the agenda, which are beyond FY2021 are with cumulative timeline. For example, The agenda of Ease of Doing Business index 50 by 2025 is an agenda to be started this year and will continue for the next five years, as there are many issues that need to be addressed to achieve this progress in Index.

Figure 10. Timeline for Domino Effect Agenda

J. Implementation Timeline



K. Powerhouse of implementation of Post-COVID-19 ICT Roadmap

The 16 domino effect agenda will be implemented following the whole of the government approach and whole of the society approach. Table 1 shows the proposed lead agency for each of the action agenda with possible co-leads, implementing agencies, and partners. Each of the action agenda will be coordinated by the coordination unit [to be specified] at ICT Division. For each agenda, there will be a dedicated team of experts from home and abroad. Financing option is also presented in the Table 1. It is to be mentioned that all names of entities are proposed and need to be finalised upon further discussion.

L. Implementation Powerhouse

Action Agenda	Lead	Co-Lead	Implementing Agency
Interoperable and connected health management systems	Ministry of Health and Family Welfare (MoHFW)	Local Government/ Ministry of Women and Children's Affairs	Directorate General of Health Services (DGHS)
'Made in Bangladesh' boost in ICT and emerging technologies	Ministry of Industries (MoI)	ICT Division/ Ministry of Commerce/ Internal Resources Division (IRD)	Bangladesh Hi-Tech Park Authority (BHTPA)/ Bangladesh Economic Zones Authority (BEZA)
Universal affordable access to digital device and Internet broadband connectivity	Posts and Telecommunications Division	ICT Division (ICTD)	BHTPA/ Bangladesh Telecommunication Regulatory Commission (BTRC)/ Bangladesh Computer Council (BCC)
Universal affordable access to digital literacy	ICT Division (ICTD)	Education Ministries (MoPME, MoE-SHED, MoE-TMED)/ National Skill Development Authority (NSDA)/ Ministry of Expatriate's Welfare and Overseas Employment	Bangladesh Technical Education Board (BTEB)/BCC/ Department of Information and Communication Technology (DoICT)/ Bureau of Manpower, Employment and Training (BMET)
Launching of Universal Identity System [UIS] with profiling for multi-purpose use	Cabinet Division	Local Government/ ICT Division	National Identity Registration Wing (NIDW)/ Controller of Certifying Authorities (CCA)
Universal coverage of digital financial services	Bank and Financial Institutions Division (BFID)	ICT Division/ Bangladesh Bank/ Insurance Development & Regulatory Authority (IDRA)	Aspire to Innovate Bangladesh (a2i)/ BCC
Financial data interoperability speeding up financial inclusion by 10X	Bank and Financial Institutions Division (BFID)	Bangladesh Bank/ Ministry of Finance/ ICT Division	Bangladesh Computer Council (BCC)
Alternative credit rating system for CMSMEs and vulnerable citizens	Bank and Financial Institutions Division (BFID)	Bangladesh Bank/ Microcredit Regulatory Authority (MRA)	SME Foundation/ Bangladesh Small and Cottage Industries Corporation (BSCIC)/ Palli Karma Sahayak Foundation (PKSF)/ NGO Affairs Bureau/ Department of Cooperatives
Digital commodity exchange for agriculture produce connecting farmers at their doorsteps	Ministry of Agriculture (MoA)	Ministry of Commerce (MoC)	Department of Agriculture Marketing/ Directorate of National Consumers' Right Protection
Facilitating bottom-up e-commerce for livelihood of local producers and artisans	Ministry of Commerce (MoC)	Ministry of Cultural Affairs/ Ministry of Textile and Jute/ Ministry of Youth and Sports (MoYS)/ ICT Division	a2i
Transformation of education to 4IR adjusted blended learning approach for all citizens	National Education Reform Commission (proposed)	All divisions of Education Ministries (MoPME/ MoE-SHED/ MoE-TMED)/ ICTD/ UGC/ Ministry of Textiles and Jute (MoTJ)/ MoYS	Bangladesh Technical Education Board (BTEB)/ NSDA/ BCC/ Directorate of Secondary and Higher Education (DSHE)/ Primary and Mass Education Division (PMED)/ DoICT
National Skills Registry for both the formal and informal economy	National Skill Development Authority (NSDA)	ICT Division/ Ministry of Labour and Employment (MoLE)/ University Grants Commission (UGC)/ Bangladesh Election Commission	a2i
Paperless government	Cabinet Division	Ministry of Public Administration (MoPA)/ ICT Division	a2i/ BCC
Ease of Doing Business Index, 50 by 2025	Bangladesh Investment Development Authority (BIDA)	ICT Division/ Bangladesh Securities Exchange Commission (BSEC)	List of Agencies under BIDA
National Policy and Agenda for Start-ups	ICT Division (ICTD)	BSEC/ BIDA/ Ministry of Foreign Affairs (MoFA)	Startup Bangladesh Limited

Partners	Coordination	Financing
DGHS/ Directorate General of Family Planning (DGFP)/ Community Health Care Provider (CHCP)/ HealthTech players and start-ups/ NGOs in healthcare	ICTD Coordination Unit	PPPA/ World Bank/ FDI
Public Private Partnership Authority (PPPA)/ BIDA	ICTD Coordination Unit	PPPA/ World Bank/ ADB/ IDB/ Development partners (e.g., EU, JICA, DFID)
Device manufacturing companies/ Private-sector players in Bottom of Pyramid (BoP)/ NGOs/ Internet Service Providers Association of Bangladesh (ISPAB)/ Connectivity start-ups for Bottom of Pyramid (BoP)	ICTD Coordination Unit	GoB Funding (e.g. Social Obligation Fund)/ World Bank/ PPPA/ Development partners (e.g., EU, JICA, DFID)
NSDA/ BTEB/ ILO Skills 21 project/ EdTech companies and start-ups/ NGOs/ Social enterprises	ICTD Coordination Unit	GoB Funding/ PPPA/ Development partners (e.g., EU, JICA, DFID)
Bangladesh Bureau of Statistics (BBS)/ BoP data start-ups/ NGOs	ICTD Coordination Unit	GoB Funding/ Development partners (e.g., EU, JICA, DFID)
Mobile Financial Services (MFS)/ Digital Financial Services (DFS)/ Fintech start-ups/ Investors	ICTD Coordination Unit	PPPA/ FDI
Ministry of Industry/ SME Foundation/ MRA/ Fintech companies and start-ups/ Micro Finance Institutions (MFIs)	ICTD Coordination Unit	GoB Funding
SME Foundation/ MRA/ Fintech companies and start-ups	ICTD Coordination Unit	GoB Funding
a2i/ MoA/ Ministry of Fisheries and Livestock (MoFL)/ Ministry of Local Government, Rural Development and Co-operatives (MoLGRD)/ PKSf/ Development partners (e.g. DFID, IFC)	ICTD Coordination Unit	PPPA/ World Bank/ FDI
e-Commerce Association of Bangladesh (e-CAB)	ICTD Coordination Unit	PPPA/ World Bank/ ADB/ IDB/ Development partners (e.g., EU, JICA, DFID)
UNESCO/ UNICEF/ NGOs/ EdTech start-ups	ICTD Coordination Unit	GoB Funding/ PPPA/ World Bank/ ADB/ Development partners (e.g., EU, JICA, DFID)
Bangladesh Employers Federation (BEF)/ Chambers/ BBS/ BTEB	ICTD Coordination Unit	GoB Funding/ World Bank/ Development partners (e.g., EU, JICA, DFID)
UNDP	ICTD Coordination Unit	GoB Funding/ Development partners (e.g., EU, JICA, DFID)
All Ministries and Agencies	ICTD Coordination Unit	GoB Funding/ World Bank/ Development partners (e.g., EU, JICA, DFID)
Startup supporting initiatives/ ventures	ICTD Coordination Unit	GoB Funding/ World Bank/ Development partners (e.g., EU, JICA, DFID)

Post COVID-19 ICT Roadmap for Bangladesh

ICT and Emerging Technologies

Post COVID-19 ICT Roadmap for Bangladesh: ICT Industry (Software)

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Software Industry is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Software Industry

Bangladesh is propelling on the trajectory of a new growth curve of rapid digitization determined by technological progress. High-tech and Software Technology Parks, vibrant start-up ecosystem, over 100 million internet users, and mounting adoption of digital devices construct the columns of support ecosystem for building Digital Bangladesh.¹ Bangladesh is targeting USD 5 Billion local market revenue and USD 5 Billion export by ICT industries in the next five years (Mission 5 billion). The Bangladesh Association of Software and Information Services (BASIS) reports that there are over 1200 software and Information Technology Enabled Services (ITES) member-firms in Bangladesh. Based on the IT-ITES Industry Statistics, the estimated magnitude of the software and software enabled services industry in the country was over Tk. 1200 Crore in local market revenue and USD 477 million in export revenue in 2018. The report also states that roughly 72,000 are working part-time and full-time in the Software industry (2018 data).² Majority of the income of the software sector comes from private initiatives. The country earns about US\$ 800 million from exports by trading domestically created software and offering ICT based services each year, whereas the amount was just a few million US dollars some decades ago.³ The software industry in Bangladesh has a remarkably optimistic future in terms of growing potentials and can create job opportunities for millions of people though the sector has still been suffering from the shortage of skilled labor. Industry experts estimate that the overall revenue will be reduced by 20-25 percent due to the COVID-19 pandemic.⁴ Without proper intervention of the government and adaptive policy reformulation, this thrust sector will not be able to retain its revenue generating capacity and employability.

Impact of COVID-19 on the Software industry

BASIS estimates that around \$800 million equivalent of international work orders were cancelled, as well as \$500 million worth of domestic work orders. Cumulatively, Bangladesh lost about \$1.3 billion worth of business due to the Novel Coronavirus from the sales of software and ICT product.⁴ Although due to enhanced remote working scenario, changed mode of business and lifestyle, demand for few Software categories has increased, COVID-19 pandemic has run riot through the centres of the ICT industry in Bangladesh and in turn, the employability of this sector might be compromised due to massive operational loss. If such conditions persist, the social stability of the country could be under major threat in absence of any policy interventions.

Constraints

Lack of local and global market intelligence, ineffective promotional and branding strategy, inability to retain skilled employees and lack of self-sustainability have halted any immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow following the pandemic. Financial easing i.e. lessening the barriers to take loans or working capitals is in an insufficient level which is needed to be addressed. Exploring and penetrating new market opportunities need collective effort of the stakeholders. The last mile internet is unaffordable due to high transmission cost, it is also afflicted with poor connectivity.

Action Agenda

Taking lessons from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the ICT sector, the ICT Ministry is proposing the following interventions in the immediate short term:

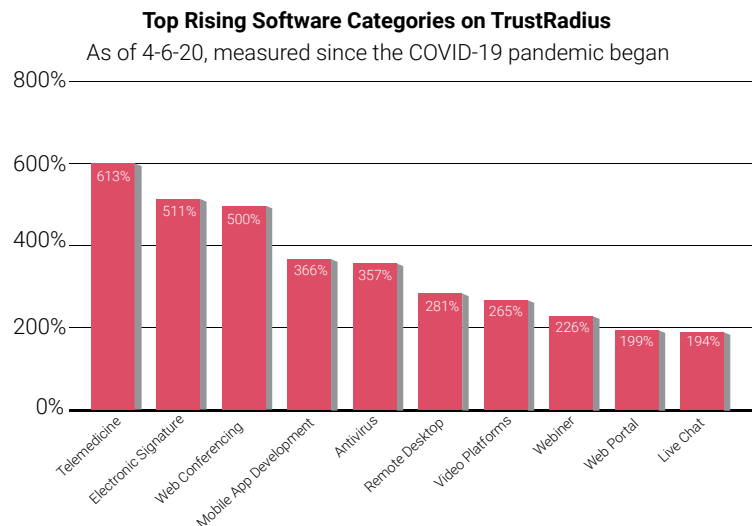


Fig: Top rising Software Categories since COVID-19
Source: TrustRadius, 2020

16. Bangladesh Bureau of Statistics

17. IT-ITES Industry Statistics of Bangladesh, LICT Project, 2018

18. Bangladesh Association of Software and Information Services (BASIS)

19. Bangladesh IT and Digital Sector Tackling COVID-19 Implications, Lightcastle Analytics Wing, 2020

Title	Check for demands and opportunities in both local and global markets and gather market intelligence	Remodelling of promotional strategies and branding for both local and global market	Supporting other line ministries and industries in successful operational shift post-COVID	Support organizations in retaining skilled employees and create employment opportunities with FDI	Promote local Software products and services, employment and self-sustainability
Why (To address :)	To leverage the local market and export opportunities and recover from the COVID 19 losses strategic interventions can help based on demands and opportunities in the local and global markets and acquired market intelligence (where to go, with what to do) from a study	Local Software companies are cutting back on marketing while others are being more agile and coming up with interesting ways of engaging their audience during these difficult times. As many international companies are going out of business, this creates opportunities for Bangladeshi companies	According to Digital Transformation 2020 Global Study by Boston Consulting Group (BCG), 80% respondents feel digital transformation has become more urgent in light of COVID-19, however only 30% of transformations succeed in meeting goals. ICT Division can provide technical support to other line ministries and industries in successful operational shifts in their businesses post-COVID	During Covid-19 organizations are cutting off their employees as businesses are facing a crisis as maintaining a large number of employees can pose threat to the sustainability of the organizations	Ensuring local employment and self-sustainability will help to reduce unemployment rate in the long run through which the agenda of 'Made in Bangladesh' to ensure local IT Companies prioritization will be achieved
What	The study will focus on i) Policy interventions required to make public procurement favorable to local Software products and Services ii) Untapped opportunities in the local market iii) demands and opportunities in the global market and acquire market intelligence regarding where to go with what to go	Existing industry promotion and branding strategies will be revisited and remodeled according to the shifting demands and changed geopolitical scenario post COVID-19 pandemic. A common Business-to-Business platform will be established where interested international buyers can find their match in Bangladeshi Software companies for particular Software products and services requirements	A Program of Emergency Assistance to Work and Production can be created for employers and workers which can support other line ministries and industries in coping up with operational shifts in post-Covid situations. ICT Division and ICT Industry will formulate proper integration and guidelines for other ministries and industries for this shifting through integration of existing and potential software.	Employee retention strategy will be assessed along with newer recruitment policies and training. Apart from this, upskilling the workforce in specialized skills will be helpful in attracting foreign investment which will in turn create employment opportunities	Local employment and self-sustainability can be ensured through prioritization of local IT companies as well as local startups. Promoting "Made in Bangladesh" agenda will also ensure the local companies are prioritized, especially for essential services
Lead Agency	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Coordinator	Bangladesh Computer Council	Bangladesh Computer Council.	Bangladesh Computer Council	Bangladesh Computer Council	Bangladesh Computer Council
Partners	BIDA, EPB, BASIS; Development Partners	BIDA, EPB, BASIS; Development Partners	Cabinet Division, Different Ministries, Industry Associations, Development Partners	BIDA, EPB, Industry Associations, Development Partners	Ministry of Planning, CPTU, Council (BCC); Industry Associations; Development Partners
Financing modality	Bangladesh Computer Council should allocate budget to conduct study to gather local and global market intelligence	ICT Division can allocate budget	Concerned ministries should co-invest with the ICT Division	ICT Division can allocate Budget to support the companies. Private companies should co-invest for a sustainable model	BCC can propose awareness campaigns in their budget

Post COVID-19 ICT Roadmap for Bangladesh: Emerging Technologies, ICT sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Emerging technologies is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

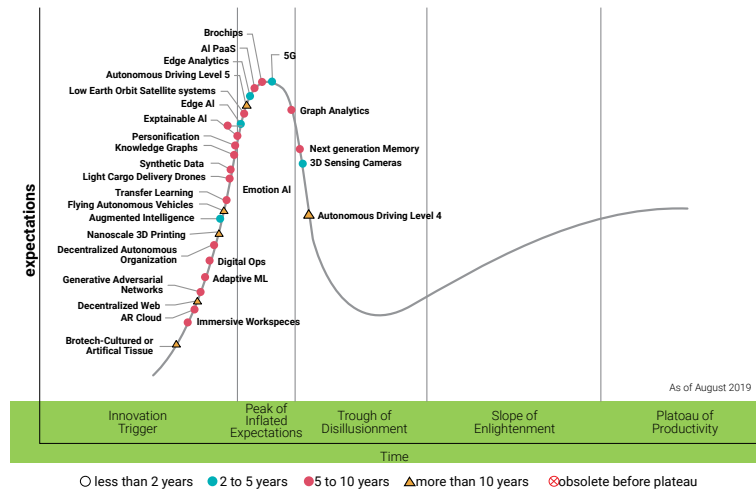


Figure 1: Emerging technology trends with transformational impact- Source: Gartner-2019

Why the Emerging tech-sector

The digital interference in current years has resulted in technology to be viewed as more than just a means of automating the production process. Evidence suggests that the latest technologies, such as artificial intelligence, robotics, AI, big data analysis, and blockchain are driving the fourth industrial revolution and are opening new business opportunities in both domestic and global markets. In Bangladesh, Companies are incorporating emerging technologies to fulfil the new demand. These businesses are at different stages in adopting emerging technologies like robotic process automation, artificial intelligence, blockchain, big data analytics, virtual reality, and the Internet of Things (IoT). Their capacity of following digital progress will be an important element for the future success of the country's ICT industry. The government has also taken initiatives to introduce policies and strategies to create the ecosystem and promote emerging technology in Bangladesh.

Impact of COVID-19

In response to the Covid-19 pandemic, the Bangladesh Government and private sector jointly collaborated to accelerate the adoption of emerging technologies such as artificial intelligence, big data, cloud computing, blockchain to face the pandemic for monitoring, resource allocation and decision making. ICT Division, together with several other Government organizations, technology and telecom companies, followed suit. There's no question at this point that the COVID-19 pandemic has had a major economic impact on the world. The temptation is to think that everyone will suffer due to supply chain disruptions, lockdowns, and other issues. But for some of the emerging technologies led businesses, this pandemic has become more of a growth opportunity than a setback.⁸

Product and Technology	Impact in Q1, 2020	Impact in 2020
Smart Phone	★★★★★	★★
PC	★★★★★	★★
Tablet	★★★★★	★★
Storage	★★★★	★
Network	★★★★	★
Server	★★★★	★
IoT	★★★	★
Big Data	★★	★
Security	★★★	★
IT service	★★★	★
Smart home	★★	★
UC & C	★★★	★★★★
Software	★★	★
AI	★★	★
Wearable devjice	★	★
VR/AR	★	★
Cloud service	★	★★
Overall ICT	★★★	★

Product and Technology	Impact in Q1, 2020	Impact in 2020
Retail	★★★★★	★★★
Transportation	★★★★	★★
Customer	★★★	★★
Manufacture	★★★	★
Energy	★★	★★
Agriculture	★★	★
Service	★★	★
Architecture	★★	★
Finance	★	★
Telecommunications	★	★
Education	★	★★
Utilities	★	★★
Media	★★	★★
Government	★★	★★
Health care	★★★	★★★★
Overall ICT	★★★	★

★ Small negative impact ★★★★★ Large negative impact ★ Small Positive impact ★★★★★ Large Positive impact

Figure 2: How will the COVID 19 outbreak impact the overall ICT market growth Source: IDC, 2020

Constraints

Absence of an ecosystem to encourage emerging technology R&D, inadequate skill and capacity development programs for IT-ITES Companies in emerging technologies, promotion and funding of emerging technology solutions, inadequate knowledge on emerging technology in education sector, lack of policies and strategies supporting emerging / frontier technology solutions have halted any immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow following the pandemic.

8. How Will COVID-19 Impact New Tech?, Medical Device and Diagnostic Industry report, 2020.

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the emerging technology-sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Create an eco-system to encourage emerging technology R&D. Establish Center of Excellences to promote R&D, skill development and the capacity of IT-ITES Companies in emerging technologies	Promote Emerging Technology Startups and Solutions in public and private sector	Promote and fund emerging technology solutions, from PoC development to scale up, for the public sector, including health, agriculture, education, smart city, etc.	Promote Emerging Technology education in Education Sector	Ensure implementation of policies and strategies supporting emerging / frontier technology solutions
Why (To address:)	The Fourth Industrial Revolution brings with it many opportunities in emerging technologies such as AI, IOT, Blockchain, AR/VR, etc. It is an opportunity for Bangladesh to be able to leapfrog into higher value skills and increase its IT-ITES export revenue significantly. At the same time, the implementation of many of these technologies can bring in transparency and efficiency in the local market for both the public and private sector. However just depending on the emerging tech services will not give the significant boost to move from a factor driven economy to an innovation economy. Investment in the innovation ecosystem is required to ensure that Bangladesh is able to get the full benefit by creating an IP centric ecosystem	The ICT Division has prioritized funding for emerging technology startups through its Startup Bangladesh program. There are many new startups that are coming up with solutions with AI, IOT, Blockchain - which may have significant impact in service delivery in many of the sectors. However, local awareness regarding the skill of the local startups as well as lack of awareness in emerging technology does not encourage the private or public sector to invest in these solutions	Application of emerging technology in agriculture, health, education etc. can significantly improve productivity. For example, application of drones and AI in pesticide spraying in fields can vastly reduce the overuse of pesticide and significantly bring down the cost as well as offer a safer alternative for humans. However, these applications are new and local companies and startups do not have sufficient experience to implement them. Similarly public sector organizations do not have enough exposure to emerging tech solutions and do not have the relationship with the private sector emerging tech companies to experiment and deploy these products. Also, funding may not be allocated for such experiments and public sector organizations usually opt for traditional software and hardware systems for IT deployment	The Primary, Secondary and Tertiary Education system of Bangladesh needs to integrate education in emerging technology in its curriculum. The BCC LICIT project has published a report titled "Education and Skills for the Fourth Industrial Revolution" (2019) where it has reviewed the course content of the schooling and University system of Bangladesh and has compared it with the Education system of developed countries who are leading the technology space in the Fourth Industrial Revolution. Significant change in the curriculum and pedagogy of our education system is required that the youth of the Nation are future ready	The Government has prioritized the use of emerging technology through the National ICT Policy, AI Strategy, Blockchain Strategy, Robot Strategy, IOT Strategy, 8th Five Year plan, and Perspective Plan 2041. However, implementation of most of the proposed strategies / applications are far from being realized.
What	Establish Centre of Excellence to support R&D in local Universities and also to build the capacity of local ICT Companies. Conduct skills development program on emerging technology.	Promote Emerging Technology Startups and Solutions in public and private sector	Support in Proof of concept and then mass deployment is necessary to implement emerging technology products in the public sector to ensure cultural fit, local employment generation and successful implementation of the product	The Education system in Bangladesh needs to be redesigned to include 4IR skills to ensure that the youth of Bangladesh are future ready. Content & Curriculum design and organize ToT for the teachers	The ICT Division needs to take the lead role in forming the partnerships with the different line Ministries to ensure the implementation of the policies / strategies
Lead Agency	ICT division	ICT division	ICT division	Education Ministry	ICT division
Coordinator	Bangladesh Computer Council (BCC)	Bangladesh Computer Council (BCC)	Bangladesh Computer Council (BCC)	ICT Division, UGC	Bangladesh Computer Council (BCC)
Partners	Ministry of Finance, BHPTA, UGC, IT Associations	Cabinet Division, ICT Associations, Startups, FBCCI and other trade bodies	Cabinet Division, Line ministries, Development. Partners, private sector companies	ICT Associations, All Universities & Educational Institutions	Cabinet Division, Line ministries, DoICT, IT Associations
Financing modality	ICT Division should request to allocate funds to create a Center of Excellence. Long term solution needs to be developed through partnership between ICTD and UGC. Private sector can co-invest with Government & Universities in R&D projects	BCC can propose awareness campaigns in their budget. The private sector companies can co-invest in the promotional strategy.	Long term sustainable plan needs to be developed by the ICT division and the line Ministry. Private sector companies can co-invest with Government to develop and deploy the solutions	The Ministry of Finance can allocate a budget. Development partners can also be a source of fund.	Not Applicable

Post COVID-19 ICT Roadmap for Bangladesh: ITES-BPO, ICT sector

How the Roadmap came to be

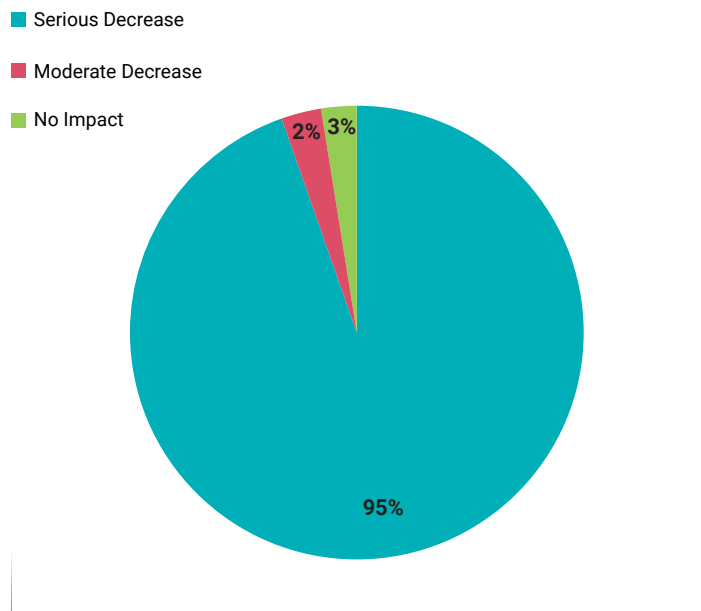
With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. IT enabled Business Process Outsourcing (BPO) is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the BPO

The BPO industry of Bangladesh has been growing steadily in the last decade. Riding on robust IT infrastructure, skilled human resources and supportive Government policies, the income growth of the business process outsourcing (BPO) sector in Bangladesh has risen significantly. Bangladesh has made major strides in laying the groundwork for a diverse BPO market. The BPO industry within Bangladesh has been growing serving international clients and domestic clients. The industry now employs over 50,000 people, and is exporting services mostly to European and North American clients. The current global pandemic has led to shrinking IT budgets for most organizations, but it is expected that there will be a continual growth in demand for BPO services, with cost optimization being the primary driver for offshoring services. The BPO sector can help to boost the country's economy through revenue and job creation.

Impact of COVID-19 on the BPO segment of ICT industry

95% of BPO firms in Bangladesh have lost revenue due to COVID-19. The BPO firms are estimated to have suffered a loss of around 1730 crore BDT from domestic market⁴, which includes revenue coupled with net operating loss. It is evident that the Covid-19 Pandemic has significantly affected the BPO Industry and if such condition persists may result in massive job loss. As a promising sector for the country, the BPO Industry has grown from a few hundred employees to over 50,000 employees in less than 10 years. Given the extent of revenue and employment that this sector has created in neighboring countries, it is expected that if the current rate of growth had continued, this sector could employ the largest number of youth. In order ensure employment opportunity for the University educated youth of the country, policy interventions are required to ensure sustained growth for this sector during and post Covid-19.



Constraints

Absence of internationally recognized certification to measure and showcase the skill set of local workers, reaching out to foreign clients and establishing effective connection with them, poor marketing intelligence (where to go, whom to go) and business development techniques, lack of country branding as BPO destination, lack of skilled human resources and lack of appropriate financial stimulus for the BPO industry during the COVID 19, have halted any immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow following the pandemic.

Action Agenda

Taking lessons from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the ICT sector, the ICT Ministry is proposing the following interventions in the immediate short term:

Title	Creation of a universal grading system or professional certification for the workforce	Remodelling of promotional strategies and branding for both local and global markets	Aggressive marketing for the niche experiences	Identify post COVID-19 newer demands and penetrate in new market opportunities in local market	Invest in developing the necessary skills for leveraging new opportunities.
Why (To address :)	To assess and improve the fresh entrants' necessary skills along with the development of the incumbents' current set of skills, a universal grading system or professional certification is necessary.	The BPO industry might fail to achieve the projected amount of domestic and export revenue due to the COVID-19 global pandemic. Post COVID-19 situation might be even difficult if the changes in global technological practices are not addressed and not followed by an adaptive promotional and branding strategy.	With aggressive marketing aiming at diversifying the client-basket, the attempt to extract the revenue as much as possible from the sectors where companies already have niche experience and skilled labor might be an optimized business strategy.	Digital health services, e-Commerce, digital transactions, and other services that boomed in the pandemic need a strong outsource customer service and logistic support to continue their business momentum. Thus, seemingly this is a great opening for the BPO companies to exploit those new market opportunities.	As it is assumed that the post COVID-19 era will unleash a new horizon of newer market opportunities, to maintain a smooth supply of skilled manpower, such skill development programs should be continued even at a larger scale.
What	Prepare the course curriculum, content, question bank and grading system for the professional certification course. Prepare Assessment portal.	Conduct market assessment on the difference of pattern or magnitude between pre and post COVID-19 market trend. Develop a b2b platform involving the stakeholders and act as a mediator in attracting foreign buyers.	Prepare marketing strategy for promoting BPO sector globally. Brand Bangladesh as a global BPO destination focusing on the niche area.	Conduct demand-supply analysis to find new market opportunities in the local market.	Conduct skill development programs for leveraging new opportunities.
Lead Agency	ICT Division	ICT Division	ICT Division	BACCO	ICT Division
Coordinator	Bangladesh Computer Council	Bangladesh Computer Council	Bangladesh Computer Council	ICT Division	Bangladesh Computer Council
Partners	NSDA, BACCO;	Ministry of Commerce (MoC); BACCO, EPB, BIDA	BIDA, EPB, BACCO	Bangladesh Computer Council	NSDA, BACCO,
Financing modality	ICT Division can allocate funds for assessment portal development and curriculum development. To create a Center of Excellence, long term solution needs to be developed through partnership between ICTD & private sector companies.	ICT Division can allocate funds for market assessment and portal development.	ICT Division can allocate funds.	BACCO can co-invest with the Government	ICT Division can allocate funds.

Post COVID-19 ICT Roadmap for Bangladesh: Freelancing, ICT sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Freelancing is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Freelancing-sector

Bangladesh supplies 16 percent of the total global online workers, the second highest in the world, according to the 2017 Online Labour Index of Oxford Internet Institute. Owing to many reasons, freelancing is fast becoming popular among the youth both in Bangladesh and globally. Some of the major reasons for the growing popularity of freelancing are flexibility of working as per one's own convenience, higher income and availability of a wide range of tasks to choose from. The freelancing business's overwhelming success has paved the way for a new trend and widened the scope of its popularity in future. Many highly skilled individuals have formed a whole new category of highly skilled, well-experienced corporate freelancers who offer their services as independent contractors and make greater contributions in the ICT industry's performance. As more and more generations join in and unemployment grows, it comes as no surprise that even experts regard that this work culture is here to stay at least for the next few years. Though the foreign payment options are still scarce and highly inefficient and though there are no rules yet to protect the right of this workforce, freelancing has found acceptance and the future, albeit unpredictable, looks positive.

Impact of COVID-19

The COVID-19 pandemic has thrashed the hard-earned outcomes gained by the freelancers in past years. According to Bangladesh Freelancers Development Society (BFDS) around 80 percent freelancers are now out of work. The work orders fell by 60-70% and freelancers involved in only domestic market are amongst the most sufferers. During the pandemic, transactions in the bank were halted, to some extent, initially. However, the already-present complication in cashing out the payment for the freelancers has been ever-difficult during the pandemic. Despite the minor repercussions due to COVID 19, Bangladesh looks at a billion-dollar global market opportunity. Apart from the global market, the struggling local businesses due to COVID 19 usually are not in a position to hire/retain permanent workforce, which is why they are looking at the massive talent pool available in the local freelance sector.

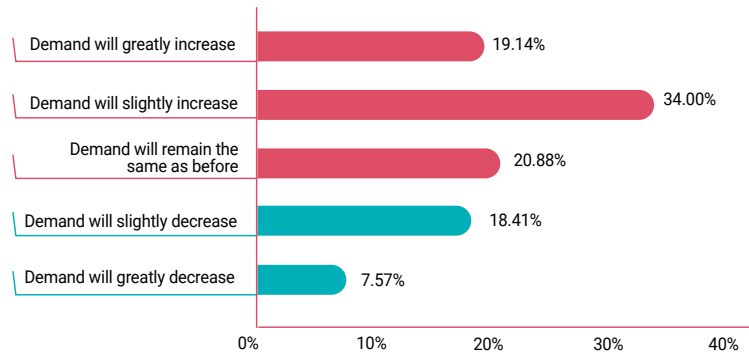


Fig: Payoneer's survey: Future of Freelancing Post-COVID looks bright

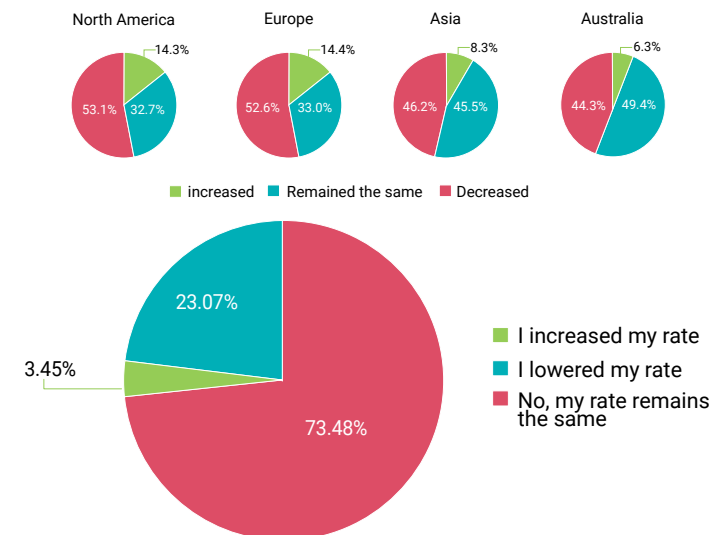


Fig: Payoneer's survey on impact of COVID 19 on freelancing

Constraints

Cross border payment issues, absence of global and local market analysis, lack of skill training and mentorship programs and market condition, inadequate access to last mile affordable and high speed internet in rural area, lack of brand image as a top outsourcing destination leads to less number of freelancing jobs and lack of appropriate financial stimulus for the freelancers during the COVID 19, have halted any immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow following the pandemic.

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the freelancing-sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Address cross border payment issues	Global and local market analysis for freelancing	Professional development programs for freelancers through skill training and mentorship	Branding Bangladesh as an ICT skill destination	Last mile affordable and high speed internet connectivity in rural area
Why (To address :)	Cross border payment is one of the most critical issues Bangladeshi freelancers face. Existing payment services offer no real advantages as freelancers bear the burden of fees and delays because they do not have too many options. In the same vain, bank transfers are cumbersome as excessive procedures often make it difficult for freelancers to withdraw money. Freelancers also face trouble for outbound payments on account of advertisement and other business expenses. Although freelancers can remit IT expenses within a permissible limit with the ERQ account for freelancers, they have to pay 30% tax on it. The freelancers who have their own website for their services are unable to process any payment generating from credit cards issued by any foreign country due to regulatory issues.issues.	With Covid-19, many freelancing job requirements in the global market has diminished while new requirements have emerged. Along with that, with the advent of the Fourth Industrial Revolution, technological change keeps accelerating and demand for new skills keeps emerging. Local freelancers need to keep tabs on the new trends and more proactively update their skills to remain marketable. Prospects and needs of freelance jobs in multiple local sectors can be assessed to find local market opportunities.	Rapid digitalization and a high rate of educated unemployment has made Bangladesh the second largest provider of freelancers. However, many Bangladeshi freelancers tend to undersell themselves and lack of high-level skills make them lose out on potential profits. Also, the top performing freelancers can achieve vertical growth by becoming entrepreneurs.	Country branding initiatives are required for Bangladeshi freelancers to be able to get visibility and have fair competition with other countries in the freelance marketplaces. Due to large numbers of graduates entering the job market every year, many graduates are unable to get formal employment. Freelancing has created vast employment for many people, especially youths. Awareness needs to be created to give IT freelancing a recognition as real and full-time employment in order to make more skilled graduates join the freelance workforce.	For all remote jobs, be it freelancing or work-from-home module due to the COVID-19, necessity of internet access, stability and speed is equivalent as corporate offices. As internet traffic has surged during the coronavirus shutdown, many have been experiencing slow internet connectivity. To expand freelancing all across the country, it is fundamental to ensure last mile affordable and high speed internet connectivity in rural areas.
What	<ol style="list-style-type: none"> 1. Address tax and bureaucratic issues regarding ERQ account. 2. Allow global payment services to operate in Bangladesh. 3. Simplify the payment receiving process from international payment gateway. 	With a view to reaching the Government's IT-ITES export earning target, it is being suggested to conduct a study of the global market to find future demands and opportunities. There are also local freelancing opportunities from multiple sectors who laid off their employees creating vacancies for contract-based work due to the COVID-19 pandemic. A study on it will help leverage the opportunities coming from the "new normal".	With a view to reaching the Government's IT-ITES export earning target, it is being suggested to assess the skill requirements necessary to compete in the freelancing platforms, design and conduct training programs for aspiring and existing freelancers. The freelancers can increase their earnings and marketability by mastering additional skills to compliment the ones they have. It is being suggested to open a mentorship forum for new and aspiring freelancers run by the freelancers who are at the top. It will help develop a complete and useful resource for anyone who wants to start his/her career in freelancing. It is also being suggested to take up programs to develop managerial and entrepreneurial capabilities among top performing freelancers and connect them with public and private incubation and accelerator facilities. The focus should be on upgrading from service delivery to product innovation and commercialization, particularly in frontier technologies.	It is being suggested to make branding efforts to promote high performing Bangladeshi freelancers in the top freelance marketplaces. ICT Division should assess the fields Bangladeshi freelancers have a competitive edge in and run branding programs to give them visibility in the freelance marketplace. Designing local mass awareness campaigns to give freelancing a recognition as real employment is also being suggested. Awareness programs should be run to bust the myth of earning easy and unlimited money with freelancing to get only skilled and hardworking people enter this market.	Ensure last mile affordable and high speed internet connectivity
Lead Agency	Bangladesh Bank	ICT Division	Bangladesh Computer Council	ICT Division	BTRC
Coordinator	ICT Division, Bangladesh Computer Council	Bangladesh Computer Council	ICT Division	Bangladesh Computer Council	ICT Division and Post and Telecom Division
Partners	NBR, All scheduled banks and NBFIs, BASIS, BFDS	Academia, BFDS	NSDA, Technical Education Board, BFDS, BITM, World Bank, ADB	BASIS, BFDS	ISPAB, NTTN Operators, Telecom operators
Financing modality	Not Applicable	ICT Division should request to allocate funds to conduct research on global and local market analysis for freelancing	ICT Division should request to allocate more funds to run skill development programs.	ICT Division should request to allocate funds to conduct Country branding	More budget allocation from the annual budget to fund such projects will ensure the bulk of the capital. Secondary sources could be financial assistance from development partners.

Post COVID-19 ICT Roadmap for Bangladesh: ISP and Infrastructure, ICT sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to tackle the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. ISP and Infrastructure is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the ISP and Infrastructure -sector

Bangladesh has been working relentlessly to establish "Digital Bangladesh", an integral part of the government's Vision 2021. The government initiatives have resulted in an accelerated pace of growth of internet users. Number of internet users in Bangladesh stood at 103.476 Million in June, 2020.¹⁰ Dependence on the Internet increased since the start of the pandemic. The Internet has become essential for work, education, essential services, telemedicine or entertainment. Data Centres and Cloud operation is relatively new business in Bangladesh and awareness about the technology is low among consumers in Bangladesh. Also, there is no legislation that directly and specifically prohibits, restricts or governs data privacy and hosting of data. In the digital age the confidentiality of data is important. If policies and rules are made to ensure data privacy, data localization and hosting of data in countries territory, more new firms will invest in the industry. There is a strong business opportunity for SMEs and IT companies in IT and cloud infrastructure, particularly in the departments of hybrid cloud, rural IT services, and cloud infrastructure.

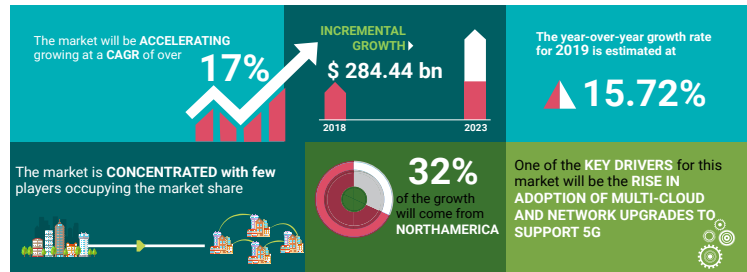


Fig: Global Data Center Market 2019-2023
Source: Technavio,2020

Impact of COVID-19

During the pandemic, the increased internet traffic led to reduced bandwidth availability per head. Working from home became difficult due to slower speed of the Internet. When the national holiday was announced, many people left urban areas and were headed towards their villages. Most of the urban houses use ISP connection and as a result, the ISP firms observed a sudden fall in revenue. ISPs were unable to collect bills from thousands of consumers. They have bills pending for 2/3 months. The sector is facing problems in accessing working capital from the banking sector under the government's stimulus package as the banks are unsure if the ISP industry qualifies for the stimulus package. Excessive dependence on foreign data centres and cloud operators leads to lack of access to data during emergencies. Also privacy of confidential data cannot be ensured through foreign cloud service provider.

Constraints

Complex VAT structure in the ISP value chain, lack of cash and inability to secure loan from banking sector or Govt's stimulus package, delayed in port clearance and excessive import duty on equipment, lack of National Data Protection and localization rule and incentive to operate business and lack of rules & guidelines to host public confidential data in local cloud have halted immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow from the pandemic.

10. Bangladesh Telecommunication Regulatory Commission

Action Agenda

Taking lessons from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the ISP and Infrastructure sector, the ICT Division is proposing the following interventions in the immediate short term:

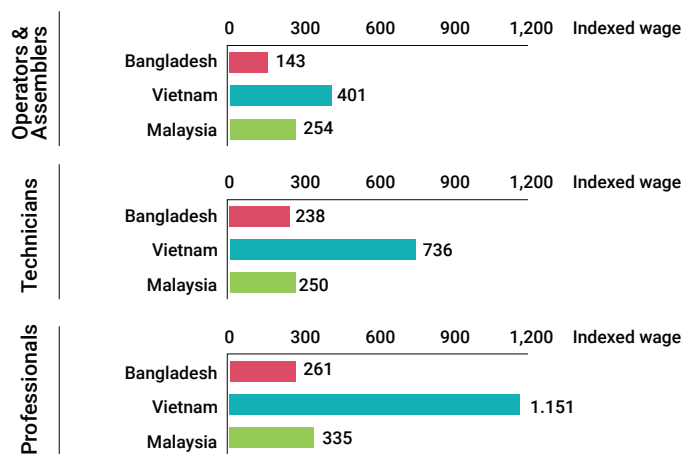
Title	Withdrawal of Vat of the internet service providers.	Facilitate access to working capital under the government's stimulus package	Facilitate faster port clearance and reduced import duties	Provide proper safety gears and necessary health support to the HR	Incentivize set-up of local Data Centres and Cloud Operators	Incentivize set-up of local Data Centres and Cloud Operators
Why (To address :)	Withdrawal of VAT of the internet service providers will ensure the users to get internet facilities at lower price (30%-40% cheaper). This will help the sector to cope with the challenges they are facing because of the pandemic. Immediate assurance about this will secure jobs and ensure low cost internet service to their clients.	Due to the pandemic, the corporate houses have disconnected their internet connections on a large scale, almost 30% of the businesses have shut down already. ISPs can't collect bills from the households. In cases where they are being able to collect bills, the realized bill amount is just 20% of the pending bill Stimulus package through ensuring access to working capital from banking sector will secure the financial health of the ISPs	Faster port clearance will reduce expensive deferrals, fines, reallocation of the stock and different penalties. Reduced import duties will motivate the interested parties to invest more which will ensure upgrade of internet services.	Providing support to ISPs and NTTNs during Covid-19 period by providing the network engineers & technicians with proper safety gears and necessary health support will make the engineers more comfortable regarding their day to day activities. They will be more committed to their job when they are ensured about their safety regarding health issues.	Data Centers & Cloud computing is helping to build the digital Bangladesh of high connectivity and computer literacy. By bridging the digital gap to empower Bangladeshis from every aspect of society. Incentivizing set-up of local cloud infrastructure through subsidy on price will accelerate business in the country. People will reduce their dependency on foreign operators and focus more on national operators which will contribute to the economy.	Public Data is quite sensitive. With a supportive policy for the localization of data and data privacy, more businesses will be encouraged to invest in the local market and data safety can be ensured.
What	NBR can issue SRO on withdrawal of VAT on the internet service providers.	The government should formulate a blueprint for implementing access to working capital from the banking sector by setting achievable targets within a specific timeline.	The GoB can create strategic implementation plan through which a complete guideline will be provided regarding faster port clearance and reduction of import duties.	Support to ISPs and NTTNs during Covid-19 period can be ensured by providing the network engineers with proper safety gears and necessary health support.	Tax waiver on income from local Data Centers and Cloud Operators. Reduce tax on importing cloud infrastructure tools.	National Data Localization and Data Privacy act should be created. Design set of principles, rules and guidelines for citizen's data protection
Lead Agency	NBR	Ministry of Finance	Ministry of Commerce	ICT Division	NBR	ICT Division
Coordinator	ICT Division, Bangladesh Computer Council	ICT Division, Bangladesh Computer Council	ICT Division, Bangladesh Computer Council	Bangladesh Computer Council	ICT Division, Bangladesh Computer Council	Bangladesh Computer Council
Partners	ISPAB	Bangladesh Bank, ISPAB	Ministry of Shipping, NBR, ISPAB	Ministry of Health & Family Welfare, ISPAB	ISPAB, Ministry of Finance	Cabinet Division, Legislative and Parliamentary Affairs Division, ISPAB
Financing modality	Not Applicable	Not Applicable	Not Applicable	Not Applicable	More budget allocation from the annual budget to incentivize this sector.	Not Applicable

Post COVID-19 ICT Roadmap for Bangladesh: ICT Industry (Digital Device)

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Digital Device manufacturing is a fairly new and one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Cost: Significantly Lower labor cost



66

" Large pool of low-skilled labor in Bangladesh imply labor costs are a quarter of China, about one fifth of Malaysia"

- Local Hi-tech Company

Why the Digital Devices Sector

Bangladesh is propelling on the trajectory of a new growth curve of rapid digitization determined by technological progress. High-tech and Software Technology Parks, vibrant start-up ecosystem, over 100 million internet users, and mounting adoption of digital devices construct the columns of the support ecosystem for building Digital Bangladesh. Although there are vast prospects in the Digital Devices sector in Bangladesh, the capacities of the sector have stayed unexploited earlier. Later on the Government has initiated a series of policy changes that allows organizations to set up production bases in Bangladesh, with an intention to cater to the domestic market and export. The availability of workforce at a competitive wage structure, domestic market demand, and a favorable policy structure are some of the factors that make Bangladesh an attractive market for digital device manufacturing. Success stories of manufacturing organizations, such as Walton, Samsung, Oppo, Data Soft, provide evidence of the support provided by the Bangladesh government in driving the growth of the digital device industry.

Impact of COVID-19 on the Digital device segment of ICT industry

Due to increased demand for remote working during the COVID-19 situation, demand for computer, laptop, networking devices such as Microphones, Headphones, and Webcam has skyrocketed. On the other hand, import from China was almost stopped initially, and later resumed at a slower pace. This led to a shortage of Networking and Security devices on the market. Many people bought the devices at 4 or 5 times the original price of the product. While other manufacturing countries had a shorter period of lockdown in their manufacturing cities, holidays announced by the government of Bangladesh prolonged. As a result, digital device production in Bangladesh was stopped for some time. One lesson that the Covid-19 pandemic has taught us is that we need to have our own manufacturing hub of digital devices and not only rely on import of those products. Policy intervention is required to ensure that investors are encouraged to invest in this sector and to ensure continuous growth.

Constraints

High capex, skill set availability, industry ecosystem, quality assurance and international certification for locally manufactured products, lack of rules to prioritized local product in Government purchase, less awareness about locally manufactured products, lack of appropriate financial stimulus for the digital device manufacturers during the COVID 19, have halted any immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow following the pandemic.

Action Agenda

Taking lessons from local and global best practices and to tackle (i) the effects of the pandemic and (ii) the existing systemic and regulatory shortcomings of the ICT sector, the ICT Division is proposing the following interventions in the immediate short term:

Title	Encouraging the purchase of locally assembled products in Government-funded projects	Incentivize quality assurance certification of local digital device products from international authority	Promoting "Made in Bangladesh" products in both local and global markets	Attract foreign investment and foreign companies in Hi-Tech park	Policy support to incentivize local production or assembling	Address the lack of skilled manpower or migration of skilled manpower
Why (To address :)	By encouraging the purchase of locally assembled products in Government-funded projects, the import value of digital devices can be reduced and a huge amount of employment can be created.	When the local firm will be incentivized to have certification from the international authority for quality assurance, the firms will be encouraged to have certification for their products. As a result, the quality of the products will improve drastically, and the products will have a positive image in local and foreign markets.	Digital device assembling firms of Bangladesh do not have a central portal to communicate with each other. With a single, central portal, there will be a forum and community of Bangladeshi digital device manufacturers. This will create an image of products in the portal as products "Made in Bangladesh".	Even after having local firms invested in Hi-Tech Parks, BHTPA still has unused lands and spaces for further investment. BHTPA now should look out for investments from foreign technological companies.	With easier and lenient policies for local production or assembling businesses, more new firms will invest in the industry and will increase the level of businesses.	Creating and retaining skilled manpower will help the assembling industry to produce manufacturing products with less wastage, and hence reduce inefficiency. With increased skilled manpower, the Bangladeshi assembling industry can attract more foreign investments, as costs of skilled workforce will reduce as well, providing a cost advantage to the industry.
What	Locally assembled/manufactured digital device should get priority in Government-purchase	Incentivize quality assurance certification of local digital device products from international authority.	A central, single portal will be created to connect all the Bangladeshi digital device manufacturers with buyers from local and international markets.	With proper incentives and lenient policies, a large number of foreign investments can be attracted to Hi-Tech Parks.	To encourage more firms to invest in local production or assembling industry, the Government should design supportive policy which will incentivize their investment in the form of lower tax or faster administrative processes.	Encourage Technical Education to meet the demand-supply of the skill set required by the assembling industry and conduct skill development programs.
Lead Agency	CPTU	ICT Division	ICT Division	BHTPA	ICT Division	ICT Division
Coordinator	ICT Division	Bangladesh Computer Council	Bangladesh Computer Council	ICT Division	Bangladesh Computer Council	Bangladesh Computer Council
Partners	Cabinet Division, Planning Division, Local Digital Device Manufacturers and Assemblers	Ministry of Finance, Local Digital Device Manufacturers and Assemblers	Ministry of Foreign Affairs, EPB, Local Digital Device Manufacturers and Assemblers	BIDA, NBR, Local Digital Device Manufacturers and Assemblers	NBR, Local Digital Device Manufacturers and Assemblers	NSDA, UGC, Local Digital Device Manufacturers and Assemblers
Financing modality	Not Applicable	ICT Division can allocate budget for the incentive packages.	ICT Division can allocate budget. Private companies should co-invest for a sustainable model.	BHTPA can allocate budget	Not Applicable	ICT Division can allocate budget. Private companies should co-invest for a sustainable model.

Post COVID-19 ICT Roadmap for Bangladesh

ICT and Emerging Technologies

Thematic Paper

1. Sector Overview:

As there has been a rapid growth in the ICT sector of Bangladesh over the past 11 years, the Government of the People's Republic of Bangladesh has recognized the sector as a prospect of potential development, employment generation, industrial expansion and positive externalities for other sectors. As the dreadful COVID-19 pandemic is certainly staying for an unanticipated period of time, seemingly Bangladesh has to adapt with the life in the domain of the "new normal" and thus, the ICT Division of the Government of Bangladesh has perceived and developed the roadmap to analyze and deliver solutions to optimize the changes in the way we think, live, and work. The purpose of this section is to unveil the background of the roadmap, and report the prevailing situation in the ICT industry.

1.1 Background

Bangladesh is propelling on the trajectory of new growth curve of rapid digitization determined by technological progress. High-tech and Software Technology Parks, vibrant start-up ecosystem involving over 1200 tech startups, over 100 million internet users, and mounting adoption of digital devices construct the columns of support ecosystem for building Digital Bangladesh⁴. Bangladesh is targeting USD 5 Billion local revenue and USD 5 Billion export by the IT and ITES sector in next five years (Mission 5 billion). To reach the goal, Bangladesh needs to profit from the cognitive ability of graduates on the rise and just over 150 institutions in Bangladesh are preparing the huge workforce with industry demand-driven training on science and technology. The ICT industry needs to be settled down into the "new normal" caused by the pandemic through governmental policy intervention, potential transformation and upgradation so that it can sustain its ever-growing impact on the economy and society. For honing the strategic spotlight, the ICT industry has been segregated into six segments:

- I. Software
- II. Emerging Tech
- III. BPO
- IV. Freelancing
- V. ISP and Infrastructure
- VI. Digital Device

The following sub-sections will shed light to the state-of-the-art of the aforementioned ICT industry segments.

1.2 Software

The Bangladesh Association of Software and Information Services (BASIS) reported that there are over 1200 software and Information Technology Enabled Services (ITES) member-firms in Bangladesh. Based on the IT-ITES Industry Statistics, the estimated magnitude of the whole IT industry in the country was over BDT 12 Billion in local market revenue and USD 477 million in export revenue in 2018. The report also states that roughly 72,000 are working part-time and full-time in the Software industry (2018 data)⁵.

Majority of the income of the software sector comes from private initiatives. The software industry in Bangladesh has a remarkably optimistic future in terms of growing potentials and can create job opportunities for millions of people though the sector has still been suffering from the shortage of skilled labor. At present, the industry is developing and thriving in both the regional and international markets by satisfying market demand.

Throughout history, Bangladesh concentrated on building an export-based software industry but at the same time, BASIS reports that the ICT sector of Bangladesh has encountered complications with cross-border payments while serving overseas customers. However, the assortment of frontier technologies those are supposed to bring the fourth industrial revolution has been creating the chance of renewing software-based solutions for boosting domestic competitiveness.

1.3 Emerging Tech

The digital interference in current years has resulted in technology to be viewed as more than just a means of automating the production process to decrease costs. Companies are incorporating technology to deal with front-line development and to accomplish their purposeful goals relating to better client satisfaction, a more successful sales team, unrestricted inner establishments, instant decision making, and creative business models. These have resulted in a great demand for digital technologies that can really change the way businesses function and make a step towards improvement in efficacy.

The value propositions for Bangladesh are: 80 million people under 25 years old who are tech-savvy, 50% of the population that has extensive digital experience through mobile network subscriptions, pool of 500,000 trainable graduates per year, and entrepreneurial drive.⁶ These are facilitated by the government's assurance and aid for emerging technology ideas with the view to create Bangladesh as a center of digital innovation. The aforementioned factors along with sturdy entrepreneurial energy have led to creative digital solutions for the nation's distinct problems.

To promote the digital entrepreneurs and ease the creation of emerging technology, Leveraging ICT (LICT) projects under Bangladesh Computer Council (BCC) has established labs for AI and blockchain and trained over 3500 people in emerging technologies, out of which over 3,000 people have been given jobs.

A dynamic industry is rising in Bangladesh, with many businesses running initiatives covering most emerging technologies like robotic process automation, artificial intelligence, blockchain, big data analytics, virtual reality, and internet of things, and are at different phases of examining and conducting. Their capacity of following the digital progress will be an important element for the future success of the country's ICT industry.

4. Bangladesh Bureau of Statistics

5. Baseline survey by iDEA Project, Startup Bangladesh

6. IT-ITES Industry Statistics of Bangladesh, LICT Project

1.4 BPO

Although late to the IT outsourcing and BPO industry, due to cost advantage and availability of large youth pool, Bangladesh has large untapped export market opportunities. Bangladesh needs to grasp the shifting global BPO trends and leverage the possibilities of limitless growth.

Absence of trained human resources and durable strategy, and inadequate nation branding impose a threat to the prospective BPO sector in Bangladesh. The export basket can be differentiated by introducing BPO into the curriculum and using up-to-date information technologies, and can also create job opportunities for the citizens.

In 2019, the total local market revenue of the industry was over BDT 9.70 Billion⁶. There are about 150 BPO companies in Bangladesh, which employs over 50,000 young people. The sector and the government target to employ 100,000 professionals by 2021. The BPO industry is going to create more employment opportunities with support from the government and increased demand for the BPO services both for local market and international market.

1.5 Freelancing

The smooth access, in general, to Internet has generated an international market for digitally delivered freelance work, which is emerging quickly at present. Freelancing is fairly new to Bangladesh, and has only gained popularity in the last three to four years. Bangladesh is the second most preferred country in providing online labor, as demonstrated in a study by the Oxford Internet Institute (OII). The country provides 16 % of the total global online labor. The online labor of Bangladesh is leading all the other countries in sales and marketing assistance, with noteworthy input in software development and technology, creative multimedia, and data entry.⁷

However, Freelancers are dealing with inward remittance issues due to the lack of well-recognized payment platforms like PayPal in Bangladesh, the restriction of foreign exchange to pay for marketing, and employing foreign freelancers as their assistants. Freelancers are making excessive number of visits to banks to manage their payment problems which hikes the shoe-leather cost. Another challenge faced by the freelancing sector is that only a small proportion of the many listed freelancers are experts. The prosperity of these professionals should be upscaled into businesses. To do so, the attention should be on output strategy and management. Freelancing professionals should be encouraged to have entrepreneurship and business development skills as well as skills in their area of focus. The freelancers should focus on improving communication skills, professional ethics, and treaty law.

1.6 ISP and Infrastructure

Internet in Bangladesh has observed substantial growth, despite experiencing many limitations in increasing internet access and usage and expansion of the Internet and Information Technology, which are of high priorities to the government. The major difficulty of using the Internet in Bangladesh is its allocation. It is still an urban facility as telephone networks are more focused in metropolitan areas, especially in Dhaka. Mobile operators are delivering important services in and outside urban areas using 4G/3G/EDGE or WiMax, but the geospatial digital divide exists. There is a great trade opportunity for SMEs and IT companies in IT and cloud infrastructure, particularly in hybrid cloud, rural IT services, and cloud infrastructure. Directed network infrastructure facilities for both the public and private sectors have still not been established. There is scope for a huge market in export, and secluded regulation of networked IoT gadgets is anticipated to start newer markets.

In 2018, Bangladesh inaugurated the 4G network service. The number of internet users in Bangladesh surpassed 100 million and reached 103.253 million users for the first time, as recently stated by the Bangladesh Telecommunication Regulatory Commission (BTRC). 95.16 million out of the 103 million people using internet services accessed it through the web or cellular network. In a country with a population of 161.4 million, the growth has been comparatively steep.⁸ The foundations for fiber optic connectivity are being laid, which will ensure high speed internet at cheaper price. Bangla-GovNet project implemented by ICT Division built the ICT Backbone Network up to 240 government ministries, divisions and departments, 64 districts and 64 upazila. Info-Sarker 2 project extended this network up to the upazilla level and connected the government offices. The ongoing Info-Sarker Phase-3 project has taken up the goal to establish broadband internet infrastructure in 2600 unions across the country through the optical fiber cable, of which 2400 unions have already been connected. The Connected Bangladesh project is working on establishment of connectivity in 772 remote unions of the country.

1.7 Digital Device

Bangladesh delivers financial services over the mobile network and already serves more than 30 million clients through 4.5+ millions of transactions every day. Increasing consumption of digital devices and consumer gadgets by the emerging middle and affluent class (MAC) has developed as the foundation for assisting the entry of Bangladesh into the international high-tech manufacturing industry. Corresponding to International Data Corporation (IDC), 34 million phones worth US\$1.18 billion were imported in 2017, and the laptop market was valued to be at US\$300 million in 2018.⁹

Although there are vast prospects in the computer hardware sector in Bangladesh, the capacities of the sector have stayed unexploited. The country has been advancing towards the dream of Digital Bangladesh, where device penetration is more significant than network for growing digital education among students.

Even though ICT is announced as the most booming sector of the government's current Digital Bangladesh movement, the computer hardware industry is unfortunately not addressed as the prime portion of the campaign; instead all the work goes to the improvement of the regional service market software and ITES trade. ICT is one of the latest industries after the liberation of the country.

2. Impact of COVID 19 on the ICT Sector

Inside experts of this industry presumes that the overall revenue will be reduced by 20-25 percent due to the COVID-19 pandemic¹⁰. This section attempts to capture the impacts of COVID-19 on the ICT sector utilizing a holistic approach.

2.1 Fall in Revenue of the ICT firms

COVID-19 has resulted a fall in revenue in all major industries of Bangladesh. The impact is equally negative on the IT/ITES firms of Bangladesh. Syed Almas Kabir, President of BASIS, estimated that around \$800 million equivalent of international work order was cancelled, as well as about \$500 million worth of domestic work orders. Cumulatively, Bangladesh lost about \$1.3 billion worth of business due to the Novel Coronavirus from the sales of software and ICT product.¹¹ The BPO firms in Bangladesh are predicted to be blown by lost revenue coupled with net operating loss of around 1730 crore BDT from domestic market.¹² 90% of the BPO firms think that there will be a serious decrease on the company's profits and revenues due to COVID-19. This is due to fall in revenue of the local and international firms, who are the primary customers of the ICT firms of Bangladesh. As a result, bills are stuck, and hence revenue of the ICT firms declined.

2.2 Rises in Net Operating Losses of ICT Firms and possibility of bankruptcy

COVID-19 has also resulted in a rise in Net Operating Losses of the ICT Firms. BPO firms have faced with significant loss due to COVID-19 situation. This is because, along with fall in revenue, there were fall in variable costs. However, fixed costs like rent, base utility fees, and employee salaries were incurred, that lead to a rise in Net Operating Losses. According to a source from BASIS, "a serious dearth of cash flow, 30-50 per cent revenue loss, uncertainty in clients' bill payment, the additional cost of arrangement for a home office (devices, internet and cost management) and so on will hamper financial sustainability, which may lead to bankruptcy for many companies."

2.3 Sudden shock and fall in productivity

Due to COVID-19, employees were instructed stay home and can't move for the jobs. Business owners of this industry were concerned regarding the negative impact on productivity of the workforce due to the pandemic-led stress. Many of the employees initially did not have the necessary setup to execute work from home. However, market demand did not fall, and there was a surge in e-Commerce demand. As a result, a sudden shock was felt in the ICT industry. Due to lack of preparation, productivity has as well taken a hit.

2.4 Higher rate of Unemployment

Bangladesh is on the verge of losing 894,930 jobs as projected by the Asian Development Bank (ADB). Like every other industry, COVID-19 has resulted in unemployment in ICT Industry as well. In spite of upsurge in demand of e-commerce and medical scribe in lockdown days, a huge number of firms experienced major fall in revenue coupled with at least an unchanged operating costs, and in effect, suffered loss. Thus, ICT firms started to downscale their operations and cut the costs. This resulted in a rise in unemployment in ICT Industry. The companies are planning to cut down 51% of their resources on an average in coming days which will see almost half of its talented employees becoming unemployed.

2.5 Fall in Investments

Due to fall in revenue of the firms and fall in confidence of the consumers, there is a demand uncertainty in both local and global market for the ICT firms. As a result, the firms are reluctant to invest in new ventures and test out new ideas. The whole ICT industry function centrally lies on the intellectual work. As a result, the ICT firms do not get loan support from the banks since the banks are yet to recognize the intellectual property of the ICT companies as assets. Therefore, a cash crisis is prevailing in this thrust sector.

2.6 Major blow to the Freelancers

The COVID-19 pandemic has thrashed the hard-earned outcomes gained by the freelancers in past years and now around 80% of the freelancers have lost their jobs. The work orders fell by 60-70% and freelancers involved in only domestic market are amongst the most sufferers.¹³ During the pandemic, transactions in the bank were halted, to some extent, initially. Later, the operations in bank were open at small scale. However, the already-present complication in cashing out the payment for the freelancers has been ever-difficult during the pandemic.

2.7 Lower Bandwidth

During the pandemic, most of the people stayed indoors. As a result, people have been using the Internet more than they usually do. As per the State Minister for ICT, Mr. Zunaid Ahmed Palak, the internet usage has been increased by 50% in the days of pandemic. This led to reduced bandwidth availability per head. Working from home became difficult due to slower speed of the Internet.

2.8 Disruption of revenue of the ISPs

Erica Moser from Government Technology magazine reported that, "the mass closures resulting from the COVID-19 pandemic have left Internet service providers with two main issues to address: An unprecedented number of people are now working from home or taking college classes online, and people suddenly out of work may be wondering how they'll make their monthly payments, including the Internet bill¹⁴. When the national holiday was announced, many people left urban areas and were headed towards their villages. Most of the urban houses use ISP connection and as a result, a sudden fall in revenue was experienced by the ISP firm. ISPs were unable to collect bills of thousands of consumers, where bills of 2/3 months were due.

2.9 Rise of import of Digital Devices and rise in time of shipment's arrival due to global supply chain breakdown

Due to increased demand of remote working during the COVID-19 situation, demands for networking devices such as Microphones, Headphones, and Webcam has skyrocketed. On the other hand, import from China has almost stopped initially, and later resumed at a slower pace. This led to a shortage of Networking and Security devices in the market. Many people bought the devices at 4 or 5 times the original price of the product.

2.10 Fall in local production of digital device

While other manufacturing countries had a shorter period of Lockdown in their manufacturing cities, holidays announced by the government of Bangladesh prolonged. As a result, Digital Device production in Bangladesh was stopped for a long time. This led to a fall in productivity of Digital Device manufacturing.

3. Systemic Constraints in the Overall ICT Industry

Inside experts of this industry presumes that the overall revenue will be reduced by 20-25 percent due to the COVID-19 pandemic¹⁰. This section attempts to capture the impacts of COVID-19 on the ICT sector utilizing a holistic approach.

3.1 Software

COVID-19 has resulted a fall in revenue in all major industries of Bangladesh. The impact is equally negative on the IT/ITES firms of Bangladesh. Syed Almas Kabir, President of BASIS, estimated that around \$800 million equivalent of international work order was cancelled, as well as about \$500 million worth of domestic work orders. Cumulatively, Bangladesh lost about \$1.3 billion worth of business due to the Novel Coronavirus from the sales of software and ICT product.¹¹ The BPO firms in Bangladesh are predicted to be blown by lost revenue coupled with net operating loss of around 1730 crore BDT from domestic market.¹² 90% of the BPO firms think that there will be a serious decrease on the company's profits and revenues due to COVID-19. This is due to fall in revenue of the local and international firms, who are the primary customers of the ICT firms of Bangladesh. As a result, bills are stuck, and hence revenue of the ICT firms declined.

- a. Not enough explorative study to identify the changes in demand due to COVID-19 and providing insights.
- b. Weak promotional strategies and poor branding of local software firms.
- c. Lack of proper academia-industry-government coordination and combination.
- d. Unemployment of ICT graduates and need of more rigorous training.
- e. Absence of self-sustainability in the Software sector.
- f. Need for strategic interventions based on demands and opportunities in the domestic and international markets and attained market intelligence.
- g. Need for technical support and digital transformation to achieve operational success
- h. Calling for well-designed employee retention programs to upskill the workforce in specialized skills and attract foreign investment
- i. Negligible private expenditure on software.
- j. Lack of synergy among firms
- k. High-cost of overseas business development
- l. Absence of initiative to increase the reuse capacity for lowering cost and lead time for increasing profit to revenue ratio.

3.2 Emerging Tech

- a. Not enough explorative study to identify the changes in demand due to COVID-19 and providing insights.
- b. The sector needs more funding and promotion to encourage innovation in emerging technologies.
- c. Technical education curriculum are not developed in line with global emerging tech trends, and hence, absence of technical knowledge among graduates.
- d. Lack of implementation of policies and strategies friendlier to emerging technology solutions.
- e. Hitech Parks/Center of Excellences should have emerging tech-supportive infrastructure

3.3 Business Process Outsourcing

- a. Absence of internationally recognized certification to measure and showcase the skill set of local workers. Lack of skill set is one of the main challenges.
- b. Lack of communication between B2B in both local and global market due to absence of a platform. Reaching out to foreign clients and establishing effective connection with them is a challenge for BPO companies.
- c. Lack of platform where local Businesses can take service from the BPO firms.
- d. Less effort to obtain as much revenue as possible from the sectors where firms already possess niche experience and skilled labor. Local BPO companies who work with business intelligence are limited in number.
- e. Difficulties in acquiring investment in forming the required skills for availing new opportunities
- f. Inertia in initiating Voice based service for banking and financial service (BFS) outsourcing in which 25,000 jobs could be created. Customer care for other service industries like insurance yet to be outsourced. Citizen care in public service delivery is an untapped opportunity.
- g. Clients are not willing to pay for the quality.
- h. Generally, sales and marketing skills are very low among IT companies. Clients do not focus on their core competencies and provide those services by themselves, which could have been outsourced.
- i. Negligible private expenditure on software.
- j. Lack of synergy among firms
- k. High-cost of overseas business development
- l. Absence of initiative to increase the reuse capacity for lowering cost and lead time for increasing profit to revenue ratio.

3.4 Freelancing

- a. Difficulties for cross-border transactions.
- b. Many of the previous freelancing skills and fields became obsolete due to Covid-19
- c. Absence of knowledge of freelancers about skills and market condition.
- d. Lack of branding as top outsourcing destination leads to less number of freelancing jobs
- e. Inadequacy with last mile bandwidth speed and quality of the Internet.
- f. Freelancers have limited scope of work (no registration of legal entities)
- g. Negotiating skills of Bangladeshi freelancers is below par.
- h. Lack of attempt of moving from marketplace to independent platform (freelancer to entrepreneur/ service to product or innovation). Vertical growth through taking up entrepreneurship should be promoted.
- i. Need to make study on potential high growth markets

3.5 ISP and Infrastructure

- a. Complex VAT structure in the ISP value chain,
- b. Lack of cash and unable to get loan from banking sector or Govt's stimulus package,
- c. delayed in port clearance and excessive import duty on equipment,
- d. Absent of National Data Protection and localization rule,
- e. Managed service of network infrastructure for both the public and private sector yet to take off.
- f. Need for exploring a large export market opportunity, and remote monitoring of networked IoT devices which is expected to open new market horizon.

3.6 Digital Device

- a. Reliance on Imported Digital Device and facing shortage during crisis, due to fall in import and disruption in supply chain
- b. Lack of industry ecosystem, quality assurance & international certification for locally manufactured products
- c. Lack of Brand Image of products of Bangladesh. No central portal to promote “MADE IN BANGLADESH”
- d. The full capacity utilization of Hi-Tech Park is yet to be done.
- e. Lack of comparative understanding of hi-tech operational facilities in other countries is making Bangladesh lose FDI opportunities, especially due to the unfolding value chain restructuring, triggered by COVID-19
- f. Lack of rules to prioritize local product in Government purchase
- g. Prevailing red-tape barriers in doing business.
- h. Shortage of skilled workforce, hence slow production
- i. Limited to assembling components.
- j. Labor component in high-tech product assembling is very low.

3.7 Revisiting the literatures on ICT industry constraints

A number of studies, both home and abroad, addressed the universal and overall constraints prevailing in the ICT sector. In the initial booming days of ICT, research indicated that the main constraints in this sector included investment in this sector, issues of standardization, security problems, and identification of the benefits of using ICT at organizational, national, and International level.¹⁵ In a recent study conducted in Qatar, it was found that the ICT industry faced deficiency of technically sound workforce and there was a mismatch between the skills required for successfully running technological entrepreneurship and those delivered by the education system.¹⁶ Moreover, inadequacy and inequality in access to financial system is also a major challenge. Solutions to these non-obvious systemic constraints have been addressed by a research of LICT project of ICTD, which was conducted by PMIS¹⁷, and are mentioned here:

- a. Government as a buyer, facility and service provider, policy maker, investor, and regulator
- b. ICT firms, start-ups, accelerators, incubators, and industry associations
- c. Academic, training and R&D institutions providing human resource, and intellectual assets
- d. Faculty members and other experts playing the role in bidding proposal evaluation and assessing performance of deployed solutions
- e. Private firms procuring and deploying ICT solutions, and their industry associations
- f. Citizens using ICT products and services, and also gaining the capacity of adding ICT value
- g. Media, Civil Society and Development institutions, including bilateral and multilateral lenders
- h. Investors, and financial & Logistics service providers
- i. Target global firms having the potential of making investment in Bangladesh and sourcing solutions
- j. Global institutions facilitating investment, monitoring cyber security, and addressing global monopolies.

4. Evolving Opportunities for ICT Response in IT-ITES and Local Cases in the COVID-19 Context

The COVID-19 pandemic has sledged forward the ICT capacity of the country by miles and the overall ICT literacy of the mass people has got better than ever. Developing apps to trace COVID-19 patients, introducing chat-bots to communicate better in the absence of designated human resources, making ventilators and other medical equipments, increased usage of internet bandwidth, spike in technological purchase, and massive boom in online shopping are some examples of the ICT advancement of the country and growing ICT adaptation of the people.

The wholesale bandwidth sales reached 1,750 GBPS while the ISPs saw their user number raised by 2.3 million in preceding three months. (ISPAB) The e-Commerce segment experienced such growth in the pandemic days which they could not gain in last 10 years. Even in the Eid-ul-Adha of year 2020, online platform based sacrificial cattle market got a huge momentum. Online shopping and transaction through digital payment modes in online platforms have shown significant growth. The growing need of maintaining online service channel demands outsourcing those services and logistics to maintain a smooth operation and this is where the BPOs can penetrate and make a sustainable ecosystem.

Both public and private sector are running office from home in most cases and thus, are using different sorts of software to ease up the process. This has opened a new horizon of opportunities for the software companies to correctly identify the needs and deliver the proper substance. In hi-tech parks, companies are involved in making functional ventilators, face shields, disinfectant systems, Medicart robots, hand sanitizers and so on which will come handy for the emerging techpreneurs and digital device companies.

In case of ICT sector of Bangladesh, it is more appropriate to say that the firms have adapted and diversified the usage of current tools in response of COVID-19 apart from the Coronavirus identifiers. The following table contains the most frequently delivered ICT solutions/services during pandemic days to smooth daily life operations of the citizens:

Solution	Type of Problem Addressed	Organization/Solution
Corona testing, screening and tracing tool	Self-testing based on symptoms.	ICT Division, Digital healthcare solutions, Doctoroncall, Dr. Bot 24/7, Banglalink, coronareportbd, CallaDoctorBD, eGeneration Beat Corona, P&T Division, Obhai, coronatestbd.com and many others.
Chatbot	Interactive solution for information, screening and support	ICT Division, BloodMan, MitaChatbot – Banglalink, Robi, GP, Preneur Lab, Panda Chatbot, Know, Whatsapp, Viber
e-commerce	A logistic coordination working group was formed with participation of stakeholders that include 68 e-commerce and logistic companies. A central database has been created of PPE, sanitizers, masks and other safety products suppliers across the country. A 'Central Delivery Worker Verification app has been developed and has 9367 verified delivery workers.	ICT Division, Chaldal.com, Daraz.com, Meena Click, Othoba.com, Priyoshop.com, Sheba.xyz, etc.
Mobile Financial Services	Most reliable options for online money transfer.	bKash, Rocket, Nagad, and many others.
Campaigns and community engagement programs	Creating and disseminating digital content to create public awareness about COVID 19	ICT Division, Muktopaath, Xomad
Online learning	Broadcast lessons for students amid the closure of all educational institutions across the country and skill development programs for the workforce	ICT Division, Bangladesh Computer Council, Sangsad TV and Coursera

5. Roadmap

The ICT industry is fighting on the frontline against the terrifying COVID-19 pandemic and facilitating the day to day necessities of the citizen. With the challenges now apparent for the IT and digital sector, it's crucial that the government pays significant attention to its third-engine.¹⁹ This section attempts to illustrate a pathway to identify the action agendas which should be undertaken by the government in every segment of the ICT sector. The first two sub-sections try to figure out the immediate and mid-long term policy measures to make the sector sustainable and proof from any negative cyclical fluctuations. The following sub-section compares the potential government policy interventions and finalizes the action agendas based on the impact, immediacy, readiness, weakness, and stakeholders buy-in.

5.1 Immediate Policy Measures

- a. Support R&D activities for empowering software firms to work in partnership with line ministries for implementing technology strategy

- b.** Empower software firms to focus on intellectual assessment management and market creation for their ideas, as opposed to pursuing customized application development from the scratch
- c.** Maintain stability of existing policy framework and link incentives with the growth of local value addition
- d.** Conduct thorough global value chain and ecosystem analysis of selected clusters to figure out target links to be located in Bangladesh and assess the ecosystem need.
- e.** Introduce National Data Protection and localization laws
- f.** Address labor law and VAT issues
- g.** Pursue innovation for improving value addition in outsourced services
- h.**
- i.** Address internet speed, access and cost issues for expanding the freelancing scope all across the country
- j.** Promote digital service innovation market for increasing utilization of already deployed fiber optics network facilities
- k.** Develop globally competitive domestic market of network, data center, cyber security, IT infrastructure and cloud service
- l.** Promote cloud start-ups around 4 tier data center.
- m.** Promote high-end graduate programs and collaborative R&D for supporting the development of world class security solution in Bangladesh
- n.** Develop globally certified pool of network, data center, cyber security, IT infrastructure and cloud service professional.

5.2 Mid and Long Term Policy Measures

- a.** Empower software firms through R&D support to focus on software innovation by leveraging 4IR technology stack to drive domestic digital economy
- b.** Assist line ministries to develop and implement 4IR technology-based innovation strategy for addressing mission objectives
- c.** Focus on creating the market of 4IR technology innovations for strengthening domestic industrial economy
- d.** Develop Design and R&D capacity for empowering industry to undertake higher value-added work, and pursue redesign as well as innovation strategy.
- e.** Develop suitable ecosystem for attracting targeted foreign companies to establish operation in Bangladesh and pursue target companies Bangladesh and pursue target companies
- f.** Empower domestic firms to be contract assemblers/manufacturers for global brands
- g.** Develop component manufacturing strategy and encourage the entry of component manufacturers for end device assemblers
- h.** Pursue regulatory reform for ensuring acceptable level of customer as well as citizen care services
- i.** Increase the supply of HR carrying internationally acceptable certificates
- j.** Promote global certified best practices for developing globally competitive domestic BPO market
- k.** Empower high end freelancers to focus on building firms for scaling up their individual successes
- l.** Focus on product innovation and management for trading ideas as opposed to hours for increasing per person income
- m.** Promote high-end graduate programs and collaborative R&D for supporting the development of world class security solution in Bangladesh
- n.** Develop globally certified pool of network, data center, cyber security, IT infrastructure and cloud service professional.

5.3 Potential Action Agenda Items

The Action Agenda is a strategy-driven, holistic document working as an umbrella for post-COVID-19 ICT sector development. The development process of the Action Agenda is critically important as it will characterize its decisive quality. A clear national ownership of the Action Agendas is vital and its development process should be an inclusive and transparent exercise of stakeholder engagement led by national authorities²⁰. In this sub-section, for every segment of the ICT sector, the potential Action Agenda items will be compared with each other to be finally picked up for possible implementation.

5.3.1 Software

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Check for demands and opportunities in both local and global markets and gather market intelligence	High	High	Low	Medium	High
Remodel promotional strategies and branding for both local and global market	High	High	Low	Low	Medium/Low
Provide technical support to other line ministries and industries in successful operational shifts in their businesses post-COVID	High	High	Low	Medium	High
Support organizations in retaining skilled employees and create employment opportunities with FDI	High	High	Medium	Low	High
Promote local Software products and services, employment and self-sustainability	High	High	Medium	Low	Medium

5.3.2 Emerging Tech

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Create an eco-system to encourage emerging technology R&D and establish Center of Excellences to promote R&D, skill development and the capacity of IT-ITES Companies in emerging technologies	High	High	Low	Medium	High
Promote Emerging Technology Startups and Solutions in public and private sector.	High	High	Low	Low	Medium/Low
Promote and fund emerging technology solutions, from PoC development to scale up, for public sector, including health, agriculture, education, smart city, etc.	High	High	Low	Medium	High
Support organizations in retaining skilled employees and create employment opportunities with FDI	High	High	Medium	Low	High
Promote Emerging Technology education and skill development in Education Sector	High	High	Medium	Low	High

5.3.3 BPO

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Create a universal grading system/professional certification for the workforce.	High	High	Low	Medium	High
Remodel promotional strategies and branding in local and global markets; use a B2B platform.	High	High	Low	Low	Medium/Low
Promote aggressively niche experiences and skilled human resources	High	High	Low	Medium	High
Identify Post COVID-19 newer demands and penetrate in new market opportunities as these services need a strong outsource customer service and logistic support to continue their business momentum	High	High	Medium	Low	High
Change in relevant regulations and laws to promote work from home	Medium	High	Medium	Low	Medium
Invest in developing the necessary skills for leveraging new opportunities.	High	High	Medium	Low	Medium

5.3.4 Freelancing

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Address cross border payment issues	High	High	Low	Medium	High
Post COVID-19 Global and local market analysis for freelancing.	High	High	Low	Low	Medium/Low
Focus on professional skills development and mentorship for freelancers	High	High	Low	Medium	High
Recognize freelancers as entrepreneurs of SME sector	High	Medium	Low	Medium	High
Brand Bangladesh as a top outsourcing destination.	High	High	Medium	Low	High
Ensure last mile affordable and high speed internet across the country.	High	High	Medium	Low	Medium
Enable freelancers to register as legal entities.	High	Medium	High	High	Medium

5.3.5 ISP & Infrastructure

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Withdraw VAT of the internet service providers.	High	High	Low	Medium	High
Facilitate access to working capital from banking sector under the government's stimulus package	High	High	Low	Low	Medium/Low
Facilitate faster port clearance and reduced import duties to ensure smooth network and connectivity.	High	High	Low	Medium	High
Provide support to ISPs and NTTNs during Covid-19 period by providing the network engineers with proper safety gears and necessary health support	High	High	Medium	Low	High
Incentivize set-up of local Data Centers and Cloud Operators (Tax waiver on income from local Data Centers and Cloud Operators)	High	High	Medium	Low	Medium
Ensure last mile affordable and high speed internet across the country.	High	High	Medium	Low	Medium
Policy Support to establishment of local Data Centers and Cloud Operation	High	Medium	Low	High	Medium

5.3.6 Digital Device

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Encourage the purchase of locally assembled products in Government-funded projects.	High	High	Low	Medium	High
Incentivize quality assurance certification of local digital device products from international authority.	High	High	Low	Low	Medium/Low
Promote "Made in Bangladesh" products in both local and global markets.	High	High	Low	Medium	High
Ensure protectionism in terms of international trade to promote the infant firms of this industry	High	Medium	Low	High	High
Attract foreign investment and foreign companies in Hi-Tech park	High	High	Medium	Low	High
Support to incentivize local production or assembling	High	High	Medium	Low	Medium
Address the lack of skilled manpower or migration of skilled manpower.	High	Medium	Medium	High	Medium

5.4 Top Five Action Agenda for ICT sector

After necessary focused group discussions, careful observation and comparison, the final items for Action Agenda were selected for each segment of the ICT sector.

5.4.1 Software

- Action 1:** Check for demands and opportunities in both local and global markets and gather market intelligence.
- Action 2:** Remodel promotional strategies and branding for both local and global market.
- Action 3:** Address how ICT Division and ICT Industry can support other line ministries and industries in coping up with operational shift post-COVID.
- Action 4:** Support organizations in retaining skilled employees and create employment opportunities with FDI
- Action 5:** Promote local Software products and services, employment and self-sustainability through preferential procurement policy.

5.4.2 Emerging Technology

- Action 1:** Create an eco-system to encourage emerging technology R&D. Establish Center of Excellences to promote R&D, skill development and the capacity of IT-ITES Companies in emerging technologies
- Action 2:** Promote Emerging Technology Startups and Solutions in public and private sector.
- Action 3:** Promote and fund emerging technology solutions, from PoC development to scale up, for public sector, including health, agriculture, education, smart city, etc. Prioritize funding to emerging technology startups
- Action 4:** Promote Emerging Technology skill development in Education
- Action 5:** Ensure policy support for emerging / frontier technology solutions.

5.4.3 BPO

- Action 1:** Create a universal grading system or professional certification for the workforce to assess and improve the skills and quality of the services.
- Action 2:** Remodel promotional strategies and branding for both local and global market; use a b2b platform for International buyers.
- Action 3:** Promote aggressively to penetrate services where Bangladesh already has strong niche experience and skilled human resources; this include graphics and creative and low hanging markets like virtual assistance, secretarial services.
- Action 4:** Check for newer demands and opportunities in both local and global markets. Penetrating new market opportunities – for example in health and financial sectors, security solutions, contact centers for e-Commerce, E-Government, etc.
- Action 5:** Invest in developing the necessary skills for leveraging new opportunities. The Government may take large scale skills development program through NSDA, ICTD and Ministry of Finance (SEIP) for this purpose.

5.4.4 Freelancing

- Action 1:** Address cross border payment issues.
- Action 2:** Conduct Post COVID-19 Global and local market analysis for freelancing.
- Action 3:** Focus on professional skills development and mentorship for freelancers
- Action 4:** Brand Bangladesh as a top outsourcing destination.
- Action 5:** Ensure last mile affordable and high speed internet across the country.
- Action 6:** Enable freelancers to register as legal entities.

5.4.5 ISP and Infrastructure

- Action 1:** Withdraw VAT of the internet service providers.
- Action 2:** Facilitate access to working capital from banking sector under the government's stimulus package
- Action 3:** Facilitate faster port clearance and reduced import duties to ensure smooth network and connectivity.
- Action 4:** Provide support to ISPs and NTTNs during Covid-19 period by providing the network engineers with proper safety gears and necessary health support.
- Action 5:** Incentivize set-up of local Data Centers and Cloud Operators (Tax waiver on income from local Data Centers and Cloud Operators)
- Action 6:** Support establishment of local Data Centers and Cloud Operation

5.4.6 Digital Device

Action 1: Encourage purchase of locally assembled products in Government funded projects through joint venture with globally known brand with mandatory equity participation of Bangladeshi companies.

Action 2: Incentivize certification from the international authority for quality assurance of local digital device products

Action 3: Promote “Made in Bangladesh” products in both local and global markets.

Action 4: Attract foreign investment and foreign companies in hi-tech park

Action 5: Policy Support to incentivize local production or assembling

Action 6: Address the lack of skilled manpower or migration of skilled manpower

To make the vision of ‘Digital Bangladesh’ a reality, ICT Division can play the role of the catalyst, adviser, and the mentor. Bangladesh Computer Council of ICT Division, with the help of academia and industry experts, should facilitate the technological triumph to reach the pinnacle of excellence in ICT sector.

Post COVID-19 ICT Roadmap for Bangladesh

Startups Ecosystem

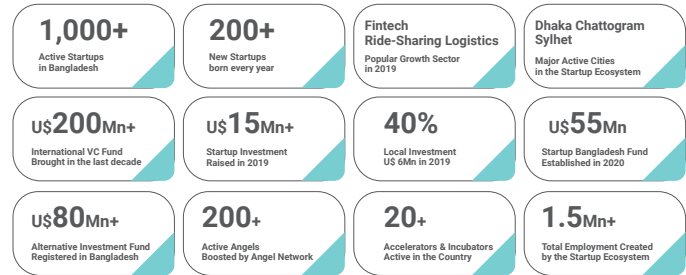
Post COVID-19 ICT Roadmap for Bangladesh: The Startup Ecosystem

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Startup Ecosystem is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why Bangladesh Startup Ecosystem?

In the last half decade startups have become a driving force for innovation and economic progress in Bangladesh. They have been instrumental in the pursuit of Vision 2021 and Digital Bangladesh - where digital transformation is the foremost priority, facilitating access to information technology and efficient, ICT-enabled services. Startups have scaled to provide employment to an estimated 1.5 million people and indirectly support the livelihood of an estimated 6 million. They have attracted over US\$ 200 million in international venture capital funds till date.

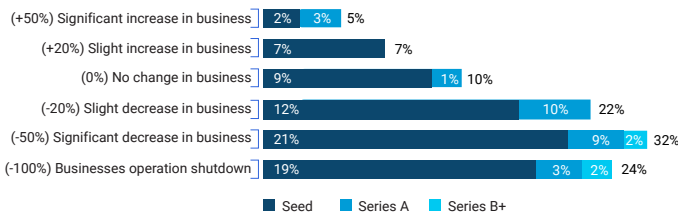


Source: BSEC, Bangladesh Startup Survival Guide, LightCastle Analytics Wing, 2020

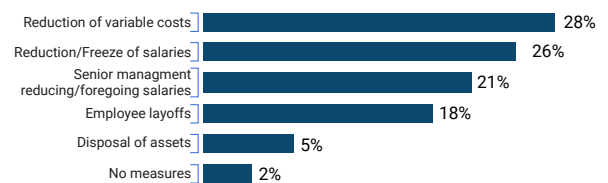
Impact of COVID-19

The startup ecosystem has been severely hit by the COVID-19 pandemic, with many being forced to make the hard choice of shutting down business. In a survey of 160+ startups conducted in April 2020, 80% of top ten startups (in terms of direct or indirect employment generated), 48% of essential sector startups, and 56% of all surveyed startups saw at least a 50% drop in revenue generation. 52% seed stage startups saw some decrease in their top line performance. What was more alarming was that 63% of startups had less than 3 months of runway, while 87% would exhaust their cash reserves in less than 6 months. In addition to operational challenges, startups face logistical challenges due to restricted mobility.

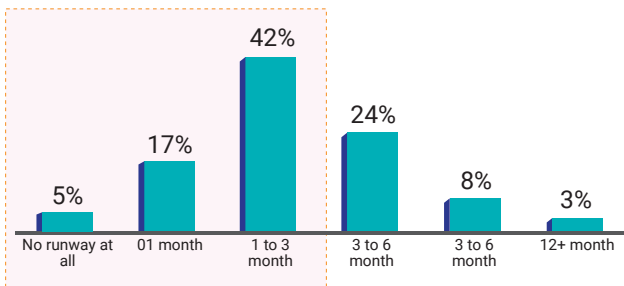
56% of business saw at least a 50% drop on revenue generation, while 52% seed stage startups saw decrease in business



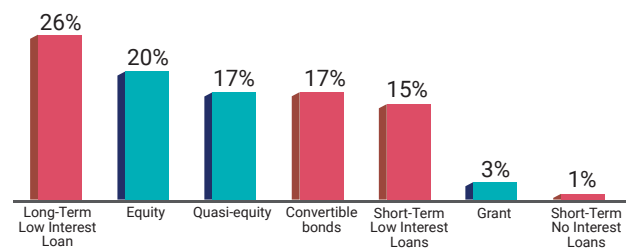
Reduction of Variable Cost and Salary are the first measures taken by 54% of the startups



63% of Startups have less than 3 months of runway



59% of Startups seek leverage (loans and bonds) in times of crisis



Source: BSEC, Bangladesh Startup Survival Guide, LightCastle Analytics Wing, 2020

Constraints

An internal survey conducted to understand the severe bottlenecks faced by over a hundred startups found that finding the right talent, in terms of co-founder and team, is the biggest problem that founders face when attempting to take their company forward. Lack of access to funding, improper knowledge of cash flow management, need for comprehensive government support, and legal and regulatory challenges are some of the major problems riddling the sector, without even taking the effects of COVID-19 into consideration.

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the Startup Ecosystem, the ICT Ministry is proposing the following five interventions in the immediate to short term:

Title	An emergency allocation of BDT 150 crore Startup fund for 150 prominent Startups in the form of equity/quasi-equity by 2020	Launch fund of funds to attract investments from both domestic and foreign capital markets by 2021	BHTPA from ICT Ministry can launch Startup Assistance program to provide in-kind benefits to minimize Startup operation cost till the middle of 2021	A new procurement law - "Made in Bangladesh" that mandates corporations to source from Startups along with a mechanism in the startup policy for incentivizing angel investors will increase the overall liquidity of the sector by 2021	IICT Ministry to set-up Invest Bangladesh (www.investbangladesh.gov.bd) as the holistic information platform for Startups by 2025 as a part of 8th Five Year Plan
Why	Without funding support, many seed and growth-stage startups are going to wind up, growth of the country and number of jobs for the population will be impacted.	A fund of funds (also multi-manager investment) gives small investors broad diversification to protect investments from severe losses from uncontrollable factors (inflation and counterparty default), increasing private sector participation through de-risked public vehicles for investing in startups	By providing in-kind services at lower or no cost to startups will allow them to marginally optimize their expenses against decreased revenue that can sustain their profitability	Launching a procurement movement that obliges corporations to source a portion of their total procurement from startups will help the early stage startups navigate through the immediate challenges created by the crises and become more resilient in the future	A one-stop centralized portal will promote all startup activities and opportunities in one place, decentralizing the latest entrepreneurship opportunities and information allowing startups to network, access free tools and resources and participate in programs and challenges. E.g. startupindia.gov.in in India
What	The ICT ministry can establish a BDT 150 crore startup support fund program in the form of grant/ quasi-equity/ matching fund nature to support the 150 startups for a runway of 12+ months. Based on multiple criterias i.e. employment, market potential, and post-pandemic adjusted valuation, startups can be categorized as- small, medium, and large	Create a fund of funds through public private partnership to increase investment in ecosystem	Startups can utilize ICT Ministry's and other GoB ministries' extensive infrastructure (tier-4 Data Center; access to Startup Bangladesh co-Working space; rent exemption at Sheikh Hasina High Tech Park, Jessore, and Rajshahi; GoB warehouses) at a minimum costs	The Ministry of Commerce and Ministry of Finance can work together in order to introduce the proposed procurement rule which will open new avenues for startups and drive the demand side development while encouraging angel investors to invest in startups will further develop the supply side	By converging all support information (startup job circulars/ investment opportunities/ co-working space/ government contracts) and knowledge information (grant opportunity/ development fund applications/ latest competitions), Startup Bangladesh will make it the largest opportunity discovery platform for startups in Bangladesh
Lead Agency	Startup Bangladesh	Bangladesh Bank	Bangladesh Hi-Tech Park Authority (BHTPA)	Ministry of Commerce	Startup Bangladesh
Actor	Startups	Startups; Angel Investors; VCS, FIs and NBFIs	Startups	Startups, Ministries of Bangladesh	Startups, Startup Media, Development Partners, Accelerator/ incubators, University
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	Startup Bangladesh	Startup Bangladesh	Startup Bangladesh	Startup Bangladesh	Startup Bangladesh
Government Partners	ICT Division, Bangladesh Bank, Startup Bangladesh, BIDA	ICT Division, NBR, Bangladesh Bank, Ministry of Commerce/ Ministry of Industry, BIDA, Startup Bangladesh	Bangladesh Hi-Tech Park Authority (BHTPA), ICT Division	Ministry of Commerce, Ministry of Finance, ICT Division, a2i	ICT Division, Startup Bangladesh
Private and Development Partners	Angel and VC Network	Angel and VC Network, FIs and NBFIs	BSC, Angels, VC, ecosystem builder, FIs, gov., dev		Startup Media: Youth opportunities, Future Startup, dataBD.co; BDjobs and startups; Accelerators/ Incubators and Competitions; UNCDF, a2i, USAID, DFID and more
Financing and modality	Government Funding through Startup Bangladesh	Private Public Partnership between government, VC and financial institutions	Government Funding through BHTPA	Government Funding	Government Funding

Post COVID-19 ICT Roadmap for Bangladesh

Startups Ecosystem

Thematic Paper

Post COVID-19 ICT Roadmap: Startups Ecosystem

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh [in collaboration with the Access to Information (a2i) Program, Innovision, LightCastle Partners, and DataSense @ iSocial] is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Startups is one of the 14 priority sectors selected based on the impact of COVID-19 and potential for transformation of economy and society.

1. Why are Startups Important?

Startups disrupt the economy and force it to evolve, taking technology one -or several steps- higher by introducing advanced technologies, opening new markets, boosting production of goods and services, increasing employment opportunities and directing local impacts.

Startups play a significant role in economic growth. They create more jobs which means more employment and more employment results in an improved economy. Simultaneously, startups contribute to economic dynamism by spurring innovation and injecting competition. New entrepreneurs can bring new ideas to the table which is much needed to stir innovation and generate competition.

Startups also have a direct-impact on the cities that they make their homes. For instance, Infosys has changed Bangalore (India), Alibaba impacted Hangzhou (China), Microsoft changed Redmond (WA, USA) and Google transformed Mountain View, California (USA). All these companies started small, but as they grew, they transformed the cities where they operated. They improved employment patterns providing job opportunities to both experienced and young professionals. This led to a surge in the flow of graduates and relocation of experienced professionals from different cities.

Each startup started small but boosted the economy with revolutionary technology and created new industries over time. And when they went public, they truly became money-making engines for not just the owners but also for the employees and shareholders. Thousands of Google employees became worth more than five million dollars while Narayan Murthy, the founder of Infosys, brought the new wave of wealth-creation in India among employees of the middle-class. On the other hand, Alibaba single-handedly transformed the trade scene for SMEs in China, a country that was at that time infamous for its innumerable trade entry barriers. Oftentimes, these same new millionaires put their money towards the businesses of friends and business partners, starting a virtuous circle.

When the Great Recession hit the US economy, they managed to gain back all of the jobs that were lost during the economic downfall through the jobs created by new companies. Like all the previous crises, the ongoing coronavirus will be no exception when it comes to the opportunities that it will create for startups and small and medium-sized businesses. All will depend on the industry where they will operate and their ability to get acclimated with the new coronavirus reality. Startups seem to be the most adaptable businesses to the current and post-coronavirus situation. The crisis has shown a need for fast-adapting and creative businesses.

According to the World Economic Forum, the global startup economy was valued at USD 2.8 billion in 2019 and its growth is about three to four times faster than the rest of other economies. Such figures highlight the importance of startups' role in economic recovery. Given their small size, startups, and SMEs and fast growth, startups have been driving long-lasting good jobs. Tech startup communities are known as promoters of gender equality and help to reduce the gender gap in a sector where women are not so much involved. More women in tech startups contribute to increasing access to education and digital skills among girls and women. Innovative startups can become successful in every sector from healthcare, to agriculture and food security both in developing and rich economies.

2. Situation Analysis before COVID-19 Outbreak - Global

The global startup economy remains large, creating nearly USD 3 trillion in value, a figure on par with the GDP of a G7 economy. Seven out of the top 10 largest companies in the world are in technology – the highest concentration of any industry sector among the top global companies – and 2019 saw close to USD 300 billion in venture capital investments around the world.

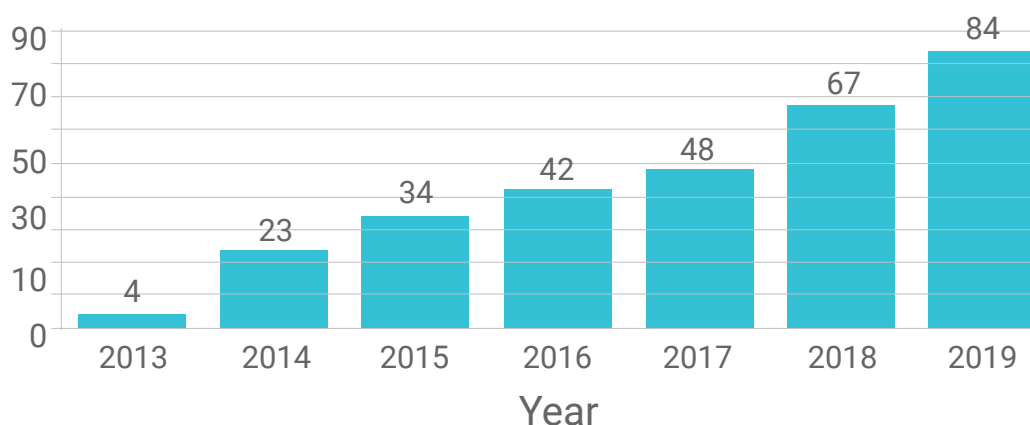
Nonetheless, even at the end of 2019, not all was well. Inclusion remained a fundamental challenge for tech ecosystems, with only 14.1% of founders globally being female, as the Startup Genome research shows. Value creation by ecosystems remains concentrated, with about 74% of all value produced being concentrated in the top 10 performing cities globally. Tech giants like WeWork and the stable of unicorns funded by Softbank began to falter – ranging from major crises, as in the case of WeWork; to a capital crunch for others.

But despite these challenges, the global ecosystem did not expect the major threat of the COVID-19 crisis. Since the crisis hit: Layoffs among startups are rampant, with just over a third of startups globally not laying off staff nor cutting hours, and with the typical startup with full-time layoffs letting go an average 33% of the staff; and Startups are facing a double whammy with a drop in consumer demand at the same time VC investments are dropping, leading to a crunch for capital. In fact, four out of every 10 startups have 3 months or fewer of capital runway, meaning they will die if they do not raise additional money and their revenue and expenses remain the same. While early signs of a rebound in Asian ecosystems are being observed – nothing like a return to normal, but a slowdown of the drop – the startup economy is going through a major transition.

Despite the concentration of value in tech ecosystems, access to the tech economy is increasingly democratized. In 2013, tech unicorns became a phenomenon, with the term popularized by Aileen Lee from CowboyVC. The name alludes to the rare and nearly mythical quality of these companies. But while still powerful they are not so rare anymore.

When Startup Genome analyzed companies in the billion-dollar club – exits or private companies in technology with **over USD 1 billion in valuation during 2013-2019, there were only four ecosystems produced unicorns or billion-dollar exits in 2013. Today, a cumulative 80+ ecosystems have done so, astoundingly.**

Ecosystems with billion-Dollar Club Startups (unicorns or exits), 2013-2019



source: www.startupgenome.com

3. Situation Analysis before COVID-19 Outbreak - Bangladesh

The startup ecosystem in Bangladesh, starting its journey in the early 2010s, has gone through a remarkable transformation and is finally coming of age. The ecosystem crystalized around Dhaka and Chattogram on the back of sectors such as IT, e-commerce and digital marketing among others. The next wave, fueled by the ride-sharing and logistics industry, has taken the ecosystem even further.

Investments received by ride-sharing and logistics sector players: Pathao (USD 12 Mn from Go-Jek), Shohoz (USD 15 Mn from Golden Gate Ventures), Deligram (USD 2 Mn from Skycatcher) have successfully captured the attention of both local and foreign investors. An enabling digital ecosystem, demonstrated by high internet and smartphone penetration rates of 55% and 31% respectively, has given rise to the number of technology-enabled service providers within the startup arena. In the coming years, emerging sectors: Fintech, Agritech, Healthtech, Edutech, Deep tech and Analytics will keep spearheading the growth of startups in Bangladesh.

Bangladesh's startup ecosystem has had a late start compared to its regional peers. However, the exemplary growth was possible due to the successful implementation of a number of countrywide incubators and accelerators programs. The global and local incubators and accelerators have been assisting entrepreneurs in aspects ranging from scaling up their ideas to raising funds and becoming sustainable in the long run. GrameenPhone Accelerator powered by Seedstars is one of the largest tech accelerator programs that has assisted successful startups such as – Sheba.XYZ (online service marketplace), CMED Health (A.I. enabled healthtech platform), Repto (online learning platform) among others to graduate.

Since 2016, Banglalink incubator, in association with ICT Ministry, has been facilitating innovative ventures to grow further. Jeeon (m-health platform), ishkul (school management software), Axis Technologies (personal and industrial robotic automation solution provider) are some of the most promising alumni graduating from the network. Robi Axiata Limited has recently launched R-Ventures (a reality show and investment platform) aiming to transform digital business ideas to a reality.

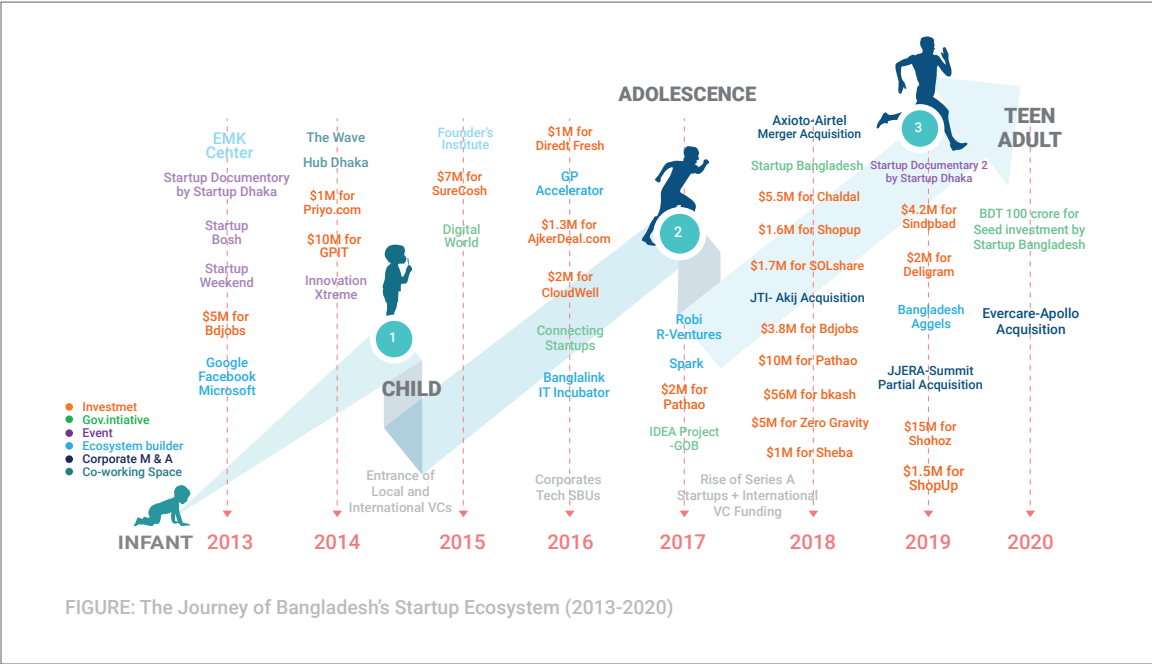


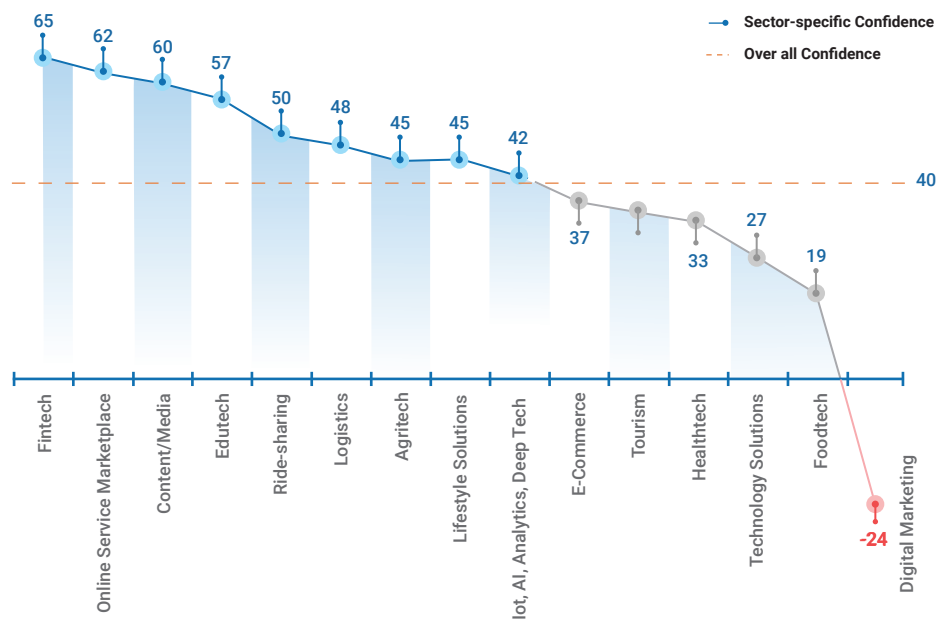
FIGURE: The Journey of Bangladesh's Startup Ecosystem (2013-2020)

2. Digital 2019 Bangladesh. Hootsuite, We are social, January 2019.

In recent years a significant number of local incubators and accelerators programs are coming up to guide both tech and non-tech startups. Startup Dhaka grabbed the attention from the global market with its flagship documentary in 2013 highlighting the promise of startups in Bangladesh. Tiger Cage, SD Asia and Future startups have been inspiring youths through their media presence to pursue an entrepreneurial career rather than waiting for jobs.

A survey source from 100+ startup founders and investors rated Fintech and Ride-sharing and Logistics as the most promising sectors. Online-enabled service marketplace platforms have captured the urban market significantly over the last 5 years. Players like Sheba.xyz, Smanager, Jantrik and Hellotask are formalizing the unstructured SME market and informal workers boosting financial inclusion. eCommerce & fCommerce sector garners high confidence from investors. Startup players like ShopUp, Chaldal, eValy, Daraz and Sindabad. Meanwhile, digital marketing showed a drop in confidence, due to market saturation and thinning profit margin coupled with latest TAX issuance.

Startup Ecosystem Confidence Index



Global players namely Truvalu, YGAP are running accelerator programs for Impact Enterprises. SmartCap – a platform by LightCastle Partners targeted at Impact Enterprises has run or supported more than 15+ accelerator programs till date. Mentoring entrepreneurs, facilitating access to finance, creating market linkages are some of the focus areas of SmartCap.

The Angel market is growing rapidly in Bangladesh with the presence of players such as -Bangladesh Angels, Pegasus Tech Venture, SBK Tech Ventures, Bangladesh Venture Capital among others. The angel's network – a consortium of angel investors in the country has been working towards bringing together promising early stage startups to and introduce them to serial entrepreneurs, tech executives and investors. Majority of the angel investors are focused on tech startups at present which might shift to impact-generating (both social and environmental) startups in the coming years.

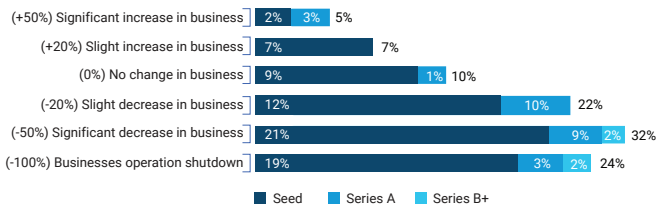
4. Situation Analysis after COVID-19 Outbreak

Since March of 2020, Bangladesh is experiencing the wrath of COVID-19 pandemic. As business shut down due to the lockdown, the entire startup ecosystem has been shaken to its core, threatening thousands of startups that create over a million jobs. To understand the impact further, LightCastle Partners commissioned an independent study – “COVID-19 Impact on the Startups of Bangladesh”. The survey was conducted in late April with responses from over 200 startups from Bangladesh. The research revealed that:

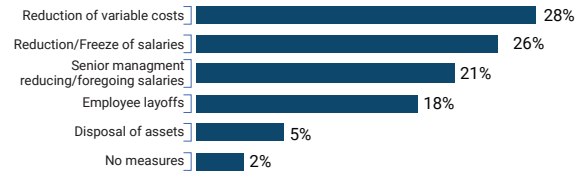
- a. 24% of businesses have stopped complete operation with 56% startups saw at least a 50% drop on revenue generation
- b. 60% of Startups have runway less than 3 months threatening 1.5 million employment
- c. USD 56 million annual loss is now feared by a total of 300 startups in 2020

Startups, and the extensive ecosystem it supports, are suffering severely due to the COVID-19 pandemic; in most cases, they face an existential threat to their survival. Based on a survey of 160+ Startups on Apr 11, 2020 - 56% of businesses saw at least a 50% drop in revenue generation, while 52% seed stage startups saw decrease in business. Out of this, 48% of Essential Sector Startups saw at least a 50% drop in revenue while 80% of the top 10 Startups in terms of direct/in-direct employment generated have seen at least a 50% drop in revenue as well. 63% of the Startups have less than 3 months of runway while 87% Startups will exhaust their cash reserves in less than 6 months. In addition to operational challenges, startups are facing logistical challenges due to restricted mobility.

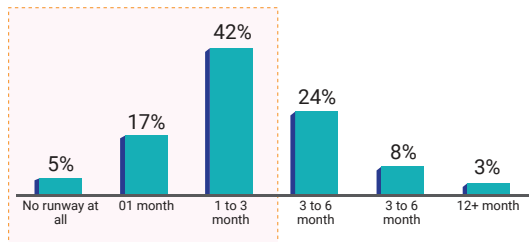
56% of business saw at least a 50% drop on revenue generation, while 52% seed stage startups saw decrease in business



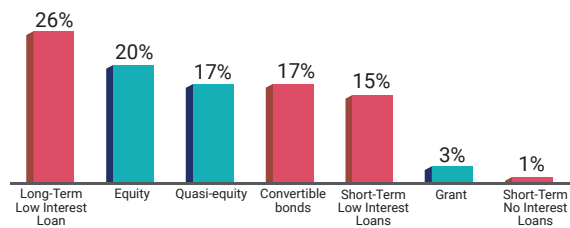
Reduction of Variable Cost and Salary are the first measures taken by 54% of the startups



63% of Startups have less than 3 months of runway



59% of Startups seek leverage (loans and bonds) in times of crisis



Source: BSEC, Bangladesh Startup Survival Guide, LightCastle Analytics Wing, 2020

Covid-19 has had a large impact on sectoral revenue in Bangladesh, the study said. Important earning sectors – such as apparel, e-commerce, automotive, ridesharing, real estate, and travel – have seen a more than 80 percent revenue impact. However, grocery, logistics, and digital financial services are the three essential sectors that have seen a positive impact on business.

In Bangladesh, the coronavirus pandemic has hit sectors like apparel, e-services and tourism the hardest. Education (including edutech), finance (including fintech), and healthcare (including healthtech) sectors have faced an initial blow but might recover partially, provided consumers will need them more if the current situation persists.

Although logistics sector players have reported a loss in revenue by 20 percent, the sector can bounce back if they improve their operational plan by partnering with e-commerce companies. With the onset of this lockdown, some of the e-commerce sector players have reported a 50 percent increase in business.

According to the Venture Capital and Private Equity Association of Bangladesh (VCPEAB), around 300 startups fear a loss of more than \$53 million as sales of products and services have come to a halt. Also, startups having an export-oriented income have experienced an 80 percent fall in revenue recently.

The jobs of almost 150,000 people – directly employed in these startups – are on the line now while about 700,000 service providers associated with these startups are currently not in a position to provide services either.

Each startup is different and needs to customise its survival strategy based on its market offering and value proposition. For example, Edutech startups can promote their professional courses as "skills you need to develop to survive in a post-corona world" through digital media.

LightCastle Partners analysis shows funding for startups in Bangladesh as a percentage of GDP is significantly low compared to other Southeast Asian countries, and the already low Startup Funding State of Bangladesh is at stake due to Covid-19.

Startups all over the world are already facing a lot of trouble when it comes to funding. Due to the recession sparked by Covid-19, the number of startup investment deals worldwide per month has dropped by more than half (55%) since the pre-coronavirus era (November 2019).

5. Global Scenario and Relevance for Bangladesh

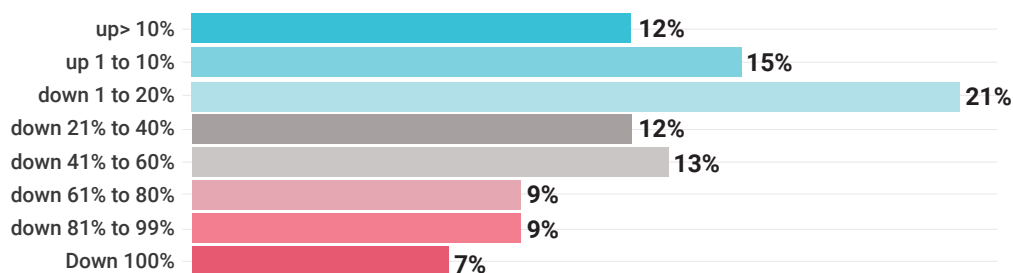
As the COVID-19 crisis hit across the world, startups have found themselves in a double bind, being hit hard from two main shockwaves: capital shock and demand. On the capital side of the equation, there is a crunch for capital across the world. This capital crunch manifests itself in three key statistics-

- a. First, four out of every 10 startups today are in the red zone: they have three months or fewer of capital runway. This means that they will collapse if they do not raise additional capital and their revenues and expenses remain unchanged, risking a mass extinction event for startups globally.
- b. Second, the fundraising process has been dramatically disrupted. Even for startups that already had term sheets from investors before the crisis, signed or unsigned, three out of every four startups have had the fundraising process disrupted. A dramatic 18% of those startups with term sheets have had a funding round canceled by the investor, and 54% have had their funding round delayed or the lead investor become unresponsive.
- c. Third, total VC funding has dropped dramatically across every single continent. Globally, it is down by 20% in the three months of 2020. In some regions of the world it dropped even more sharply. China, the first country hit by the crisis, had funding drop by over 50% relative to the rest of the world, as we have written for the World Economic Forum. While the country is experiencing a rebound in investments in March, it still faces lower activity than it had in December 2019.

The other side of the equation on the shocks affecting startups is we have seen demand drop like a rock for most companies. About 72% of startups saw their revenue drop since the beginning of the crisis, with the average startup experiencing a decline of 32%. Shockingly, almost 40% of companies of the companies saw their revenue drop by 40% or more, and only about 12% are experiencing significant growth.

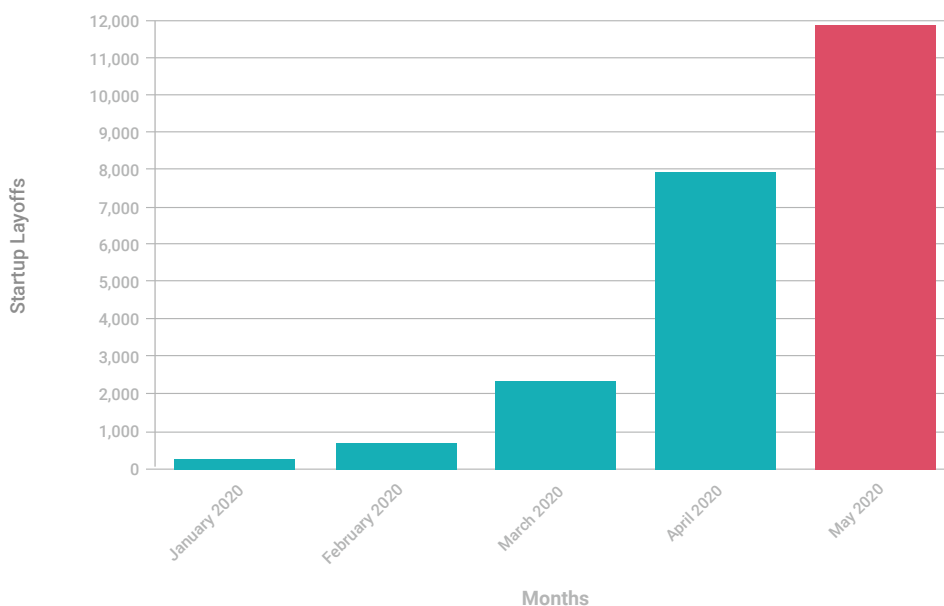
The downstream results of these two shocks are dramatic. Over 60% of startups have laid off employees or reduced salaries. For startups reducing FTEs, an average of 33% of jobs were cut, as the Startup Genome COVID-19 Impact Insights survey shows. This is also reflected in crowdsourced data about startup layoffs globally, with the number of employees laid off identified in these crowdsourced lists growing 5x between March and May 2020.

Change in Revenue Since the Beginning of the Crisis



Source: www.startupgenome.com

Number of employee layoffs grows 5x between March and May 2020



Source: Startup Genome
Calculations from Crowdsourced
Parachute List data

Globally, most of the startups are either shutting down, laying off staff or drastically changing their strategies in the wake of Covid-19 pandemic. Many of the Bangladeshi startups which raised a lot of money on the promise of rapid growth are facing plummeting demand as consumer spending stalls and unemployment is set to surge. Even the buzzy sectors like fintech, healthtech, edutech and deep tech are not immune from the effects of the pandemic.

6. Estimated Negative Impact

Bangladesh was ranked 116th out of 126 economies in the Global Innovation Index 2019. Although the economy has been performing well compared to its regional peers, in terms of innovation Bangladesh was ranked lowest indicating the lack of investment in areas such as – research and development, infrastructure, knowledge creation and diffusion among others. Having one of the most inefficient regulatory structures, Bangladesh ranked 176th out of 190 countries in the Doing Business Index. Nonetheless, all these adversities could not prevent Bangladeshi entrepreneurs from raising multi-million-dollar funds, nor discouraged foreign investors to enter the market. Moreover, local ride-sharing platform – Pathao extended its operation to Nepal in October, 2018 as the first Bangladeshi startup.

Category	United States	China	India	Indonesia	Bangladesh
Global Startup Ranking	1	14	23	54	98
Global Innovation Index ^[1]	61.73	54.73	36.58	29.72	23.31
Total Number of Startups ^[5]	100,000+[3]	25,000+	50,000+	5,000+	1,000+
Time taken to setup a new business (days)	4-8	30-40	15-30	15-30	15-30
Corporate Tax Rate	39%	25%	34%	22%	22%-35%
Number of loca; VC Firms ^[5]	1000+	-	700+	300+	25+
Number of Angel Investors	300,000+	-	1,800+	5,000+	200+
Number of Accelerators/ Incubators	1,500+	12,000+[4]	250+	-	20+

Source: Global Innovation Index 2019, Startup Blink, [5]Crunchbase, Angellist, Xinhuanet, Swiss Global Enterprise & LightCastle Analysis

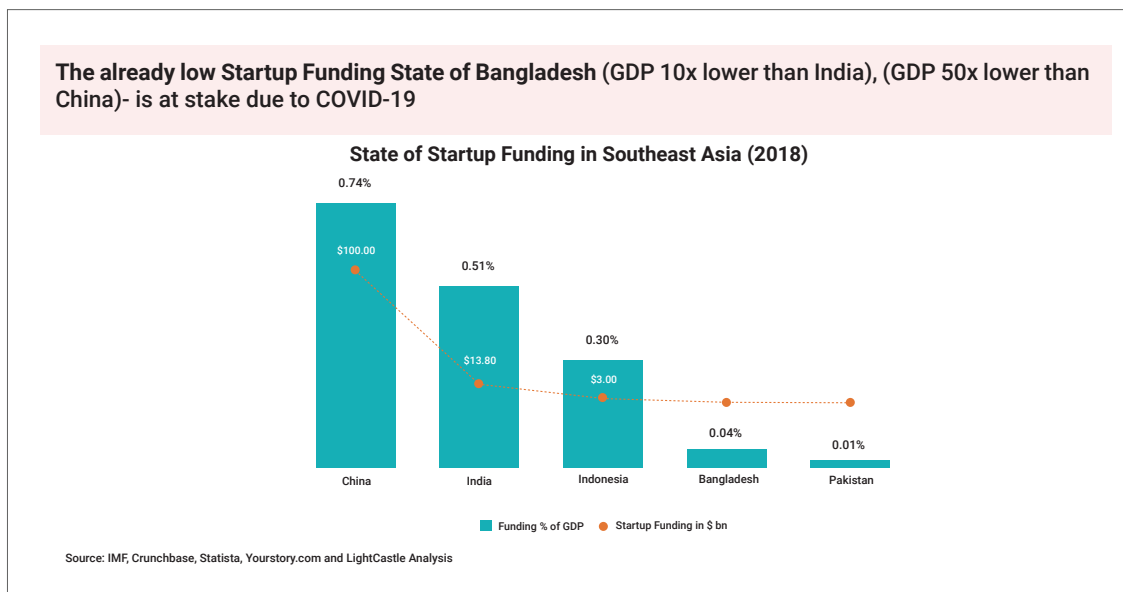
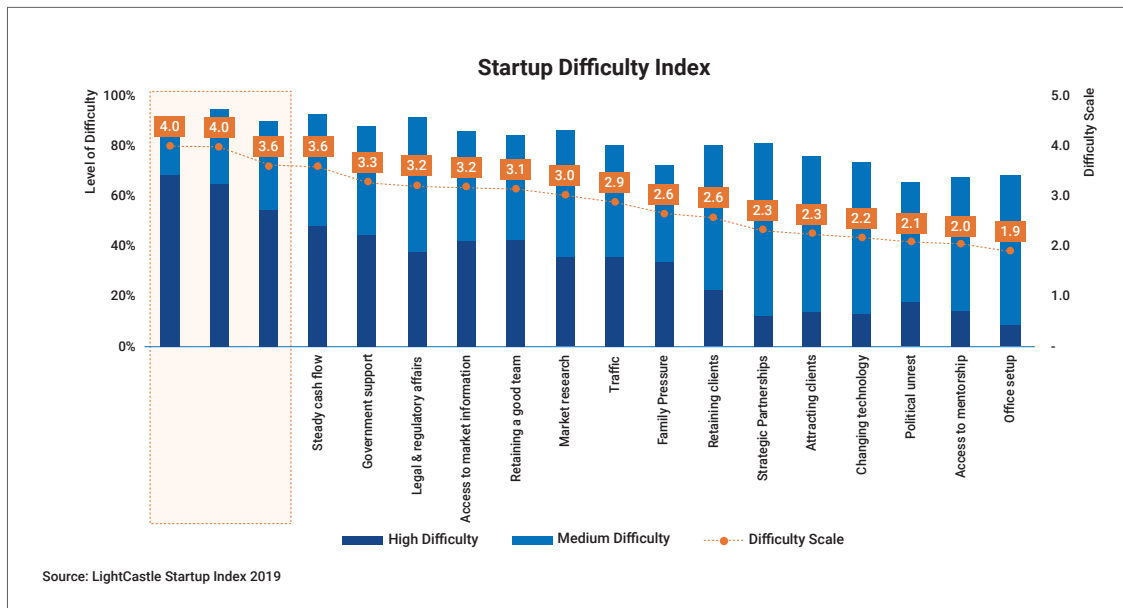
In 2018, Bangladeshi startups raised around USD 27 Mn while Indian startups raised USD 4.2 Bn. The huge discrepancy between the two markets with similar digital ecosystems can be partially answered by the difference in the number of startups but the absence of an enabling environment is the pivotal reason behind the gap. Presence of accelerator and incubation programs, mentorship and training, availability of funds in the market are not enough to initiate the next big revolution within the ecosystem. The entire business environment needs to be transformed to facilitate the growth of startups. The conclusion is clear: Bangladesh's startup ecosystem is slowly, but surely, coming of age.

An internal survey on 100+ Startup company founders was carried out to understand what are the severe bottlenecks they are facing in operating a business in Bangladesh. The findings show the top three problems for the startup founders were related to either finding the right talent (co-founder and team- top 2 challenge each with a score of 4/5) and access to funding (3.6/5) followed by cash flow management (3.6/5), government support (3.3/5), and legal/regulatory affairs (3.2/5).

3 Global Innovation Index 2019, Cornell University, INSEAD, World Intellectual Property Organization (WIPO), 2019

4 Doing Business 2019, World Bank Group, 2019

5 Indian Tech Startup Ecosystem: Leading Tech in the 20s, NASSCOM, 2019



7. Estimated Opportunities

Every crisis creates opportunities, and this crisis is no different. For instance, over half of Fortune 500 companies started during a contraction, and over 50 unicorns were created in the Great Recession alone, as Startup Genome data shows. The list of companies funded during the Great Recession is impressive. It includes Facebook, LinkedIn, Palantir, and Dropbox – all of these based in the Bay Area.

In the same way opportunities are unlocked for companies, they are also unlocked for ecosystems. The current crisis has accelerated the digitization of the offline economy, making tech companies even more important. The actions of ecosystems today will help determine how they will be positioned in the global stage tomorrow. At the same time, this is a unique opportunity for all of us to rebuild our economic communities with a lower negative impact on the environment and a stronger focus on inclusion and fair access to the amazing value that tech ecosystems create.

Just like the rise of both London and New York City came at the heels of the 2007-2009 Great Recession – in their attempt to diversify from reliance on their traditional strengths in finances – the post-COVID-19 recovery will see new ecosystems rising. Some recommendations have been suggested based on the ongoing pandemic situation and the upcoming economic recession.

a. Startup Policy: With the Digital Bangladesh agenda in Government's core, it is eminent to form a startup policy to offer multiple benefits for the startup and ecosystem players such as ease of access to debt finance, reducing the cost of doing business, ease of doing business, fiscal policy support - VAT/tax exemptions and rebates. An enabling policy will promote the growth of startups and the ecosystem attracting foreign investment in the ecosystem, benefiting the country's growth and employment rate.

b. Fund of Funds: Startup Bangladesh and ICT Ministry can form a fund of funds through a public private collaboration to invest in Startups. The fund of funds makes downstream investments in venture capital and alternative investment funds that in turn invest in startups.

c. Investor Benefits: The government needs to ensure an investment friendly environment in Bangladesh. Recommendations would be to update Foreign Exchange Regulation Act 1947, reduce entry barriers, introduce TAX benefits and ease repatriation of profits of foreign investors to attract foreign investments.

d. Ease of Doing Business: Business processes, policies, and regulations have to be streamlined and more comfortable to start and operate startups/SMEs. A way forward could be to use technology and fintech platforms to make tax payments seamless, transparent and secure.

e. Industry-Academia Collaboration: Industry-academia is mandatory to set up the right kind of infrastructure to nurture innovation and talents at school/university level as well as leverage knowledge remittances from NRBs all over the world through incentivized initiatives.

f. COV-19 Startup Support Fund: The ICT ministry can establish a BDT 150 crore startup support fund program in the form of grant/ quasi-equity/ matching fund nature to support the 150 startups for a runway of 12+ months. Based on multiple criteria i.e. employment, market potential, and post-pandemic adjusted valuation, startups can be categorized as- small, medium, and large.

As startups scale faster, they will play an instrumental role in driving innovation and speeding up economic recovery in these testing times. Therefore, the government needs to provide specific response packages to startups. While the government of Bangladesh has declared stimulus packages to export-oriented industries like working capital refinancing, EDF funding, pre-export capital, industry and MSME credit at discounted rate (4.5 percent) totalling \$8.5 billion, startups were not directly a part of the package. Given startups often do not directly operate with bank financing – and investors at least take six to 12 months to bounce back and invest – we assume the startups are going to need support for three to six months of working capital.

The size of each startup is different but if we take a look at larger ones who have 100+ employees, they would need between USD 500,000 to USD 1 million as a three to six months' runway. Depending on the number of startups that needs to be supported, the total response package needed would be around USD 12.5 million (\$500,000 each on average 25 startups) at least. If the big ones survive, the benefit would trickle down to the smaller ones.

In the coming years, Bangladesh's startup ecosystem which was set to finally come of age, will face a major setback. Startups that will adapt quickly by pivoting their businesses can navigate their way back, while companies failing to do so will get lost. In order to weather the storm, Bangladeshi businesses need to become increasingly inclusive and start creating social and environmental returns on top of positive economics. And the role of startups would become even more critical for equitable growth.

8. Road Map

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the Startup Sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	An emergency allocation of BDT 150 crore Startup fund for 150 prominent Startups in the form of equity/quasi-equity by 2020.	Launch fund of funds to attract investments from both domestic and foreign capital markets by 2021.	BHTPA from ICT Ministry can launch Startup Assistance program to provide in-kind benefits to minimize Startup operation cost till the middle of 2021.	A new procurement law - "Made in Bangladesh" that mandates corporations to source from Startups along with a mechanism for incentivizing angel investors will increase the overall liquidity of the sector by 2021.	ICT Ministry to set-up Invest Bangladesh (www.investbangladesh.gov.bd) as the holistic information platform for Startups by 2025 as a part of 8th Five Year Plan.
Why (To address:)	Without funding support, many seed and growth-stage startups are going to wind up, growth of the country and number of jobs for the population will be impacted.	A fund of funds, also referred to as a multi-manager investment, gives small investors broad diversification to hopefully protect their investments from severe losses caused by uncontrollable factors such as inflation and counterparty default. This will increase the private sector participation through de-risked public vehicle for investing in startups.	By providing in-kind services at lower or no cost to startups will allow them to marginally optimize their expenses against decreased revenue that can sustain their profitability	Launching a procurement movement that obliges corporations to source a portion of their total procurement from startups will help the early stage startups navigate through the immediate challenges created by the crises and become more resilient in the future.	A one-stop portal will promote all startup activities and opportunities in one place. A centralized portal can help decentralize the latest entrepreneurship opportunities and information all across the country which will allow startups to network, access free tools and resources and participate in programs and challenges. Such an example, startupindia.gov.in is India's largest online entrepreneurship platform
What	The ICT ministry can establish a BDT 150 crore startup support fund program in the form of grant/ quasi-equity/ matching fund nature to support the 150 startups for a runway of 12+ months. Based on multiple criterias i.e. employment, market potential, and post-pandemic adjusted valuation, startups can be categorized as- small, medium, and large.	Create a fund of funds through public private partnership to increase investment in ecosystem	The ICT Ministry and other GoB ministries have extensive infrastructure that can be utilized by the startups. These include tier-4 Data Center, Access to Startup Bangladesh Co-Working Space, Rent exemption at Sheikh Hasina High Tech Park, Jessore, and Rajshahi, GoB warehouses, and facilities at a minimum rental cost.	Ministry of Commerce and Ministry of Finance can work together in order to introduce the proposed procurement rule which will open new avenues for startups and drive the demand side development while encouraging angel investors to invest in startups will further develop the supply side.	By converging all support information (startup job circulars/ investment opportunities/ co-working space/ government contracts) and knowledge information (grant opportunity/ development fund applications/ latest competitions) on Startup Bangladesh will make it the largest opportunity discovery platform for startups in Bangladesh.
Lead Agency	Startup Bangladesh	Bangladesh Bank	Bangladesh Hi-Tech Park Authority (BHTPA)	Ministry of Commerce	Startup Bangladesh

Actor	Startups	Startups • Angel Investors • VCS, FIs and NBFIs	Startups	• Startups • Ministries of Bangladesh	• Startups • Startup Media • Development Partners • Accelerator/incubators • University
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	ICT Division • Bangladesh Bank, • Startup Bangladesh • BIDA • Angel and VC Network	• ICT Division • NBR • Bangladesh Bank • Ministry of Commerce/ Ministry of Industry • BIDA • Startup Bangladesh • Angel and VC Network • FIs and NBFIs	• Bangladesh Hi-Tech Park Authority (BHTPA) • ICT Division	• Ministry of Commerce • Ministry of Finance • Bangladesh Bank • ICT Division • a2i	ICT Division • Startup Bangladesh • Startup Media: Youth opportunities, Future Startup, dataBD.co • BDjobs and startups • Accelerators/Incubators and Competitions • UNCDF, a2i, USAID, DFID and more
Government Partners	Government Funding through Startup Bangladesh	GPrivate Public Partnership between government, VC and financial institutions	Government Funding through BHTPA	Government Funding	Government Funding
Private and Development Partners	Angel and VC Network	Angel and VC Network FIs and NBFIs			•Startup Media: Youth opportunities, Future Startup, dataBD.co BDjobs and startups Accelerators/Incubators and Competitions UNCDF, a2i, USAID, DFID and more
Financing and modality	Government Funding through Startup Bangladesh	Private Public Partnership between government, VC and financial institutions	Government Funding through BHTPA	Government Funding	Government Funding

Action Agenda 1

Challenge/Opportunity: The government has introduced multiple debt financing options for businesses in response to COVID-19's disruption of the economy. On top of the pressure to scale and reach breakeven, loan repayment creates an additional burden for startups. Hence, in addition to debt financing, it is imperative to establish a matching equity fund with relaxed valuation for startups, to boost startup runway and catalyze local and foreign investment into the ecosystem with shared risk.

Estimated impact (Quantitative): A survey on the startup ecosystem in late April reported, 60% of the startups have less than 3 months of runway. The lack of funds puts the startup ecosystem in uncertainty, which is currently creating employment to an estimated 150K+ people and indirectly supporting the livelihood of an estimated 600K+ people. By providing the prominent startups with 6-12 months of runway will ensure 80% employment and business stability.

Estimated impact (Qualitative): Without funding support, many seed and growth-stage startups are going to wind up. This will ultimately lead to dissatisfaction of the entire ecosystem of entrepreneurs, investors, and employees, resulting in a decreasing rate of entrepreneurship in the long run. In addition, growth of the country and number of jobs for the population will be impacted.

Action Agenda

Title: An emergency allocation of BDT 150 crore startup fund for 150 prominent Startups in the form of equity/quasi-equity by 2020.

Summary: The ICT ministry can establish a BDT 150 crore startup support fund program in the form of grant/ quasi-equity/ matching fund nature to support the 150 startups for a runway of 12+ months. Based on multiple criterias i.e. employment, market potential, and post-pandemic adjusted valuation, startups can be categorized as- small, medium, and large. It is proposed to allocate the fund as below:

- BDT 10 lakh each for 100 small-sized startups equity/quasi-equity
- BDT 1 crore each for 40 medium-sized startups equity/quasi-equity
- BDT 10 crore each for 10 large-sized startups equity/quasi-equity

Possible Lead Agency: ICT ministry will be the lead agency in support of Bangladesh Bank, BIDA and local angel and VC ecosystem

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
	ICT Division	Lead agency for implementation. Facilitate policy reforms required for implementation. Allocation of fund from Startup
Government agencies	Bangladesh Bank	Bangladesh, Bangabandhu Innovation Grant, Entrepreneurship Support Fund- ESF and iDEA Project.
	Startup Bangladesh	Support Agency to allocate and disburse funds for Startups from Entrepreneurship Support Fund- ESF
	BIDA	Fund manager of the rehabilitation fund responsible for disbursement, monitoring and evaluation of the fund
		Supporting Agency to promote investment climate and opportunities to foreign investors.
Government agencies	Angel and VC Network: Bangladesh Angels, BDventure, IDLC VC	The investors will cofinance the startups with de-risked valuation coupled with Startup Bangladesh

Role of ICT Division:

- ICT division will facilitate the formation of the funds and allocate a fund manager (Startup Bangladesh)
- ICT division will form selection committee to select the startups to disburse

Process of implementation:

- ICT division in response with all supporting agencies will analyze the suitable available fund to be allocated and disbursed
- ICT ministry will form selection committee with internal and external stakeholders to conduct due-diligence of the impact and need from the startups
- ICT ministry will form fund disbursement, monitoring and evaluation policies for the disbursed funds

Timeline: The steps required for developing a policy sandbox to come into action by 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Timeline	Pilot project might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	High
Selection	Internal biases in selection of the startups	A standard selection criteria will be drafted to and startups will be prioritized according to their scores.	Medium
Infrastructure	Allocation of funds from multiple sources into one pot	Formation of Startup Bangladesh to disburse the non-repayable fund through the vehicle	Medium
Promotion	Weak participation of local and foreign investors	ICT ministry and BIDA will conduct roadshows with the invested startups to attract further investment from the market	Medium
Monitoring and Evaluation	Performance of startups - stability, growth and satisfaction upto the mark after disbursement	Monthly physical and financial audits to be made to ensure the proper usage of funds	High

Scope of PPP:

ICT ministry will be involved in a proactive agreement with BIDA and Bangladesh Bank to ensure the allocation of funds from all sources.

Action Agenda 2

Challenge/Opportunity: Despite GoB's establishment of BDT 100,000 crore stimulus fund in multiple forms (mostly subsidized working capital loans), it is very difficult for the majority of startups to access the fund due to lack of physical collateral, business experience, and capacity to repay. While Bangladesh has multiple policies (Industrial Policy, Credit Policy, SME Policy) for SMEs, Startups don't yet have a comprehensive policy preventing them to include them in the traditional business and SMEs, hindering them to access capital. Formation of a startup policy with relaxed requirement will benefit the startups raise capital from banks.

Estimated impact (Quantitative): Globally, the number of startup investment deals per month has halved by 55%. A survey on the startup ecosystem in late April reported, 60% of the startups have less than 3 months of runway. The lack of funds puts the startup ecosystem in uncertainty, which provides employment to an estimated 150K+ people and indirectly supports the livelihood of an estimated 600K+ people. A formation of startup policy will relax the the criterias to access the debt finance from the banks.

Estimated impact (Qualitative): By creating a startup policy, debt financing can be eased resulting in easier financing options for the startups from banks other than alternative investments. In addition to access to debt finance, other policies can be explored to reduce cost of doing business, ease of doing business, tax benefit and rebates for both startups and investors.

Action Agenda

Title: Launch fund of funds to attract investments from both domestic and foreign capital markets by 2021.

Summary: Upon creation of the startup policy, the startup and ecosystem players will enjoy multiple benefits in access to debt finance, reducing cost of doing business, ease of doing business, tax benefit and rebates. The policy should include subsidy/ con-investing options/ tax benefits/ exit options for foreign investors to attract foriegn investments. An enabling policy will promote growth of startups and the ecosystem attracting foreign investment in the ecosystem, benefiting the growth and employment rate of the country.

Possible Lead Agency: ICT ministry will act as the lead implementer here in collaboration of NBR, Bangladesh Bank and Ministry of Industries, Ministries of Commerce and BIDA.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	ICT Division	Lead agency for implementation of the startup policy in collaboration of the supporting agency.
	NBR	Support agency to promote tax rebates and support for startups and investors.
	Bangladesh Bank	Support Agency to relax criterias for access to debt finance.
	Ministry of Commerce/ Ministry of Industry	LSupport agency to formulate ease of doing business and reduction of cost of doing business.
	BIDA	Supporting Agency to promote investment climate and opportunities to foriegn investors.

Role of ICT Division:

- ICT division will lead and coordinate with multiple government stakeholders to form the startup policy.

Process of implementation:

- ICT ministry will formulate a tender for construction of startup policy
- Selected consulting company will prepare a draft startup policy with input from multiple stakeholders and global practices
- ICT ministry will validate the draft startup policy with BIDA, Bangladesh Bank, NBR, Ministry of Industries and Ministry of Commerce Upon acceptance, the final policy will be launched and circulated to respected stakeholders.

Timeline: The initial steps required for developing a policy sandbox to come into action by 2020 and fiscal policy should be completely functional by 2021.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Timeline	The timeline will be a challenging task to meet as the strategy taken will be for a 5-10 year horizon.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay. Mid term and quarter term evaluation should be kept for the check and balance.	High
Stakeholder Management	With multiple stakeholders in play it is essential to match everyone's expectation and agenda	ICT ministry need to coordinate with all public stakeholders deeply to push for common agenda	High
Definition	A widely accepted definition needs to be in place to categorize startups to enjoy the policy	The definition can be modified with inspiration from similar global ecosystem and our own ecosystem	Medium
TAX Reform	NBR may not pardon the request of restructuring the vat and tax exemption policies	Justify the reasoning through existing use-cases in comparison to other SEA countries	Medium
Debt Financing	Implementation of the policy for debt financing may increase risks of the banks which needs to be justified	The policy needs to be justified with existing use-cases from other countries	Medium

Scope of PPP:

ICT ministry will be involved in a proactive agreement with supporting public stakeholders to ensure the allocation of funds from all sources

Resources from Private sector [technical]: UN agencies have been assisting governments to devise and execute strategies for achieving digital economies. Technical support from them is necessary to set and meet specific goals. The World Bank annually collects data across economies to identify whether they meet the indicators for a digital economy and release their annual report based on the research findings. They should be consulted to gain a deep understanding of the outcomes

Action Agenda 3

Challenge/Opportunity: The government has initiated multiple initiatives such as Hi-tech parks, software parks, co-working spaces, data centers, and more. Startups affected by the COVID can be offered with these in-kind support in addition to the cash support programs.

Estimated impact (Quantitative): A survey in April reported, 63% of startups responded to cut costs by releasing office spaces and cutting out rent. Support from government allocated spaces can help startups to relocate and cut down costs. Additionally, data centers, subsidized mobile data packages, mentoring, accelerator space can help bring down the costs by maximum 40%.

Estimated impact (Qualitative): By providing in-kind services at lower or no cost to startups will allow them to marginally optimize their expenses against decreased revenue that can sustain their profitability. Even if the startups are unable to raise investment in the short-term, the in-kind support will help decrease cost and lengthen their cash runway.

Action Agenda

Title: BHTPA from ICT Ministry can launch Startup Assistance program to provide in-kind benefits to minimize startup operation cost till the middle of 2021.

Summary: The ICT Ministry and other GoB ministries have extensive infrastructure that can be utilized by the startups. These include:

- Tier-4 Data Center at Bangabandhu Hi-Tech City for immediate deployment
- Access to Startup Bangladesh Co-Working Space, free of charge
- Reshuffling of Co-Working Space at Janata Tower (STP) and Startup Bangladesh for reallocation for essential services startups
- Rent exemption at Sheikh Hasina High Tech Park, Jessore, and Rajshahi, for startups as additional office space for the next 12 months
- Maximum space utilization in BHTPA, GoB warehouses, and facilities at a minimum rental cost

Possible Lead Agency: BHTPA along with ICT ministry can lead the implementation.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Bangladesh Hi-Tech Park Authority (BHTPA)	BHTPA with all its resource and facilities will lead the implementation of program.
	ICT Division	The division will facilitate coordination of all public and private stakeholders for implementation of the program.

Role of ICT Division:

- ICT division will facilitate coordination of all public and private stakeholders for implementation of the program

Process of implementation:

- ICT division in response with all supporting agencies will analyze the suitable available support available to be disbursed
- BHTPA will form selection committee with internal and external stakeholders to conduct due-diligence of the impact and need from the startups
- ICT ministry will monitor the implementation of allocation of resources by BHTPA

Timeline: The initial steps required for developing a policy sandbox to come into action by 2020 and incentives should flow till the middle of 2021.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Timeline	Project may take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	High
Selection	Internal biases in selection of the startups.	A standard selection criteria will be drafted to and startups will be prioritized according to their scores.	Medium
Efficient Usage	As limited infrastructure is available to be disbursed, resources need to be disbursed justly to the right needed startups.	Penalty to be issued if startups don't use or damages resources after allocation.	Medium
Promotion	Lack of promotion will result low applications	Promotion campaign need to be run in support of ecosystem enablers to reach maximum number of startups.	Medium
Monitoring and Evaluation	Performance of startups stability, growth and satisfaction upto the mark after disbursement.	Monthly physical and financial audits to be made to ensure the proper usage of funds.	High

Scope of PPP:

- BHTPA and ICT ministry can explore partnership with BTCL to provide low-cost internet service.

Action Agenda 4

Challenge/Opportunity: The COVID19 pandemic has forced a significant number of Bangladeshi startups to shut down their operations. Most of the early stage startups do not also have runways longer than 3-6 months. As the global economy enters a recession, Bangladeshi investors are also showing reluctance in investing in new ventures. Under these circumstances, a policy sandbox that encourages angel investors to invest in early-stage startups by providing fiscal (tax rebate) and monetary (preferential interest rates) benefits.

Estimated Impact (Qualitative): Incentivizing angel investors as well as launching a procurement movement that obliges corporations to source a portion of their total procurement from startups will help the early stage startups navigate through the immediate challenges created by the crises and become more resilient in the future.

Action Agenda

Title: A new procurement law - "Made in Bangladesh" that mandates corporations to source from startups along with a mechanism for incentivizing angel investors will increase the overall liquidity of the sector by 2021.

Summary: Ministry of Commerce and Ministry of Finance can work together in order to introduce the proposed procurement rule which will open new avenues for startups and drive the demand side development while encouraging angel investors to invest in startups will further develop the supply side.

Possible connected agencies:

Broad Group	Specific Entities	Role and Resources
Government agencies	Ministry of Commerce	Lead agency for implementing the proposed procurement rule.
	Ministry of Finance	Supervise the formalization of suggested incentives for angel investors.
	Bangladesh Bank	Provide policy support for incentivizing investors.
	ICT Division	The division will facilitate coordination of all public and private stakeholders for implementation of the program
	a2i	Will facilitate public and private sector collaboration and run the pilot phase.
Private Agencies	Bangladesh Angels Network	Will work as a representative for all the angel investors in the country.

Action Agenda 4

Challenge/Opportunity: The COVID19 pandemic has forced a significant number of Bangladeshi startups to shut down their operations. Most of the early stage startups do not also have runways longer than 3-6 months. As the global economy enters a recession, Bangladeshi investors are also showing reluctance in investing in new ventures. Under these circumstances, a policy sandbox that encourages angel investors to invest in early-stage startups by providing fiscal (tax rebate) and monetary (preferential interest rates) benefits.

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Summary: Ministry of Commerce and Ministry of Finance can work together in order to introduce the proposed procurement rule which will open new avenues for startups and drive the demand side development while encouraging angel investors to invest in startups will further develop the supply side.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Financial	The actual financial impact on the Ministry of Finance may go beyond the estimated amount.	The ministry might have to restructure the vat and tax exemption policies.	High
Impact	The desired impact might not result in corporations sourcing from startups.	Government might need to introduce further incentives (i.e. b-corp, tax breaks) to promote procurement from startups.	High
Timeline	Implementation process might take longer than anticipated due to the nature of the initiative.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Implementation	The ministry of finance may not be able to process the request of restructuring the vat and tax exemption policies for investors.	Justify the reasoning through existing use-cases in comparison to other SEA countries.	High
Promotion	Lack of promotion will result low activity and outreach.	Promotion campaign need to be run in support of ecosystem enablers to reach maximum beneficiaries.	Low

Scope of PPP:

- In determining the appropriate incentive for angel investors, there is scope for the Ministry of Finance, ICT ministry and associations like Bangladesh Angels Network to formulate policies.
- Government agencies (ICT division, Ministry of Commerce) will be involved in a proactive agreement with private sector entities (corporations) in developing the procurement rule.

Action Agenda 4

Challenge/Opportunity: In Bangladesh, there is a lack of one common centralized platform for startup ecosystem related information and news. Setting up a dedicated platform for information will promote local startup activities and boost investment climate ultimately propelling the entrepreneurship ecosystem.

Estimated impact (Quantitative): As of the Global Innovation Index 2019, Bangladesh ranked 116th out of 129 countries. When compared with other 26 South East Asian countries, Bangladesh was ranked 17th right after Cambodia, Nepal, and Pakistan as one of the least innovative countries. A central information platform will promote entrepreneurship activities boosting morale of the ecosystem, ultimately improving the ranking by 5 notches.

Estimated impact (Qualitative): A one-stop portal will promote all startup activities and opportunities in one place. A centralized portal can help decentralize the latest entrepreneurship opportunities and information all across the country which will allow startups to network, access free tools and resources and participate in programs and challenges. Such an example, startupindia.gov.in is India's largest online entrepreneurship platform.

Action Agenda

Title: ICT Ministry to set-up Invest Bangladesh (www.startupbangladesh.gov.bd) as the holistic information platform for Startups by 2025 as a part of 8th Five Year Plan.

Summary: By converging all support information (startup job circulars/ investment opportunities/ co-working space/ government contracts) and knowledge information (grant opportunity/ development fund applications/ latest competitions) on Startup Bangladesh will make it the largest opportunity discovery platform for startups in Bangladesh.

Possible Lead Agency: ICT ministry will be the lead implementation through Startup Bangladesh Initiative.

Possible connected agencies:

Broad Group	Specific Entities	Role and Resources
Government agencies	ICT Division	Lead agency for implementation of the centralized platform.
	Startup Bangladesh	Supporting agency to run the platform once implemented.
Private agencies	Startup Media: Youth opportunities, Future Startup, dataBD.co	Collaboration with multiple startup media will allow sourcing of information for the platform to highlight entrepreneurship and funding activities.
	BDjobs and startups	TCollaboration with startups will promote hiring circulars and latest achievements.
	Accelerators/ Incubators and Competitions	Collaboration with accelerators/incubators will promote local and global opportunities for startups.
Development Partners	UNCDF, a2i, USAID, DFID and more	Collaboration with development partners will enlist latest and upcoming grants and funding opportunities

Role of ICT Division:

- ICT division will lead the implementation of the platform

Process of implementation:

- ICT ministry will formulate a tender for upgradation of the online platform
- Selected consulting company will design and prepare the website
- ICT ministry will pilot and review with the startup ecosystem
- Upon acceptance, the platform will be handover to Startup Bangladesh to run and monitor

Timeline: The initial steps required for developing a policy sandbox to come into action by 2025 as a part of the 8th Five Year Plan.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Timeline	Pilot project might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	High
Partnership	Difficult to source ecosystem activity news of all levels.	Public partnership can be explored to locate more news and activities across the country.	Medium
Infrastructure	The project may become a burden on the existing team and resources.	A new team can be formed responsible for content curation and disbursement.	Low
Promotion	Lack of promotion will result low activity and outreach.	Promotion campaign need to be run in support of ecosystem enablers to reach maximum beneficiaries.	Low
Financial	Allocation of budget to run the initiative smoothly.	An additional budget needs to be assigned to run the program.	Low

Scope of PPP:

One of the core propositions to implement a pilot project model before getting final approval is private-public partnership. ICT ministry will be involved in a proactive agreement with startups and ecosystem enablers during the development of platform.

Post COVID-19 ICT Roadmap for Bangladesh

Startups Ecosystem

Post COVID-19 ICT Roadmap for Bangladesh: Digital Commerce

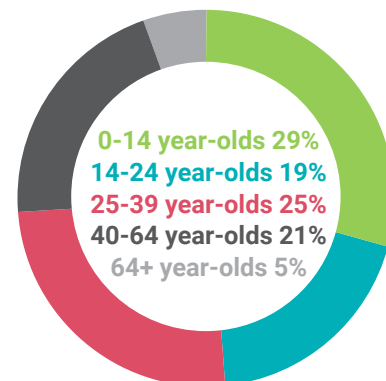
How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Digital Commerce is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Digital Commerce Sector

Bangladesh's digital commerce landscape has experienced remarkable growth since its take off in 2013-14. With currently over 102mn active internet users, the nation has seen significant improvement in digital literacy and online spending.¹ Digital commerce is being plugged-in with mobile financial services (MFS) as its mode of payment and e-logistics companies for its deliveries. Both verticals complement each other and have demonstrated exponential growth over the years. According to a study by the e-CAB, the market measure for the sector is expected to equal at Tk. 70 billion (US \$ 826 million) by 2021.² The sector has the potential to grow much further if the small and medium enterprises in urban and rural areas can adopt the digital commerce systems and functions. While the unexpected nature of the pandemic has brought major disruptions to the industry, it has also brought opportunities to leverage upon.

■ Around 45% of the total demography are potential e-commerce users



Source: IDLC Monthly Business Review, August 2018

666 cr

Loss incurred directly in e-commerce sector

**fCommerce
eCommerce
Ride-Sharing**

Top 3 sectors hit badly due to the pandemic/lockdown

82%

eCommerce Businesses have been heavily impacted

Source: e-CAB, The Daily Star, Bangladesh Startup COVID-19 Response Group, LightCastle Analytics, 2020

Constraints

With 25% contribution of Bangladesh's GDP coming from the SME sector, it is prime time for small and medium businesses to adopt digital commerce practices.⁴ However, due to the lack of technological adoption and platform services to empower the SME sector, a significant portion of the sector has been deprived of the opportunity to take advantage of the digital commerce space. In addition, lack of awareness and exposure to the utilities of e-commerce, misconceptions, knowledge gaps, and transport restrictions are refraining people from rural and peri-urban areas from availing and providing e-commerce services. Conversion of these traditional service providers and customers to digital mechanisms will be key to propelling growth of the sector.

Digital marketing has become an essential tool but the 15% tax on Google, Facebook, and YouTube ads are significant additional costs borne by the businesses, especially amid the pandemic. Lack of a conducive tax and vat policy for the digital commerce space is not only refraining existing investors from making further investments, it is also discouraging new entrants from entering the digital commerce landscape.

Impact of COVID-19

The unprecedented and aggressive COVID-19 outbreak has not spared the e-commerce sector in its path of havoc and disruption. An e-CAB study involving 1,100 of its member companies outlines a loss of Tk. 666 crore (US\$ 78.6 million) directly to the industry as a whole, with f-commerce and non-essential businesses bearing the brunt of the losses. The third-party logistics company Paperfly, that neither sells groceries nor other necessities online, has experienced a dramatic fall in orders in the ballpark of 90% despite being a market leader. Labor shortages in the sector are on the rise and workers have temporarily migrated out of Dhaka.³

\$3bn

Estimated Market Size in 2023

1.25lakh

Employment in the sector

103rd

In B2C e-commerce indes

Source: E-cab and Global E-commerce indes and Statista.com

1. Bangladesh Regulatory Commission 2020, Government of the People's Republic of Bangladesh, Retrieved: 13 July 2020, from <http://www.btrc.gov.bd/>

2. Khan, S. S. 2020, 'E-commerce in Bangladesh: Where are we headed?', The Financial Express, 10 January, Retrieved: 13 July 2020, from <https://thefinancialexpress.com.bd/views/e-commerce-in-bangladesh-where-are-we-headed-1578666791>

3. Islam, Muhammad Zahidul 2020, Online grocers fail to seize the day during biggest opening yet, The Daily Star, April 28, Retrieved: 13 July 2020, from <https://www.thedailystar.net/business/news/online-grocers-fail-seize-the-day-during-biggest-opening-yet-1897495>

4. LightCastle Analytics Wing 2020, COVID-19: Impact on Bangladesh's SME Landscape, LightCastle Partners, 25 April, Retrieved: 13 July 2020, from <https://www.lightcastlebd.com/insights/2020/04/25/covid-19-impact-on-bangladeshs-sme-landscape>

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the digital commerce sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Develop a COVID-19 code of conduct along with e-commerce policy that promotes the growth of hyperlocal e-commerce for last-mile reach, which could be implemented by 2020	Tax reformation for online shopping and digital advertisement by 2020	Assisted e-commerce services to help people adopt online shopping practices by the end of 2020	ICT Ministry can work on policy level with BTRC to ensure affordable mobile internet prices within 2020	Promote existing digital platform startups and services and introduce new ones for SMEs for digital transformation by the end of 2021
Why (To address:)	Health risk concerns when receiving and delivering of products	With reduced orders and supply chain disruption added to the thin profit margin, the value added tax is becoming a burden for many small and medium sized e-commerce organizations	Lack of awareness and exposure to the utilities of e-commerce is refraining people from rural and peri-urban areas from availing e-commerce services	If mobile internet prices are kept stable or made affordable, the 6 crore mobile subscribers who do not use mobile internet can potentially begin to use data and in turn can be introduced to digital commerce	Platform services for SMEs with end-to-end solutions starting from sourcing to delivery will enable approximately 1% of the 6 million SMEs to adopt e-commerce. Keeping in mind, close to 30% of SMEs have experienced 50% reduction in revenue during the pandemic
What	COVID-19 code of conduct for pickup and delivery. And policy to promote the growth of hyperlocal e-commerce	Tax reformation to ease the expenditure on digital marketing	Tailored business model to empower and educate businesses in the remote regions	Budget reformation to decrease mobile internet prices	Introduction of digital platforms to provide end-to-end e-commerce services to SMEs
Lead Agency	ICT Ministry	National Board of Revenue	ICT Ministry	BTRC	ICT Ministry
Actor	Department of Health under the Ministry of Health and Family welfare and Bangladesh Road Transport Authority	National Board of Revenue, Ministry of Finance	BRAC NGO, UNCDF, SME Foundation	ICT division Mobile operators - Grameenphone, Banglalink, Robi	SME Foundation, Software Development Companies
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	E-Cab	a2i	a2i	SME Foundation
Partners	Center for Policy Dialogue. Last-mile delivery solutions: Pathao, eCourier, ShopUp, Chaldal, PriyoShop and Shohoz	E-Cab Will be the representative voice of the digital organizations to determine the extent to which TAX exemption will help in reduction of costs	PKSF, iSocial (Kalyanis), e-Entrepreneurs, Start-up Bangladesh	Additional support from think tanks like CPD can be taken in order to validate the price ranges determined	E-Cab, Digital Start-ups, Consulting Agencies
Financing and modality	Government agencies (Bangladesh road authority, ICT Ministry, DGHS) will be involved in a proactive agreement with private sector entities (e-cab, startups, digital commerce companies) and development partners	The telcos, digital marketing agencies along with the ICT ministry and the BTRC have the scope of working together to determine appropriate tax rates on mobile data, voice and digital ads Government agencies (ICT ministry, NBR) will be involved in a proactive agreement with private sector entities (Telcos, Digital Marketing companies)	PPP; Government agencies (Ministry of Industries, a2i) will be involved in a proactive agreement with digital commerce entities and development partners (UNCDF SHIFT, BRAC)	PPP; Government agencies (ICT ministry, NBR) will be involved in a proactive agreement with private sector entities (Telcos, Digital Marketing companies)	PPP; Government agencies (SME foundation, a2i) will be involved in a proactive agreement with private sector entities (software companies, startups) and development partners

Post COVID-19 ICT Roadmap for Bangladesh

Digital Commerce

Thematic Paper

Post COVID-19 ICT Roadmap : Digital Commerce

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh [in collaboration with the Access to Information (a2i) Program, Innovision, LightCastle Partners, and DataSense @ iSocial] is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Digital Commerce is one of the 14 priority sectors selected based on the impact of COVID-19 and potential for transformation of economy and society.

Why is Digital Commerce Important?

Digital commerce refers to the purchase and sale of products and services using digital channels including the Internet, mobile network and commerce infrastructure. Informational and monetary related data exchange are also a part of digital commerce. This mode of transaction is being preferred at present as it allows companies to conduct business without having brick and mortar presence, thus reducing infrastructure, communication and other overhead expenses and making transactions more efficient by eliminating unnecessary intermediaries.

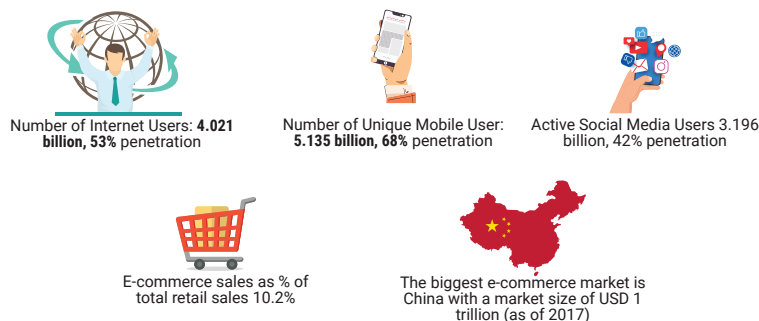
The growth of global digital commerce has been remarkable over the past decade due to the engenderment of the internet, innovations in networking, and computer technology. Traditional brick and mortar shops and conventional commerce are not able to satisfy customers in terms of variety due to limited products and services available. Alongside medium and large enterprises, smallhold businesses are gradually getting involved in digital commerce and are being able to access a wide array of customers not only within the country but also across the globe.

As the influence of digitalization continues in B2B and B2C , radical changes in the behaviours and expectations of customers are being seen - from the way they search for a product or service, consider to purchase, complete the transactions, and become loyal to a brand, to the way they communicate their likeness and preferences to peers. Since the demand spectrum of this sector is being able to get a more detailed showcase of goods and services, reduced prices due to competition, and easier comparison of prices, their consumption behavior has been adjusting accordingly. These customers are a major driving force of the economy as their consumption spending add up to the GDP calculation applying the expenditure approach. The probability of reaching out to a wider range of customers increases with the embracing of digital commerce.

Digital commerce has immense potential for the supply side of the spectrum as businesses can increase their market share to a wider customer base. Besides, selling products and services online is cost effective compared to traditional methods due to high recurring overhead costs of the latter, including store management cost, security cost, rental expense, employee expense, and other operating expenses..Besides, underprivileged suppliers of goods such as rural farmers, craftsmen, potters, and micro and small businesses have the potential of better pricing of their goods without minimum interference of middlemen.

Situation Analysis before COVID-19 Outbreak - Global

Due to the emergence of online retail behemoths such as Amazon and EBay, the trend of digital commerce gradually hit the Asian countries. Adoption of digital commerce in Asia began with countries like Japan, South Korea and Singapore in the early '90s, after which countries like China, Thailand, Malaysia, and Indonesia joined the fray. The third wave hit developing markets like India, Cambodia, and Vietnam, among others in the 2000s. In 2017, the global e-commerce market size grew by 25% to reach USD 2.30 trillion, and rose even higher to USD 3.69 trillion in 2018, driven by 4.02 billion internet users, 5.14 billion unique mobile users, and 3.20 billion social media users¹. China has been leading the market for a while, contributing USD 1 trillion to global market size.



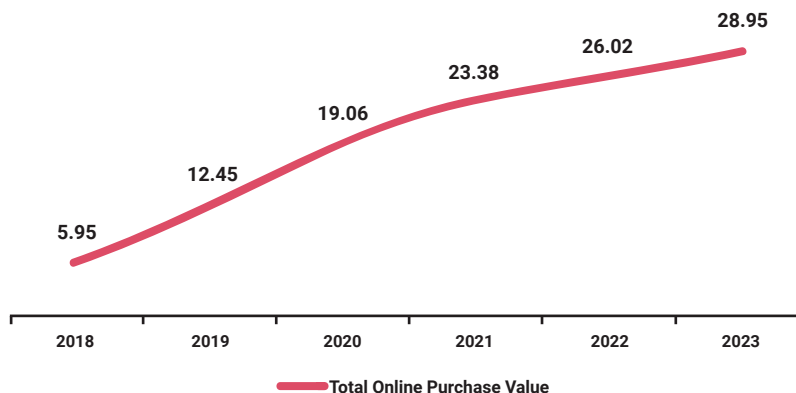
Digital in 2018, Hootsuite and We Are Social 2018

The global market is expected to reach USD 18.89 trillion by 2027 growing at a CAGR of 19.9% during the forecast period². Key market players include Apple, eBay, Alibaba, Amazon, Google, iTunes, WalMart, Microsoft, Jabong, and Myntra. In 2017, the highest global e-commerce market was captured by Asian countries. The reasons identified behind the e-commerce boom in South Asian markets are rise in disposable income, increased access to the internet and growing smartphone usage. Application of analytics to increase consumer conversion rate is the reason for the huge revolution in China, while in Singapore, the digitized payment system helped the e-commerce boom.

3. Situation Analysis before COVID-19 Outbreak - Bangladesh

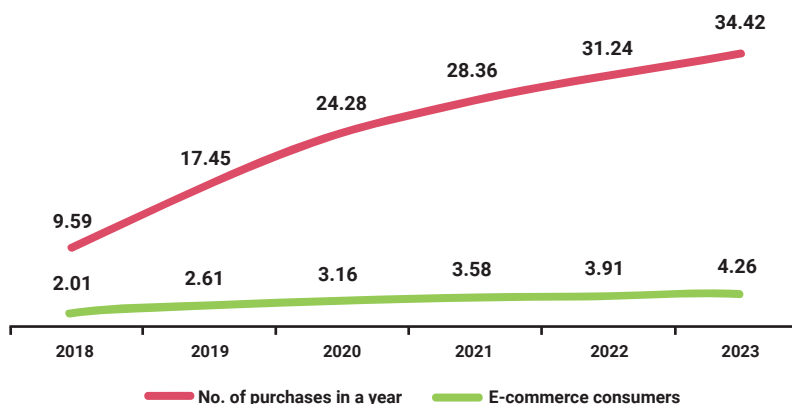
In Bangladesh, digital commerce is still at a nascent stage compared to its regional counterparts. The journey began in 2008, and during 2012-13, digital commerce ventures mushroomed throughout the major cities. Albeit the belated introduction to digital commerce, Bangladeshi consumers, backed by increased disposable income and access to the internet, are rapidly adapting. The industry is set to grow exponentially over the next couple years due to the emergence of heavyweight international digital commerce players in the country and fresh investment flowing into existing local contenders. Recent investment and acquisition trends show that Chinese investments are flowing into the South Asian market as a part of strengthening their presence in this region. An exemplifier would be Alibaba buying out the entire South Asian operation of Daraz. Warren buffet's Berkshire Hathaway has shown interest in Indian payment gateway Paytm. These indicate that digital commerce is expected to grow in upcoming years.

Digital Commerce Market Size Bangladesh (BDT Billion)



The industry is set to reach USD 344 million by the year 2023 driven by a higher consumer base, increased distribution network and large digital commerce companies providing affordable value to its consumer base. The consumer base, mainly composed of active internet users of Bangladesh is also projected to grow at a similar pace to 4.3 million by the year 2023 with their number of purchases per year increasing at a much higher pace.

E-Commerce Order Base Growth (Millions)



Such growth of the digital commerce industry relies much on the digital ecosystem of Bangladesh. Being the 5th largest mobile market in Asia Pacific, the country's 161 million people are under mobile subscription and 102 million are under internet usage of which 94 million are using mobile internet³. Besides, Bangladesh is forecasted to have 40 million middle and affluent class (MAC) population by 2025⁴, who will have a consumption upgrade and thrive to pursue an improved lifestyle. Using ride hailing applications instead of public commute, ordering food online instead of dining out, shopping online instead of traditional shopping – all of these are considered indications of improved lifestyles. That is why startups like Pathao, Shohoz, Hungry Naki, and Bagdoom among others are blooming in Bangladesh.

3. Digital in 2018, Hootsuite and We Are Social, 2018

4. Global E-Commerce Market is Expected to Reach \$18.89 Trillion by 2027, Statistics Market Research Consulting Pvt Ltd, May 2020

4. Situation Analysis after COVID-19 Outbreak

As the ramifications of the COVID-19 crisis continue to be felt across the world, entire industries are struggling under the weight of demand downturn, labor shortages and inability to maintain their supply chain processes. However, demand downturn has not been the issue of primary concern for the digital commerce industry which has seen an unprecedented rise in orders for certain businesses and growth of overall consumer base owing to the lockdown in place.

The pandemic has caused a large surge of demand to wash over the e-commerce industry in a way that it was, from a capacity standpoint, not equipped for. The mandated lockdown and rampant fear of infection has changed consumer spending patterns. Marginal propensity to save has risen as households hold back on consumption on luxuries and raise consumption for essentials. An estimated increase of around 3-4 times of pre-pandemic orders for necessities and a sharp decline in orders for luxuries have left businesses with the latter product portfolio to either adapt and start offering groceries and essentials for sale, or suffer large losses from a lack of orders. e-CAB spokespersons have raised concerns regarding this shift in the pattern of purchases, stating that only around 100 websites are actively providing necessities online.⁶

Convenience in meeting orders in the time of the pandemic has become paramount for online businesses as they experience rapid growth in the number of customers and orders. However, this sudden scale-up has been met with a general lack of preparedness in terms of capacity, mobility, and resources for these same companies as they struggle to capitalize on the demand surge. Companies such as Chaldal, which are one of the larger B2C businesses specializing in grocery delivery, have attempted to improve their own capacity significantly through the employment of more delivery men. The average order size rose from an average of BDT 1,300 to BDT 3,750.⁷ The company must now deal with over 5,000 orders a day and is unable to meet them without slashing convenience and setting maximum order limits or lengthening delivery times. Such an upsurge also highlights the incommensurate supply in comparison to demand and it makes the situation difficult for online businesses as they attempt supply-chain rearrangements in crunch time.

3rd Party Logistics in Bangladesh who do not sell online groceries and essentials such as Paperfly, despite being a market leader, have experienced a dramatic fall in orders in the ballpark of 90%. Labor shortages have risen up and workers have temporarily migrated out of Dhaka. Further constraints on deliverymen mobility have arisen due to the heavy scrutiny by law enforcement who have directives as such. Order cancellation and delays are increasingly common due to such stringent movement. In addition to this, worker safety and provision of proper masks, PPEs and otherwise, have become added liabilities for businesses.

An e-CAB study involving 1,100 of its member companies, has determined a loss of BDT 666 crore directly to the industry as a whole, with a significant loss in e-commerce sales and sales for businesses not involved in sale of necessities.⁸ Therefore, it is important for the industry to avail the stimulus package put forward by the government to cope, scale up and/or innovate.

5. Global Scenario and Relevance for Bangladesh

COVID-19 has globally changed consumer perspectives of digital purchases and transactions, which in many cases has hugely increased the demand for digital commerce services.

a. Key role in keeping citizens supplied with essentials

Digital commerce companies in China played a key role in keeping the residents of affected places supplied during their lockdown spanning for two months. Alibaba leveraged its digital logistics platform to identify and contact all qualified manufacturing partners to reopen plants in 58 cities even during the Chinese New Year Vacation for producing medical supplies within 48 hours. JD.com deployed their automated technologies to ship remotely operated smart vehicles to deliver goods to hospitals and households.⁹

b. Creation of employment opportunities

The global lockdown has indicated a shortage of human resources in digital commerce supply chains as people stay home and leave the responsibility of grocery and other essential items' delivery to the digital commerce companies. As a result, many of these companies globally have moved fast to recruit personnel for their operations, creating a surge in employment opportunities. In China, Freshippo and 7Fresh confronted the challenge by hiring workers from shuttered restaurants and retail outlets to staff the supply chain. The companies were able to leverage these workers' skills and only had to provide limited training.¹⁰ Amazon has hired 175,000 additional people in the US.¹¹ In Bangladesh, Chaldal has hired 300 workers after the COVID-19 pressure mounted.¹²

c. Governments making it easier for businesses and households to connect to digital commerce

Legal frameworks surrounding online remote service delivery are being clarified and even relaxed to some extent. Countries like India published new guidelines on health-based digital commerce and services. The US adjusted its Medicare program to pay for digital commerce-based health services in alignment to previous in-person visits.

Many governments are overcoming information frictions during the crisis. Local brick-and-mortar shops are rapidly moving online to continue serving their clients. For instance, Italy established a website listing some digital commerce offerings by companies during the crisis.

d. Innovation and collaboration of businesses to be driven by digital commerce

The crisis has spurred innovation in the e-commerce sector of countries around the globe. In China, JD.com ramped up its telemedicine business to turn itself into one of the front-line Covid-19 triage services. Through a series of prescribed questions, telemedicine doctors can assess whether a caller is likely to be Covid positive. AliHealth started offering free online consultation on both platforms. MTDP has expanded its educational offering creating online classes in small business management skills.

In Bangladesh, the crisis has made way for businesses like AjkerDeal and PriyoShop to diversify into the online groceries market, helping to secure employment for their own workers and providing much-needed service for the community. Bikroy.com, which is the largest online marketplace for C2C customers, has introduced a category called Essentials as they attempt to help local suppliers find markets. Foodpanda and Pathao which focused their core business on food delivery have also joined the fray to scale up and deliver groceries, medicine, and other items to their customers through listing suppliers of such products on their respective apps. E-courier has spotted the vacuum in online grocery and introduced the first BOT-based messenger shopping in the city. HelloTask, a supplier of cleaning and home-making services, have undertaken the ambitious project of turning apartments' basements into groceries where only dwellers of the apartments will be the buyers. Pet Service platforms such as PoshPets have switched to online services and are providing over-the-internet veterinary services.

Estimated Negative Impact

Amid the COVID-19 pandemic, delivery and logistics personnel are not strictly maintaining safety precautions. The whole industry can be at risk if these supply chain personnel keep following poor practices. Besides, VAT on online shopping and tax on digital advertisement are burdening small digital commerce companies. The country's low e-commerce penetration compared to neighbours coupled with a price hike surge in mobile data can fade the potential of the sector. Moreover, a huge number of SMEs associated with the digital commerce sector are not digitized yet.

a. Health risk concerns when receiving and delivery of products

Amid the COVID-19 pandemic, the last-mile frontline essential workers of the digital commerce industry i.e. delivery and logistics personnel are not strictly maintaining safety precautions and are unaware of delivery guidelines and code of conduct for delivery processes in high risk zones. Without a strict code of conduct with clear instructions for delivery processes in restricted areas, health and safety standards for online sales, in particular for e-grocery, logistics businesses and delivery workers cannot be ensured.

b. Burden of VAT and digital advertisement tax on top of reduced orders and supply chain disruption

The 7.5% Value added tax on online shopping is currently applicable to the commissions and fees charged by the digital commerce agencies. With reduced orders and supply chain disruption added to the thin profit margin, the value added tax is becoming a burden for many small and medium sized e-commerce organizations. With digital marketing as relevant as ever, the 15% tax on Google, Facebook and Youtube advertisement is a significant cost to be borne by the businesses.

c. Lack of awareness of the utilities of e-commerce refraining rural and peri-urban people from availing e-commerce services

In Bangladesh, e-commerce has penetrated only 1% of the entire GDP. Compared to India, by 2030 e-commerce is forecasted to reach 2.5% of its GDP to stand at USD 300 billion. This is mainly due to the lack of awareness of and exposure to the utilities of e-commerce of rural and peri-urban people. Acceptance of e-commerce amongst traditional retailers might not be plausible without any program to raise awareness about the benefits of e-commerce and how it could make the retail industry more resilient against future economic challenges.

d. Price surge in mobile data threatening ample internet usage

Price hike in mobile data is set to decrease internet usage and hence reduce consumer spending on digital commerce platforms. With consumers moving to online shopping due to the pandemic, it is the most appropriate time to urge customers to spend online and create long-term behavioral changes. If internet and talktime are not made affordable and kept stable for 4-5 years the attempt to catalyze the digital Bangladesh goal might be endangered.

e. Absence of digitization among e-commerce associated SMEs.

COVID has forced many SMEs to shut down their physical outlets. Currently, there are around 25,000 SMEs associated with the digital commerce sector but are not digitized, endangering almost all of their operations including sourcing, delivery, and payments.

7. Estimated Opportunities

At a time of crisis, it is instrumental to leverage partnerships and develop informed awareness through it. Mutual sharing of insights and experience will help mitigate the impact of COVID-19 on the digital commerce landscape and the broader economy.

a. Development of a COVID-19 code of conduct and e-commerce policy promoting the growth of hyperlocal e-commerce for last-mile reach

By developing a strict code of conduct with clear instructions for delivery processes in restricted areas, health and safety standards for online sales, in particular for e-grocery, logistics businesses and delivery workers can be ensured. If the code of conduct is strictly maintained ensuring lockdown in areas, the contamination rate of COVID-9 can be decreased down from 2.5 to below 1, cutting down daily new cases by one-third. This would also help businesses establish best practice routines to avoid contamination and enable them to move or transport goods to restricted zones efficiently. With proper guidelines and instructions, customers will enjoy an uplift in fulfilment of service. The code would also ensure customers' safety and minimize their chances of being exposed to the virus during delivery, making it more likely that they will use the service.

b. Reformation of taxes for online shopping and digital advertisement

A tax and VAT reformation for the digital commerce space will significantly assist organizations in cutting costs and encourage new ones to enter the arena. Reduction of VAT on online shopping and digital ads will significantly assist e-commerce and digital advertisers to reduce cost during the pandemic and beyond.

c. Assisted e-commerce services to help people adopt online shopping practices

To improve the acceptance of e-commerce amongst traditional retailers, it is imperative to introduce development programs on assisted e-commerce to raise awareness about its benefits and how it could make the retail industry more resilient against future economic challenges. Assisted e-commerce with end-to-end solutions starting from sourcing to delivery will enable millions of traditional retailers to adopt e-commerce. Adoption of assisted e-commerce by retailers can significantly prevent the reduction in revenue in the future and make them more resilient. If retailers are brought on digital platforms, they will see a significant rise in revenue during peak times. In addition, efficient sourcing of products, swift delivery and digital transactions can be ensured.

d. Collaboration between ICT Ministry and BTRC on policy level to ensure affordable mobile internet prices

Internet and talktime should be made more affordable and kept stable for 4-5 years as an attempt to catalyze the digital bangladesh goal. If mobile internet prices are kept stable or made affordable, the 6 crore mobile subscribers who do not use mobile internet can potentially begin to use data and in turn can be introduced to digital commerce. If internet prices are kept within an affordable range, the propensity of consumers being online will increase enabling the website and Facebook based companies to effectively reach their target audience and instill online purchases. Ultimately, this will increase transaction and turnover of the businesses, effectively growing the GDP of the country.

e. Promotion of existing digital platform startups and services and introduction of new ones for SMEs for digital transformation

With increasing need for efficiency in the digital commerce sector, the SMEs directly linked with the e-commerce and f-commerce companies should be brought on a platform service to digitize all their key functions starting from sourcing to delivery and payments. Platform services for SMEs with end-to-end solutions starting from sourcing to delivery will enable approximately 1% of the 6 million SMEs to adopt e-commerce. Keeping in mind, close to 30% of SMEs have experienced 50% reduction in revenue during the pandemic. Adoption of digital commerce by SMEs can significantly prevent this reduction in revenue. If SMEs are brought on digital platforms, they will see a significant rise in revenue during peak times. In addition, efficient sourcing of products, swift delivery and digital transactions can be ensured.

8. Road Map

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the digital commerce sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Develop a COVID-19 code of conduct along with e-commerce policy that promotes the growth of hyperlocal e-commerce for last-mile reach, which could be implemented by 2020.	Tax reformation for online shopping and digital advertisement by 2020	Assisted e-commerce services to help people adopt online shopping practices by the end of 2020.	ICT Ministry can work on policy level with BTRC to ensure affordable mobile internet prices within 2020.	Promote existing digital platform startups and services and introduce new ones for SMEs for digital transformation by the end of 2021
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What	COVID-19 code of conduct for pickup and delivery. And policy to promote the growth of hyperlocal e-commerce	Tax reformation to ease the expenditure on digital marketing	Tailored business model to empower and educate businesses in the remote regions	Budget reformation to decrease mobile internet prices	Introduction of digital platforms to provide end-to-end e-commerce services to SMEs
Lead Agency	ICT Ministry	National Board of Revenue	ICT Ministry	BTRC	ICT Ministry
Implementing Agencies/Actors	Department of Health under the Ministry of Health and Family welfare and Bangladesh road transport authority	National Board of Revenue, Ministry of Finance.	BRAC NGO, UNCDF, SME Foundation	ICT division Mobile operators - Grameenphone, Banglalink, Robi;	SME Foundation, Software Development Companies
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	E-Cab	a2i	a2i	SME Foundation
Partners	Center for Policy Dialogue. Last-mile delivery solutions: Pathao, eCourier, ShopUp, Chaldal, PriyoShop and Shohoz	E-Cab Will be the representative voice of the digital organizations to determine the extent to which TAX exemption will help in reduction of costs	PKSF, iSocial (Kalyanis), e-Entrepreneurs, Start-up Bangladesh	Additional support from think tanks like CPD can be taken in order to validate the price ranges determined	E-Cab, Digital Start-ups, Consulting Agencies

Financing and modality	Government agencies (Bangladesh road authority, ICT Ministry, DGHS) will be involved in a proactive agreement with private sector entities (e-cab, startups, digital commerce companies) and development partners.	The telcos, digital marketing agencies along with the ICT ministry and the BTRC have the scope of working together to determine appropriate tax rates on mobile data, voice and digital ads. Government agencies (ICT ministry, NBR) will be involved in a proactive agreement with private sector entities (Telcos, Digital Marketing companies).	PPP; Government agencies (Ministry of Industries, a2i) will be involved in a proactive agreement with digital commerce entities and development partners (UNCDF SHIFT, BRAC).	PPP; Government agencies (ICT ministry, NBR) will be involved in a proactive agreement with private sector entities (Telcos, Digital Marketing companies).	PPP; Government agencies (SME foundation, a2i) will be involved in a proactive agreement with private sector entities (software companies, startups) and development partners.
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Action Agenda 1

Challenge/Opportunity: Amid the COVID-19 pandemic, the last-mile frontline essential workers of the digital commerce industry i.e. delivery and logistics personnel are not strictly maintaining safety precautions and are unaware of delivery guidelines and code of conduct for delivery processes in high risk zones. By developing a strict code of conduct with clear instructions for delivery processes in restricted areas, health and safety standards for online sales, in particular for e-grocery, logistics businesses and delivery workers can be ensured.

Estimated Impact (Quantitative): Despite the force of lockdown, general mass still visits shops and open markets for supplies. Digital commerce as a solution can enforce successful lockdowns and social distancing. If the code of conduct is strictly maintained ensuring lockdown in areas, the contamination rate, R0 of COVID-9 can be decreased down from 2.5 to below 1, cutting down daily new cases by one-third.

Estimated Impact (Qualitative): A generalized code of conduct with a clear set of instructions for the digital commerce logistics and delivery would help businesses establish best practice routines to avoid contamination and enable them to move or transport goods to restricted zones efficiently. With proper guidelines and instructions, customers will enjoy an uplift in fulfilment of service, which will prevail citizens not to go to mass markets and shop their necessity from the comfort of their home. The code would also ensure customers' safety and minimize their chances of being exposed to the virus during delivery, making it more likely that they will use the service.

Action Agenda

Title: Develop a COVID-19 code of conduct along with e-commerce policy that promotes the growth of **hyperlocal e-commerce for last-mile reach**, which could be implemented by 2020.

Summary: The ICT ministry may initiate a project for digital commerce regulatory bodies and associations to formulate a set of guidelines and instructions to be maintained strictly by delivery workers and e-commerce organizations.

Possible Lead Agency: ICT ministry will act as the lead agency with support from the Department of Health under the Ministry of Health and Family welfare and Bangladesh road transport authority to facilitate the project in creation of a code of conduct for safe delivery of online goods.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	Ministry of Road Transport – Bangladesh Road Transport Authority	Facilitate the allocation of zones and routes to be followed by the delivery force.
	ICT Division	Initiate the formulation of instructions and code of conduct and advocate the formulation of guidelines for restricted areas.
	Department of Health	Support agency for determining the necessary safety measures
Private agencies	e-Cab	They will communicate the code of conduct among all the member organizations and monitor whether the task force is maintaining the rules and regulations.
	Center for Policy Dialogue	CPD is a think tank committed to contributing towards participatory policy-making. They will participate in creating and validating the code of conduct.
	Last-mile delivery solutions: Pathao, eCourier, ShopUp, Chaldal, PriyoShop and Shohoz	These startups integrate small and medium business over the country and are practicing digitizing the SME business processes and delivering essentials in various regions of the capital. They must be brought in the group to implement the codes within their network of organizations and workforce.

Role of ICT Division:

- ICT division will ensure the overall coordination of implementation by the lead and supporting public-private bodies, the usage of the code of conduct.
- ICT division can be the lever in bringing in startups like Pathao, eCourier, ShopUp, Chaldal, PriyoShop and Shohoz for pilot testing to ensure that the best practices are maintained and have been brought into the implementation process.

Process of implementation:

- ICT ministry will call for an inception meeting with the above-mentioned respected bodies, assign responsibilities and fund allocation.
- After the set of rules and regulations are formulated, with the support of the ICT ministry e-Cab will communicate the code of conduct to all the member organizations for implementation.
- The startups and digital commerce organizations will be responsible for promoting the set of rules and instructions within their organizations and delivery forces.
- ICT Division and E-cab to analyze the results and ensure the processes of dynamic improvement through an agile approach

Timeline: The initial steps required for developing a policy sandbox that enables e-commerce businesses to grow and develop hyperlocal last-mile delivery which could be achieved within 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Implementation	Multiple external factors might create loopholes while implementing in real life.	Multiple external factors might create loopholes while implementing in real life.	High
Partnership	As organizations from various backgrounds will be brought together, conflict of interests might arise.	Strategic partnership management should be managed by the lead agency with support from private regulator, E-cab.	High
Ethical	Ignorance of the defined rules and regulations by delivery teams.	The individual digital commerce organizations along with E-cab can come together to ensure strict monitoring. Penalty will be ensued in any case of breaking the code.	High
Timeline	Implementation process might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases in terms of preparing the delivery and logistics teams and implementing it. Nevertheless the first version of the code should be out by August 2020	Medium
Acceptability	Mass public might not adhere to the lockdown rules putting last-mile frontline workers in risk	Awareness campaigns need to be run to increase people's acceptance of digital commerce and increase social distancing by discouraging outgoing attitudes	High

Scope of PPP:

- One of the core propositions to implement the code of conduct to ensure safety precautions and monitoring the results is private-public partnership.
- Government agencies (Bangladesh road authority, ICT Ministry, DGHS) will be involved in a proactive agreement with private sector entities (e-cab, startups, digital commerce companies) and development partners.
- To create the code of conduct partnership with startups and e-commerce companies is a precondition. Startups and e-commerce organizations will once again come in action when monitoring and analyzing the results.

Resources from the Private sector [technical] After completing the initial partnership agreement, a framework needs to be built based on which monitoring will take place. For instance, all the individual e-commerce and logistics companies will have to integrate a feedback survey for customers on delivery safety precautions. Based on the collected information from the end consumers, monthly/weekly reports will be submitted to the ICT ministry.

Resources from the Private sector [financial]: A short term financial budget is adequate to implement the code of conduct in a span of 2 month and later delivered to e-CAB and ICT ministry for joint monitoring and evaluation.

Action Agenda 2

Challenge/Opportunity: The 7.5% Value added tax on online shopping is currently applicable to the commissions and fees charged by the e-commerce agencies. With reduced orders and supply chain disruption added to the thin profit margin, the value added tax is becoming a burden for many small and medium sized e-commerce organizations. With digital marketing as relevant as ever, the 15% tax on google facebook and youtube ads is a significant cost to be borne by the businesses. A tax and vat reformation for the digital commerce space will significantly assist organizations in cutting costs and encourage new ones to enter the arena.

Estimated Impact (Qualitative): Reduction of value added taxes on online shopping and digital ads will significantly assist e-commerce and digital advertisers to reduce cost during the pandemic and beyond, which could be implemented within 2020.

Action Agenda

Title: Tax reformation for online shopping and digital advertisement by 2020.

Summary: TICT ministry and NBR should work together in order to exempt some portions of taxes imposed on digital commerce and advertising to reduce the costs and keep the digital commerce organizations afloat.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	Ministry of Finance – National Board of Revenue	Lead agency for implementation. Facilitate policy reforms required for implementation.
	ICT Division	Supervise the technical implementation process.
	Bangladesh Bank	Facilitate policy reforms required for implementation.
Private agencies	E-Cab	Will be the representative voice of the digital organizations to determine the extent to which TAX exemption will help in reduction of costs

Role of ICT Division:

- ICT division can be the coordinator to keep the National Board of Revenue and e-cab coherent in terms of defining the tax reformation and exemption of the sector.

Process of implementation:

- E-cab will conduct surveys among their member organizations to determine the extent to which they need tax exemptions and submit them to the ICT ministry.
- ICT Ministry will be convener to the Ministry of Finance who will act as the lead implementer, firstly by analyzing the response from the market players and incorporate it after considering limitations and guidelines of tax reformation.

Timeline: The tax could be reformed immediately and the first milestone can be achieved by end of 2020 if the initiative can give rise to the online sales volume. To bring about the desired behavioral change, tax incentives should continue till the end of 2021.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Financial	The actual financial impact on the NBR may go beyond the estimated amount	The actual financial impact on the NBR may go beyond the estimated amount	High
Impact	The desired impact might not result in if consumer spending on digital commerce platforms do not see significant rise	Access to affordable internet and incentives on purchasing online may be mitigation measures	High
Timeline	Implementation process might take longer than anticipated due to the nature of the initiative.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Implement-ation	The NBR may not pardon the request of restructuring the vat and tax exemption policies	Justify the reasoning through existing use-cases in comparison to other SEA countries	High
Acceptability	The bias-ness may cause tension in the business community causing a net decrease in overall moral and confidence	It is imperative to curtail the critical need for TAX rebate for the e-commerce player due to their unfavorable conditions to raise working capital loans from banks.	High

Scope of PPP:

- In determining the appropriate tax and vat reformation, there is scope for NBR, ICT ministry and associations like E-cab to formulate policies for vat and tax exemptions on online shopping and digital ads.
- Government agencies (ICT division, NBR) will be involved in a proactive agreement with private sector entities (E-cab) and development partners.

Action Agenda 3

Challenge/Opportunity: In Bangladesh, ecommerce has penetrated only 1% of the entire GDP. Compared to India, by 2030 ecommerce is forecasted to reach 2.5% of its GDP to stand at \$300 Bn. To improve the acceptance of eCommerce amongst traditional retailers, it is imperative to introduce development programs on assisted e-commerce to raise awareness about the benefits of e-commerce and how it could make the retail industry more resilient against future economic challenges.

Estimated Impact (Quantitative): Assisted e-commerce with end-to-end solutions starting from sourcing to delivery will enable millions of traditional retailers to adopt e-commerce. Adoption of assisted e-commerce by retailers can significantly prevent the reduction in revenue in the future and make them more resilient.

Estimated Impact (Qualitative) If retailers are brought on digital platforms, they will see a significant rise in revenue during peak times like Eid, Pohela Boishakh and Independence day. In addition, efficient sourcing of products, swift delivery and digital transactions can be ensured.

Action Agenda

Title: Assisted e-commerce services to help people adopt online shopping practices by the end of 2020.

Summary: Lack of awareness and exposure to the utilities of e-commerce is refraining people from rural and peri-urban areas from availing e-commerce services. There are also some misconceptions and knowledge gaps that prevent them from understanding the process of online shopping. Assisted e-commerce is a simple process that requires a very small initial investment from the store owner in a rural area and can help new customers to convert quickly to digital.

Possible Lead Agency: Ministry of ICT will act as the lead implementer along with the Ministry of Industry to implement the project.

Possible connected agencies:

Broad Group		
Government agencies	Ministry of ICT	Lead agency for implementation. Develop a plan to implement the process.
	Ministry of Industries	Partnering with UNCDF, a2i is expected to launch a countrywide promotional campaign using the various government platforms which they could utilize to educate retailers about assisted e-commerce around the country
Private agencies	Deligram, Shohoz	These startups must be on board to introduce retailers to basic e-commerce operations. Targeting both urban and rural retailers might bring about a revolutionary change in this segment.
Development Partners	BRAC NGO	BRAC is one of the pioneer NGOs in working in the development sector and has a countrywide network. Partnership with them should be leveraged to reach the target beneficiaries.

Process of implementation:

- The Ministry of ICT will act as the lead implementer, firstly by designing the curriculum comprising basic assisted e-commerce education amongst the retailers. Second, the ministry will mandate all retailers to conduct by digital transfer and only allow cash under certain circumstances.
- A countrywide promotion to be carried out by a2i in partnership with development organizations (UNCDF, BRAC) to promote the core idea. The way Meena Cartoon by UNDP created awareness among the citizens of this subcontinent about hygiene and sanitation, child marriage, female education among other social problems, can be replicated to promote assisted e-commerce literacy.
- Partnerships with tech startups should be explored so that they can introduce assisted e-commerce literacy programs.

Timeline: The necessary requirement for drafting policy must start immediately and the 10X result in terms of digitizing retailers could be achieved within 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Impact	The desired impact might not result in if people do not start practicing availing assisted e-commerce services or do not expand their range.	A countrywide assisted e-commerce awareness building program can mitigate this issue.	High
Promotion	The success of this initiative largely depends on promoting the benefits of assisted e-commerce services to induce long-term behavioral change. If proper promotion does not take place, the initiative will not be able to bring about the change.	Promotion through different media must take place. Especially television and radio promotion should be utilized as these media have better reach in the rural areas.	High
Partnership	Implementation of the process might face some challenges if ecommerce providers fail to launch timely packages for retailers..	Initially incentivizing assisted e-commerce service providers to cater to the need of the retailers can be a way to mitigate this issue.	High
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	Financial assistance from development partners (i.e. UNCDF SHIFT, BARC) might be explored in case of budget shortage.	Medium
Timeline	Implementation process might take longer than anticipated due to the broad range of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Low

Scope of PPP :

Government agencies (Ministry of Industries, a2i) will be involved in a proactive agreement with digital commerce entities and development partners (UNCDF SHIFT, BRAC).

Resources from Private Sector [technical]:

Partnerships with private sector and startups are a precondition in implementing the proposed solution. A countrywide promotion will be carried out by a2i in partnership with development organizations (UNCDF, BRAC) and education boards to promote the core idea. The way Meena Cartoon by UNDP created awareness among the citizens of this subcontinent about hygiene and sanitation, child marriage, female education among other social problems, can be replicated to promote assisted e-commerce.

Action Agenda 4

Challenge/Opportunity: Price hike in mobile data is set to decrease internet usage and hence reduce consumer spending on digital commerce platforms. With consumers moving to online shopping due to the pandemic, it is the most appropriate time to urge customers to spend online and create long-term behavioral changes. Internet and talktime should be made more affordable and kept stable for 4-5 years as an attempt to catalyze the digital Bangladesh goal.

Estimated Impact (Quantitative): If mobile internet prices are kept stable or made affordable, the 6 crore mobile subscribers who do not use mobile internet can potentially begin to use data and in turn can be introduced to digital commerce. Currently, only 6% of smartphone users do online shopping which can be potentially increased to 8%-12% in 2021 with cheaper mobile internet prices.

Estimated Impact (Qualitative): If internet prices are kept within an affordable range, the propensity of consumers being online will increase enabling the website and Facebook based companies to effectively reach their target audience and instill online purchases. Ultimately, this will increase transaction and turnover of the businesses, effectively growing the GDP of the country.

Action Agenda

Title: ICT Ministry can work on policy level with BTRC to ensure affordable mobile internet prices within 2020.

Summary: If the government can implement a policy to keep the prices of mobile internet stable for the next 3-5 years, internet usage and digital purchasing tendencies will see a significant rise. Many large rural markets are still untapped due to the high prices and lack of mobile internet access. Online shopping is directly proportional to internet users and reduction/stabilizing internet prices will bring in an increasing number of online shoppers over the coming years.

Possible Lead Agency: BTRC will act as the lead implementer along with ICT division.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division	ICT division will be responsible to convene the the core message of Digital Bangladesh and it's roadmap, where affordable mobile internet prices is a must
	BTRC	BTRC will act as the lead agency to take decision and implementation of revision of TAX, VAT and Surcharge to decrease internet price
Private agencies	BTRC will act as the lead agency to take decision and implementation of revision of TAX, VAT and Surcharge to decrease internet price	BTRC will act as the lead agency to take decision and implementation of revision of TAX, VAT and Surcharge to decrease internet price

Process of implementation:

- The leading telecom companies along with digital advertisers will conduct in-depth analysis to derive the most appropriate taxable prices for customers and unanimously confirm a range.
- The ICT ministry will verify the analysis and all the factors taken into consideration in determining the range and will determine a period upto which the prices will be kept fixed.
- The ICT ministry will verify the analysis and all the factors taken into consideration in determining the range and will determine a period upto which the prices will be kept fixed.

Timeline: The initial steps required for drafting the policies should come into action by the end of 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Impact	The desired impact might not result in if people do not increase digital commerce activity	Awareness programs need to be run to promote digital commerce and it's benefit over offline channels	High
Partnership	Implementation of the process might face some challenges if the market analysis by the Telcos are not adequate enough to determine the appropriate price ranges	Additional support from think tanks like CPD can be taken in order to validate the price ranges determined.	High
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	BTRC to restructure the vat and tax exemption policies	Medium
Implementation	The BTRC may not pardon the request of restructuring the vat and tax exemption policies	Justify the reasoning through existing use-cases in comparison to other SEA countries	High
Timeline	Implementation process might take longer than anticipated due to the broad range of the program.	Implementation process might take longer than anticipated due to the broad range of the program.	Low

Scope of PPP :

The telcos, digital marketing agencies along with the ICT ministry and the BTRX have the scope of working together to determine appropriate tax rates on mobile data, voice and digital ads
Government agencies (ICT ministry, NBR) will be involved in a proactive agreement with private sector entities (Telcos, Digital Marketing companies).

Action Agenda 5

Challenge/Opportunity: COVID has forced many SMEs to shut down their physical outlets. Currently, there are around 25,000 SMEs associated with the digital commerce sector but are not digitized. With increasing need for efficiency in the digital commerce sector, the SMEs directly linked with the e-commerce and f-commerce companies should be brought on platform service to digitize all their key functions starting from sourcing to delivery and payments.

Estimated Impact (Quantitative): Platform services for SMEs with end-to-end solutions starting from sourcing to delivery will enable approximately 1% of the 6 million SMEs to adopt e-commerce. Keeping in mind, close to 30% of SMEs have experienced 50% reduction in revenue during the pandemic. Adoption of digital commerce by SMEs can significantly prevent this reduction in revenue.

Estimated Impact (Qualitative): If SMEs are brought on digital platforms, they will see a significant rise in revenue during peak times like Eid, Pohela Boishakh and Independence day. In addition, efficient sourcing of products, swift delivery and digital transactions can be ensured.

Action Agenda

Title: Promote existing digital platform startups and services and introduce new ones for SMEs for digital transformation by the end of 2021.

Summary: With 25% contribution of GDP coming from the SME sector, it is prime time for small and medium businesses to adopt digital commerce practices. While startups like Sheba.xyz, Shopup are contributing largely in digitizing the SMEs government can end-to-end solutions for SMEs to further propel the industry and make it better equipped for turmoils.

Possible Lead Agency: ICT ministry in collaboration with development partners like UNCDF and platform based startups like sheba, shopup and software development companies will be the possible lead agency.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division	Initiate the holistic platform formulation and advocate the digitization of potential SMEs
	SME Foundation	An apex institution under Ministry of Industry for SME development in the country, involved to raise awareness
Private agencies	Software Development companies	They will provide their expertise in creating the end-to-end platform to digitize SMEs

	E-Cab	Will be the representative voice of the digital organizations and platforms for SMEs
	Startups: Sheba, Shopup	These startups integrate small and medium business over the country on their platform by digitizing their services online to consumers at need
Development organizations	UNCDF SHIFT	UNCDF- SHIFT is also working to introduce a digital platform for SMEs. Collaboration with them will guarantee a seamless implementation of the plan.
	BRAC	BRAC has a wide network of SMEs and will be responsible to train and onboard potential SMEs to the digital platform.

Process of implementation:

- ICT division can be the lever in bringing the software development companies and platform-based startups like Sheba and Shopup to promote the existing digital commerce platform.

Process of implementation:

- ICT ministry will gather the existing platform available for SMEs.
- Through private-public partnerships, existing platforms will be promoted to all the relevant stakeholders

Timeline: The initial steps required for drafting the policies should come into action by the end of 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Inability to create appropriate features and services required for SMEs	Startups and e-commerce organizations having expertise in Platform development will be promoted widely.	High
Partnership	As organizations from various backgrounds will be brought together, conflict of interests might arise.	Strategic partnership management should be managed by the ICT ministry and E-Cab	High
Promotion	The success of this initiative depends on promoting the benefits of digitized platforms and services to induce long-term behavioral change among SMEs	Promotion through different media must take place. Especially television and radio promotion should be utilized as these media channels have better reach towards SMEs	High
Timeline	Implementation process might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	Financial assistance from development partners (i.e. UNCDF SHIFT BRAC) might be explored in case of budget shortage.	Low

Scope of PPP :

- One of the core propositions to implement collaboration to optimize various functions of the SMEs sector in terms of digital transformation is private-public partnership.
- Government agencies (SME foundation, a2i) will be involved in a proactive agreement with private sector entities (software companies, startups) and development partners.
- The existing platforms will be promoted through all public and private channels for digital transformation

Post COVID-19 ICT Roadmap for Bangladesh

Agriculture and Food Security

Post COVID-19 ICT Roadmap for Bangladesh: Agenda for Agriculture and Food Security

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Agriculture and Food Security is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Agriculture and Food security

A study on national food security by BRAC revealed that during the 45-day lockdown period between March and May, the country's farmers faced a loss worth Tk. 565.36 billion (€5.9 billion, \$6.66 billion). People involved in agriculture experienced a net income loss of 80%, with 66% reporting that their income had reduced to zero. South Asian Network on Economic Modeling (SANEM) has estimated Bangladesh's overall poverty rate to spike to 40.9% following the outbreak, making an additional 36 million people who are currently 'non-poor' to be categorised as vulnerable. 43% of the vulnerable people will be involved in economic activities related to cropping, animal, and fish production, that is almost 15.5 million or 66% of those employed in the sector.

"At the same time while we're dealing with [the] COVID -19 pandemic, we're also on the brink of a hunger pandemic."

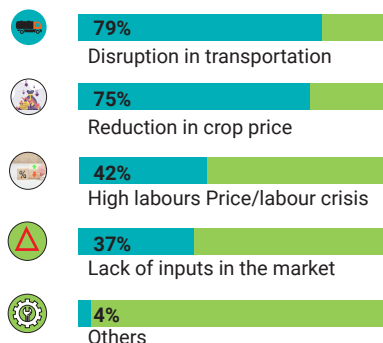
-David Beasley executive director, World Food Programme

Impact of COVID-19

The unprecedented and aggressive nature of the COVID-19 outbreak has disrupted almost all aspects of Bangladesh's primary economic activities and impacted our food security status, especially the nutrition of pregnant women and children, and low income and marginalized population. The sudden halt in supply chain, import and export barriers, dire labour shortages, and unregulated market prices have led to decrease in consumption due to both unaffordability and unavailability. Reduced farm incomes, huge job losses in both rural and urban areas, and return of migrant workers from abroad have led to mass relocation to rural regions.

Disruption in the vegetable market systems

Disruption in the vegetable market systems



Source: Innovision 2020

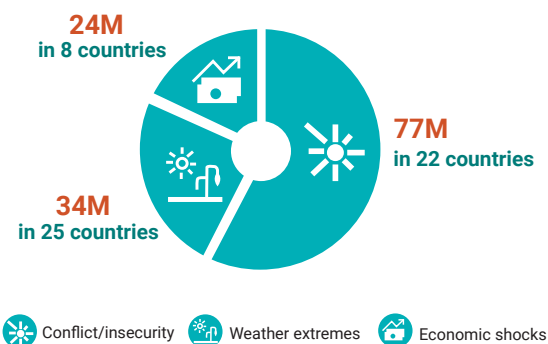
Constraints

Poor, fragmented, and dysfunctional access to information; disruptions in extension services; inefficient national coordination and planning systems involving the private sector, NGOs, and communities; lack of appropriate financial stimulus for the farmers and the poor traders, who are mostly part of the informal sector and hardly have access to banks; inadequate inter-ministerial coordination required to ensure logistics supply, procurement, and national distribution have halted any immediate pivoting that the players in the sector could have undertaken to minimize the intensity of the initial blow following the pandemic.

Despite more than a decade of investment in application of ICT in agriculture by the Government of Bangladesh and development partners, digital literacy among farmers still remains low and there is no comprehensive real time data for effective decision-making; the solutions that were in place were not enough to mitigate the impact of COVID-19. Disconnect between the e-commerce system and the farmers; absence of a commodity exchange system; lack of monitoring on market price resulted in catastrophic consequences where crops were left to rot in the fields and farmers had to drain milk on the roads.



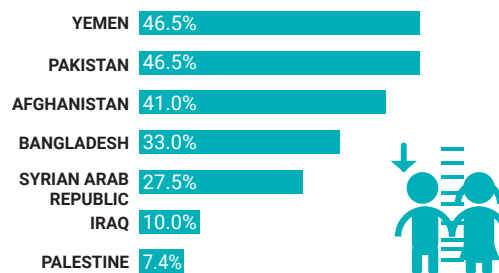
Numbers of acutely food-insecure people in crisis or worse (IPC/CH Phase 3 or above) millions) by key driver



Source: FSIN, GRFC 2020

Conflict/insecurity, weather extremes, desert locusts, economic shocks and COVID-19 are expected to be the key drivers of acute food insecurity
2020

Percentage of children under 5 years who are chronically malnourished (stunted)



Source: FSIN, based on Smart surveys, DHS, HNO, HRP and NNHS.

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the agro-sector and ICT in the agro-sector, the following five interventions have been identified for perusing to remerge stronger. One of the action agenda [highlighted in (colour)] is expected to have a domino effect in terms of market transformation for farmers.

Title	Kiosk-based mobile application through PPP and private sector led e-commerce models for Qurbani cattle trade	Developing an online marketplace for agro-machinery rentals for irrigation, ploughing, seeding, weeding, and harvesting	e-Commerce and social media (Facebook, WhatsApp) platforms connecting farmers to individual and institutional buyers in urban areas through displaced rural and urban youth	Localized agro-advisory and e-training platform for farmers including digital literacy	Launching of Digital marketplace and commodity exchange through PPP and private sector led models. Launching of commodity futures regulatory commission.
Why (To address:)	Health risk concerns when visiting haats and a certain decline in interest for cattle sacrifice for Eid-ul-Adha 2020	Acute labour shortage in agriculture, further intensified during COVID-19 lockdowns and the large chunk of young and tech-savvy urban population migrating to rural areas	Disruption in the supply chain of agro-commodities leading to possible exploitation by unscrupulous traders and large-scale youth unemployment from massive layoffs and return of migrant workers	Severe impairment of agro-extension services leading to lack of access to the right and timely advisory services (technical and financial) which can threaten food safety and security	Price volatility, information asymmetry, demand fluctuations, price controls and syndication in the agro-market systems
What	Mobile application virtually connecting all physical haats to customers	The mobile rental service, with the emigrated youth as providers	Local entrepreneurs armed with training can serve as aggregators and interface between farmers and low income population (unemployed RMG workers) who will help market the rural produce to households and businesses	Automated agro-advisory on best management practices based on local weather conditions, soil type, and farmer plantation dates; financial literacy and health risk mitigation training; adoption of 'new normal' practices in agriculture	A digital commodity exchange will connect the farmers with the buyers real time and across the country, with information on price and volume demanded and supplied of agricultural produce
Lead Agency	Ministry of Livestock	Ministry of Agriculture	Ministry of ICT	Ministry of Agriculture	Ministry of Agriculture
Actor	Cattle farmers, e-commerce partners, MFS/DFS partners, customers	Farmers, app developers, app service providers, agro-machinery entrepreneurs and importers	ICT Division, Ministry of fisheries and Livestock, Ministry of Agriculture, SME Foundation, NGOs, development partners, start-ups	Department of Agriculture Extension (DAE), Agri-information Services (AIS), NGOs, private sector working for BoP, Development partners	Ministry of Agriculture, Ministry of Fisheries and Livestock, Farmers, agro-entrepreneurs of all kinds, Agro-based industry, SEC
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	e-Cab	Private sector experts in commodity futures exchange establishment	Ekshop	a2i	Private sector experts in commodity futures exchange establishment
Partners	City corporations/ haat management, DLS, e-commerce platforms, Ministry of ICT/a2i, MFS/DFS partners (Nogod, bKash), Ministry of Information (MoI), BTRC, DGHS, Ministry of Road, Transport and Bridges (MoRTB), Cabinet Division, MoLGRDC	BADC, Ministry of Industries, Ministry of Commerce (MoC), PKSF PACE Project, PKSF RMTP 2 Project, USAID RDC Project, donors like USAID, DFID, IFAD	Ministry of Youth, PKSF, iSocial, BGMEA/ BKMEA, Truck Lagbe, E-Post, bKash/ Nogod, MoA, Department of Agricultural Marketing (DAM), Ministry of ICT/a2i, youth organizations line paikareesale.com, bhalo social enterprises, e-Entrepreneurs, Ministry of ICT/ Start-up Bangladesh	PKSF, ERD & Planning Commission, DGHS, Ministry of ICT/ a2i, Bilateral/ multilateral agencies, PPPA	Development partners/ IFAD/ PKSF, MoA, MoLF
Financing and modality	PPP; cost of services for e-commerce platforms, DFS/MFS, and e-CAB	DPPP for app development; cost of goods and services for agro-machinery sellers and manufacturers	Investment or micro-finance for e-entrepreneurs; investing in capacity building of transportation providers; none for MFS/DFS	DPPP; initial investment of online learning provider	PPP; initial investment of commodity exchange contractor; cost of goods and services of agri-businesses

Post COVID-19 ICT Roadmap for Bangladesh

Agriculture and Food Security Part I: Sector Thematic Paper

Thematic Paper

1. Sector Overview

The agriculture and food security sector cover commercial and non-commercial crops, livestock, fisheries, agribusiness and agri-allied industries. We have also considered the food consumption and access to and consumption of nutritious food thereof to assess the food security situation of the country due to COVID 19 and how this could be mitigated. The support systems, which includes finance and extensions are also reviewed and discussed. As per Bangladesh labour Force Survey 2016-2017, agriculture employs about 23.5 million people in Bangladesh. In 2018, the share of agriculture in Bangladesh's Gross Domestic Product was 13.07% (Source: Statista.com). GDP From Agriculture in Bangladesh increased to 10739.10 BDT Million in 2019 from 10468.80 BDT Million in 2018 (BBS, cited in tradingeconomics.com).

2. Impact of COVID 19 on the sector

We assessed the impact on the demand and supply trends and the support systems as well as the national policies and the regulatory environment.

Impact on food security and dietary diversity

- COVID 19 has disrupted food security for Bangladesh, especially the nutrition of the pregnant women and children under 5. **The school feeding programmes are not in operations as the schools have remained shut.** WFP in 2019 alone reached 172,000 vulnerable school children. The government planned to reach 400,000 school children in 16 districts and in 2000 schools. Low income population have cut down on meat consumption. They are relying more on plant protein and egg and to certain degree on milk. **Production of koi, pangus and tilapia might see a huge negative growth as these are mostly consumed by low income population.**

A 2017 study by Innovision Consulting shows that there are around 201,000 tilapia farmers in Bangladesh. Number of farmers engaged in pungas culture is estimated at 54,000 while another 23,000 are engaged in koi culture. The decline in fish consumption will have a strong domino effect on the overall aquaculture market systems and the backward and the forward market chain. The impact of declining income of the low income population on fish consumption is further reported in the World Fish Center June field report where they stated that **"at the lowest point, the price of a kilogram of pangasius in Mymensingh retail markets was said to have plummeted from BDT 120/kg to BDT 50/kg"**. The attributed it to low consumption by the RMG workers which constitute a major market for these species

- Mass migration from cities to rural areas contributed to the reduction in demand for fisheries as the sector primarily depended on cities and institutional buyers (Restaurants, hotels)
- A study undertaken by several development projects engaged in aquaculture in Bangladesh showed that **people affected by COVID 19 shutdown perceived fish purchase as an impediment to their dietary diversity**; in other words, if they purchased fish, it reduced their capacity to purchase other food items as they were cash starved.

Impact on Supply and demand trends

The disruption in poultry, fisheries, and livestock although varied, there are some common trends. This includes reduced and fluctuating household and institutional demand, price fluctuation.

- **Before the outbreak, as per United States Department for Agriculture Bangladesh's poultry sector was in the trajectory to export eggs and poultry meat by 2024.** The sector had nearly closed the gap between the domestic demand with a growing supply of both eggs and meat. USDA also reported, that the country's poultry farms were growing at a faster rate of 15% a year in 2019. The poultry sector accounted for 36% of the protein intake in the country through meat and egg consumption; per capital egg consumption was estimated as 95 per year and per capital poultry meat consumption was estimated at 6.5 kgs. In the backward chain, the poultry feed industry was the major consumer of maize and soybean produced in Bangladesh. **Even though, the industry has started to regroup, the immediate impact was severe.** As per published accounts in national dailies, poultry sector lost TK 1150 crores within March and April 2020. **Production of poultry and fish feed reduced by 70-75%; price of Day-Old Chic (DOC) dropped to TK 1 against the cost of TK 35 per piece.** Sector experts estimated a loss of TK 100 crores from April onwards. One of the major contributors to the early stage impact was the rumor that "Poultry can spread Corona Virus;" such rumours contributed to reduction in demand. Furthermore, the nationwide shutdown sent millions in the informal sector jobless. This left the low-income population cash starved; generally, people opted to reduce consumption of food items, especially protein.
- In the dairy sector, the SDC funded Shomoshti project undertook a rapid survey and reported several impacts. **The loss of dairy farmers is estimated at Tk 189 million everyday as they are unable to sell four million litres of milk and forced to sell 3.7 million litres of milk at reduced price.** They reported that "there is a sharp fall in income as sales of 90 per cent of retailers, the income of 85 per cent of paravets, and 74 per cent of farmers dropped due to the current market situation".

- COVID 19 shutdown stifled exports.** There are several emerging sectors like Crab fattening which depend on export market returns. As per market insights, 70% of the crabs in the Chinese market are from Bangladesh. The challenges in freight and cargo movement meant that the crab farmers were largely unable to market their produce. Such impacts were also observed on the shrimp sector. As per published reports in the national dailies 290 export orders for shrimp were canceled. The World Fish Center Bangladesh cited the Live Crab and Eel Fish Exporters Association reported that the loss may reach \$46.9 million with crabs dying, domestic market prices crashing due to surplus supply, and crab farmers being driven into debt
- There is dearth in research and findings on the impact on cattle and goat meat consumption.** As the households can keep their cattle instead of selling it, the households have better coping capacity in case cattle and goat if compared to poultry or dairy, fisheries or vegetable. However, the impact would be more observed as the country prepared for Eid-ul-Adha 2020. A quick online survey that was undertaken for the purpose of this study shows that 30% of the urban customers have decided not to sacrifice an animal and another 37% have remained undecided. This might especially affect the commercial cattle rearers who used credits from MFIs or banks for short cycle fattening.
- Farm income from vegetable and paddy production reduced by 58% in April 2020 if compared to April 2019** (Source: Innovision; National Survey on COVID 19 impact on agriculture). In the vegetable value chain, national survey undertaken by Innovision showed that there has been massive disruption in price and market demand. The price variation can be observed in the figure below:

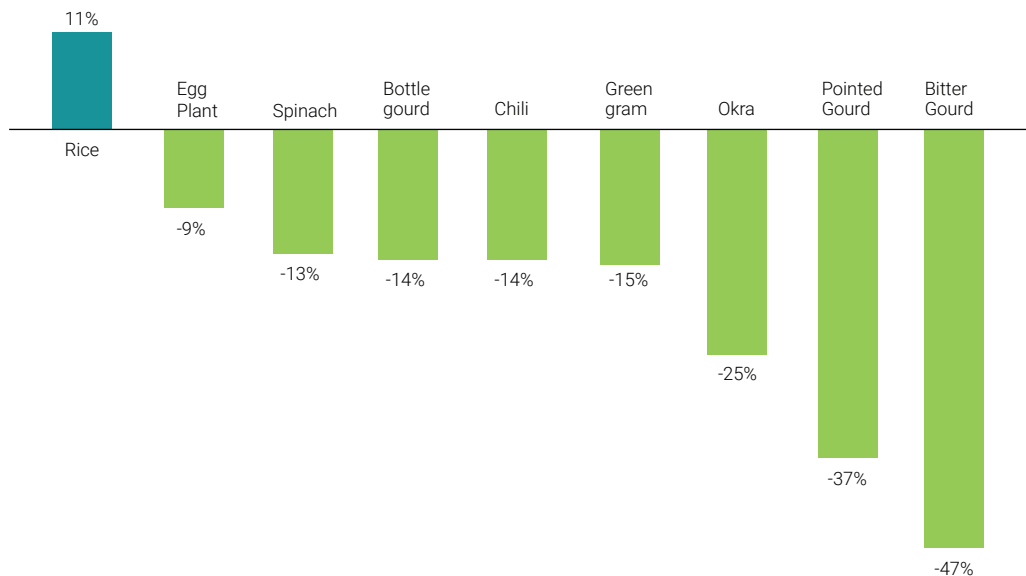


Figure 1: Price volatility in crops during COVID 19 shutdown (Source: Innovision 2020)

The farmers have reported that the major disruption has been on transportation and price of crops as presented in figure 2:

Disruption in the vegetable market systems

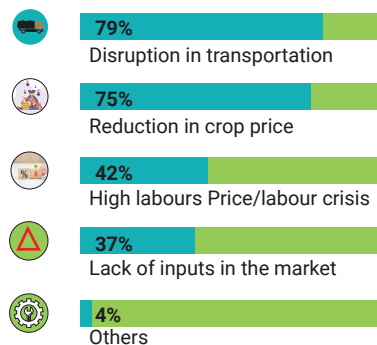


Figure 2: Disruption in the vegetable market systems (Source: Innovision 2020)

Support Systems:

The major disruptions in the support systems that have been reported includes:

- **Unemployment:** In the frozen shrimp and dried fish processing value chain alone in Cox's Bazaar district 30,000 workers became jobless. There is no established account on the number of farmers and traders who have become jobless or who have lost their working capital completely and therefore are unable to return to the farming systems.
- **Disruptions in supply chain:** Transportation shortage, inability to move products from warehouse to distribution points to retailers; retail shops were closed (SAATHI 2020; Impact of COVID 19 on agribusinesses in Bangladesh).
- **Disruptions in extension services:** Especially for poultry, livestock and fisheries, the veterinary services (both public and private) were disrupted. Access to agricultural extension service also got curtailed due to the shut down
- **Import barriers:** Which contributed to (i) increase in the average lead time required for introducing crop protection products into the market due to delayed port clearances and transportation hurdles (for agro-chemicals) (Source: SAATHI 2020) (ii) Spike in international freight fares and seeds has dampened production for import reliant seed companies (Source: SAATHI 2020) and (iii) Supply from China and India being delayed due to manufacturing and supply challenges in these countries (Source: SAATHI 2020)
- **Labor shortages:** Labour price increased to as high as TK 700; labours could not move from one location to the other. The government was able to address the labour crisis for Boro harvest in the haor region of Sunamganj through public-private and community partnerships.
- **Credit burden on the input sellers:** Findings show that the farmers have large volume of credit with the input suppliers which they might not be able to pay as they are cash starved; 44% of the farmers have BDT 12,298 as credit with the input sellers (source: Innovision, 2020)
- **Reduced access to credit facilities:** Delay in credit payments from farmers and dealers to companies created cash crunch in the market (Source: SAATHI 2020); lack of working capital finance; government stimulus has not been inclusive; banks preferred the regular clients, micro-finance was unable to respond as they were heavily burdened with defaulted loans

Policy barriers and the enabling environment

The sudden and aggressive nature of the outbreak meant that the government ministries and agencies struggled to keep pace to evolve to the need. Furthermore, the years of dysfunctions related to extension, marketing and distribution systems and dependence on informal trade meant that the agencies were unable to respond fast to mitigate the impact. However, we now have deeper understanding on the first phase of impacts and there is consensus amongst the national stakeholders about the challenges in the regulatory environment. A major impediment has been the inter-ministerial coordination that was required to ensure logistics supply, procurement and national distribution. The lack of a commodity exchange systems meant that price volatility could not be contained. Absence of a national system to aggregate demand and supply meant that the response of the market was triggered by fragmented information. The private sector was not able to tap onto logistics and warehouse, especially of that of the government that could be repurposed to meet the national market demand. Most importantly, there was no central mechanism to collect and analyse the data of the impact which could be used to inform policy decisions. Finally, the stimulus package announced by the government discounted the fact that most of the farmers in Bangladesh do not trade with the formal banking systems. In this context, the stimulus package failed to take into consideration the nature of financial needs and access of the marginal farmers in paddy, vegetable, fisheries, dairy and meat and poultry value chains.

4. Review of Systemic Constraints in the Overall Agricultural Market Systems

COVID 19 has adversely impacted agriculture market systems in Bangladesh. Review of the impacts as shown in exhibit 1, show that there was a chain reaction which can be traced to several systemic failures related to:

- **Declining consumption:** The major barrier that the sector would face is the decline in consumption. In the urban areas and with middle class and upper middle class the decline is more related to availability than affordability at this point; however, the declining consumption on hotels and restaurants and the lack of institutional purchase coupled with decline in demand from the urban poor or the people engaged in the informal sector is the major impediment. If the consumer demand is not stimulated, the investment and support from the government in stabilizing production and supply will not have little impact.

Absence of a support system that could establish functional linkages between the national distributors and sellers and the farmers and regulate the market price: Travel restrictions meant that the paikers or traders could not move between districts to collect and market produce; farmers were not able to come to the market places. The farmers were allowed to transact in the market places only for a limited period of time. The e-commerce traders serving the niche markets in Dhaka depended on national wholesale markets like Karwaan Bazaar. They were unable to connect to the farmers or aggregate produce at scale. COVID 19 revealed that the dependence on farias or paikers is not sustainable in the long run, especially in crisis situation. There is now growing concern that livestock farmers will not be able to sell the cows that they fattened to serve the Eid Ul Adha market. There is no commodity exchange systems in Bangladesh. The market price is fairly unregulated which works against the interest of the farmers. Such a system requires cold storages for perishable items, warehouses, national standards and testing systems, price monitoring systems. We do not have these systems which can be leveraged to ensure transparency in the market management system.

Lack of appropriate financial stimulus for the farmers and the poor traders in the backward and the forward market chain: Farmers depend on credit purchase of inputs; dealers also enjoy credit from the agri input companies. The credit dependent system continues to struggle to recover as the farmers were unable to pay their credit and the impact trickled upwards. The impact of this credit exposure will be observed on demand and supply of agricultural produce in the next cropping cycle. National survey undertaken by Innovision on agricultural market systems show that 85% of the farmers are out of any social safety net programmes undertaken by the government. Innovision data also shows that only 2% of the farmers have access to private banks while 77% have access to MFIs. About 12% have access to public commercial banks. The lack of data to identify the impact zones mean that if the government depends on its existence social safety nets and the declared bank led stimulus package systems, large percentage of the farmers will remain out of the support system.

Poor, fragmented and dysfunctional access to information: Information on extension is dependent on face to face contacts or communications. Even though digital information systems have been in operations, which includes the Union Information Centers (UICs); the crisis revealed that the centers could not evolve to become the key channel for connectivity for the farmers to access markets or gather information on government policies on selling and distributing their produce.

Poor national coordination and planning systems involving the private sector, the NGOs and the communities: There are several ministries and agencies that control different parts of the system. This includes Ministry of Local Government and Rural Development (MoLGRD) which manages the market places, the roads and highways department, the law enforcement agencies, the department for agricultural extension, the ministry of information, the ministry of finance. There are also elected and non-elected local government actors including the upazila chairman, Upazila Nirbahi Officers, local members. The system failed to come together for a concerted effort to mitigate the impact.

5. Review of Systemic Constraints in the ICT Market Systems for Agriculture

Application of ICT in agriculture is not new in Bangladesh. It evolved from SMS based information for agricultural information to digital information centers in rural areas to e-commerce and lately digital and mobile financial services. **Despite more than a decade of investment by the Government of Bangladesh and the development partners alongside the Ministry of Agriculture, Fisheries and Livestock, the Ministry of ICT,** the solutions that were in place could not mitigate the COVID 19 impact. For example, the e-commerce market places (based predominantly in Dhaka) were not able to collect produce from the farmers. Farmers were not able to connect to wholesalers and paikers. There was no information on market demand and prices. There was no coordination on product harvest and marketing. All of these led to a catastrophic impact. Vegetable got rotten in the field, farmers were not able to sell milk and drained them on the road, farmers producing high value crops like capsicum etc. were not able to connect to institutional buyers and supermarkets. We can determine the following systemic failures in ICT driven solutions to respond to COVID 19 challenges of the farmers and the agribusinesses:

Disconnect between the e-commerce system and the farmers; absence of a commodity exchange system and lack of monitoring on market price: While the boutique e-commerce players have been directly sourcing, they failed to operate at scale as the massive requirement for logistics management made it cost-prohibitive. The large-scale e-commerce operators had established partnerships with wholesalers and distributors. When the products did not reach the wholesalers, they were unable to set-up a collection and aggregation system directly from the farmers. Key informant interviews suggest that there is no system to standardize grading and marketing; as such trials on remote purchase failed as non-sellable produce were found in the supply. There is no official system or commodity market in the country from which online auctions and standardized graded purchase could be made. The absence of such commodity exchange systems also meant that the price remains uncontrolled and the price differentials across the country remains hugely varied. Besides, the country does not have experience in managing the multi-stakeholder arrangements between public sector, private sector, the NGOs and the farmer communities.

Lack of national real time data on production and harvest: Even though the local Department of Agricultural Extension (DAE) has data on production of different crops, the data is not available at the national level. Most importantly, it is not a publicly accessible data that the traders and farmers can use to monitor markets and decide on harvest. Absence of such systems meant that the farmers were responding blind and were simply responding to panic sales or hoarding. This resulted wastage and loss of working capital of the farmers while the traders held onto their investment.

- **Lack of data to map the impact zones and hard-hit farmers:** Moving forward, the government will not be able to support the millions of farmers and the low-income population engaged across the farming value chains. The lack of data on the impact zones mean that targeting for stimulus has to be universal. However, existing social safety nets do not reach the farmers.
- **Perception that ICT is a short-term fix; the agribusiness companies did not embrace ICT as a core business strategy:** Key informant interviews and consultative workshop suggests that ICT is seen as a short-term fix. The major agribusiness companies did not embrace ICT in their core business process.
- **Poor monitoring of ICT services:** As there is no grading and standard certification systems, sabotage by traders and competitors were found common by some of the companies which got into ICT based services for agriculture.
- **Lack of human resources:** This includes skills in satellite image processing, blockchain technology, big data analytics.
- **Farmer literacy:** The young generation of the farmers use smart phones but they are not engaged in farming in most of the cases. Farmer's ICT literacy will be essential for widespread usage of ICT based services in agriculture.

While the above three dysfunctions are manifested during the shutdown period, the withdrawal of the shutdown could expose further cracks in the systems or dysfunctions. This includes:

- **Lack of a digital learning and information system that could help farmers to regroup:** As the farmers start to regroup or attempt recovery, they would respond to market signals which are currently dependent on the local farias, paikers and wholesalers. The informal systems can work, but lack of regulation on the informal system means that it would tend to work in favour of the farias, paikers. COVID 19 revealed that the dependence on face to face meetings and backyard meetings to provide training and capacity development services to the farmers is not efficient. We need faster and more efficient access to farmers through ICT channels which can democratize information to the farmers. While the need for this is manifested more during the shutdown period, the need will remain relevant during the post shut down period until the Corona outbreak in Bangladesh is mitigated. This means at least another two crop cycles are at stake. A quick and fast solution could be to use the Union Information Centers (UICs) or to engage youths in farmer communities through the Ministry of Youth and Ministry of Women's and Children's Affairs (MoWCA) as ICT champions. There are private sector models but the scale of their operations is not enough to meet the national demand. In this context, a public, private, partnership could facilitate quick adoption of systems that could drive the recovery.

6. Evolving Opportunities for ICT Response in Agriculture and Local and Global Cases in this Context

Review of global literature shows that there are evolving opportunities to leverage ICT for COVID response for agriculture and food security. The Consultative Group on International Agricultural Research (CGIAR), identified the following opportunities:

- Agriculture extension via mobile phones
- New models for contacting labours, accessing machineries and soliciting services (uber for agricultural labour and machineries)
- Using digital platforms to decentralize markets and reduce contacts
- Digitizing input supply chains

Our review shows that in Bangladesh, the focus has been mostly on using digital platforms to decentralize markets and reduce contacts. We did not see low tech farmer driven solutions like using whatsapp to connect to buyers in the cities. We are also yet to see solutions like rental services for agro-machineries.

6.1 Local Cases

The following cases illustrate how some of the Bangladesh e-commerce platforms pivoted to respond to the COVID19 Challenges and opportunities.

i-Farmer	
Type of solution: P2P Lending	iFarmer works with verified and trained partner farmers, offering them advisory services and then connects the farm produce to B2B clients. At the end of the farming cycle the profit is shared with the farmers and farm investors.
COVID Impact	It primarily invested on cattle farming which took a blow in COVID 19 as farmers were unable to sell their cattle.

I-Farmer

Impact mitigation measures	<p>While iFarmer continued to work with the Department of Livestock and provided food support to the farmers who have no other means, it leveraged on the opportunity in the e-commerce grocery and kitchen market to provide an option to the vegetable farmers to sell through different e-commerce platforms. iFarmer introduced vegetable products on its platform for farmers seeking a new revenue source. Using the iFarmer platform, vegetable farmers can access crowdfunding resources to grow and sell vegetables.</p> <p>Within 5 days since launch of its vegetable crowdfunding channel. iFarmer partnered with Priyoshop.com, an e-commerce platform, to sell vegetable items on their platform (a first ever). iFarmer also partnered with Truck Lagbe, a logistics start-up, to transport vegetable items from farmers to Priyoshop.com warehouses. Customers can order, for delivery, vegetable items from Priyoshop.com that are supplied by iFarmer farmers.</p> <p>Currently iFarmers are also supplying litchi and mango and have started distribution to Karwanbazaar, the largest kitchen market in the country. The experience of iFarmer shows the need for multi-stakeholder partnerships for e-commerce systems to work.</p>
Key features of the pivot	<p>From the review of their pivoting strategy; we can identify several key features:</p> <ul style="list-style-type: none"> - Expanding to new verticals - Public-private-community partnership - Partnership with other tech companies/ start-ups - Cash and food support to its borrowers so that they can survive the food and cash crisis
Challenges faced	<p>Challenges faced by iFarmer includes inability to source warehouse facilities. Besides, lack of price benchmarking means that they faced competition with traders and were not able to procure as per demand.</p>

Parmeeda

Type of solution: P2P Lending	<p>Parmeeda provides safe and fresh agro produces through e-commerce platform mainly to consumers of Dhaka Metro.</p>
COVID Impact	<p>Even though consumer demand for online shopping saw an uptick, Parmeed faced challenges with regards to consumer concern on safety of food, inability to source at scale, human resource management for sourcing and retail sales. They also faced issues on mental health of their staffs. Cost of doing business increased significantly. Due to lockdown, lack of logistics facilities significantly costed them.</p>
Impact mitigation measures	<p>Parmeeda took measures on different fronts in this regard. Their measures include-change in business operations, pivoting business model, change in human resource management policies.</p> <p>To ensure workplace safety Parmeeda provided training to employees and field staffs about the safety measures against COVID19. Parmeed also provided safety equipment mask, gloves, sanitization to everyone. The organization ensured everyday cleaning and hygiene monitoring at work space. The COVID 19 operational guideline was printed and pasted across the office space. Besides, they provided customers instruction on safe handling of the delivered products to minimize risks.</p> <p>To adjust to the shifting demand trends of the customers, Parmeed increased volume of supply so that the number of trips could be reduced to minimize the risk. The organization also invested in improving their storage facility to increase the shelf life and reduce wastage. This required investment in installation of additional refrigerator, air conditioners. They also built technical capacity to address wastage of fruits (installation of fruit drier so that the unsold fruits can be dried and later can be sold as core-product).</p> <p>To manage their human resources, Parmeeda introduced COVID allowance for employees to keep their motivation level and cover their commuting cost. They maintained regular salary and continued the festival bonus. They also provided additional benefit on sales to the staffs who worked under the risk of outbreak. Parmeeda offered reduced salary for those who opted to work from home and increased salary for those who worked at office.</p> <p>To the customers, Parmeeda encouraged digital payment. They partnered with VISA and BKash and provided different promotional offers to make the customers interested in paying digitally and avoiding cash-based systems. As a result, online/ digital payment increased 60% during the shutdown. Besides, they partnered with different banks and mobile operators to reach more customers with information on safe food sold by Parmeeda.</p>

Parmeeda

Key features of the pivot	<p>From the review of their pivoting strategy; we can identify several key features:</p> <ul style="list-style-type: none"> - Gamification of digital payment - Putting employee safety at the heart - New partnerships, especially with financial service providers - Emphasis on internal and external communication
Challenges faced	The challenges that they faced includes: (i) increase in cost of working capital (ii) engaging different law enforcement agencies. Furthermore, they saw the lack of a single service platform that can solve logistics, financials, supply chain related problem for e-commerce.

We identified several other local cases which became highly relevant in context of COVID 19. These are summarized below:

Solution	Type of Problem Addressed	Company
Food for nation: Agro wholesale market to connect farmers with traders	Disconnect between the wholesalers and the e-commerce platforms, supermarkets	It runs under a public-private partnership model anchored by Ekshop under A2I programme
Shufola: Precision-technology and local weather-driven customised recommendation for farmers and local agro-retailers	Crop failure due to unpredictable natural weather conditions	MPower Social Enterprises
Shurokha: Expert tele-consultation service for on crops, cattle, poultry and fisheries for farmers, local service providers and extension officers	Lack of access to extension service providers; weak government capacity to reach farmers at scale	MPower Social Enterprises
Shudokkho: Smartphone app for livestock service providers on business efficiency, service tracking, alerts and notifications, e-Learning on appropriate medicines and dosages	Service inefficiency of the para veterinary service providers	MPower Social Enterprises
A-Card: Credit facility extended by Bank Asia through agro-retailers' smartphone app	Fast and easy access to credit services	Bank Asia
Rupali and Fosholi: Smartphone app for knowledge repository on crops and fisheries	Access to on demand knowledge on crops and fisheries production	ACI

6.2 Global Cases

Based on online literature, we can identify several cases of using ICT as a response to mitigate COVID challenges. Following is a curated list of solutions:

Name	Type of Solution	Country of Origin	Key Features
e-prod	Agriculture ERP	Kenya	An integrated enterprise resource planning software for contract farming management. The solution became more prominent during COVID 19 as it allows digital payment, monitoring of production, weather-based insurance, standardization, e-learning modules.
Informal community led solution	Whatsapp based direct transaction with buyers	India	In Siddipet in Telangan, a group of 100 farmers used WhatsApp, a digital messaging platform, to reach potential consumers in Hyderabad. The group of farmers was anchored by a key member who disseminated the message widely, compiled the orders, and ensured their deliveries. Bangladesh could also gain from such informal mechanisms by community engagements.
Farmerline	COVID 19 messages to farmers at risk	Ghana	Ghanaian start-up Farmerline is sharing vital COVID-19 updates with at-risk farming communities through its voice message service.

7. Roadmap

- The findings and the analysis presented show that we will need a phased approach to recovery and this will include both ICT and non-ICT responses and in many cases integration of both. The assessment shows the need for interventions on demand side, supply side, support systems and the policy and the regulatory environment. **Not all of these solutions would require ICT as a primary delivery channel. However, the government will also have to opt for the key issues, which if addressed, can unlock the potential in the market. This should be done from the purview that the resources of the government is also constrained. The non-ICT interventions that are required immediately to support the agricultural and food security market systems include the following:**

Immediate Measures Needed To Reconstruct The Sector:

Undertake and a publish a national heat map for agriculture, livestock and fisheries which can be used by development partners to channel their resources

- Immediately set-up a national price commission and determine the minimum farm gate price and maximum retail market price for agro commodities
- Facilitate import of seeds, inputs and agro-machineries that are critical to ensure production by reducing port handling barriers and taxes and tariffs imposed
- Engage DAE to identify hardest hit farmers and ensure supply of inputs through a third party
- Provide equity financing for innovations to reduce agricultural bottlenecks in financing, marketing and agricultural extension
- Rent out unused warehouse spaces to private sector; get into public private partnerships to scale warehouse facilities
- Establish special purpose vehicles for value chain financing in agriculture
- Strengthen and formalize the farmer's associations and make it mandatory for farmers to be registered under a farming association

ICT interventions that can support the interventions:

While the Ministry of Agriculture along with other relevant ministries and agencies undertake the aforementioned actions, the ministry of ICT can play a facilitative role by incentivizing and promoting ICT driven solutions that can foster demand, remove the bottlenecks in production and market access. Following is a long list of these possible measures that were identified based on stakeholder consultation.

Short-term

- Digital cattle haat with upcoming Eid as priority
- Digital tools to identify farmers who have been hit the worst by COVID and Amphan, and provide financial support through DFS
- National e-transport systems for agriculture
- Promotion of rental services for agro machineries to address the challenge of labour shortage
- Rental of government warehouses for private sector engaged in e-commerce or direct sales to the consumers
- Remote training platforms for farmers facilitated by Union Digital Centers on safety, COVID awareness, e-Commerce
Mid-term
- Encourage agro-input sellers to go online through e-Commerce platforms
- Encourage online bidding systems through digital marketplace to ensure fair price for farmers and avoiding large gatherings in marketplaces
- Encourage cattle insurance with machine-learning based digital cattle identification and monitoring
Long-term
- Yield predictions through processing of satellite images of cultivable land
- Digital monitoring of market prices across the nation across a range of important products that may affect food security

We ranked these measures based on five criteria- scale of impact, immediacy, readiness, risks of failure and stakeholder buy-in to select the five action agendas that might have the largest and strongest impact through ICT interventions. The results are shown below:

Mid-term

- Encourage agro-input sellers to go online through e-Commerce platforms
- Encourage online bidding systems through digital marketplace to ensure fair price for farmers and avoiding large gatherings in marketplaces
- Encourage cattle insurance with machine-learning based digital cattle identification and monitoring

Long-term

- Yield predictions through processing of satellite images of cultivable land
- Digital monitoring of market prices across the nation across a range of important products that may affect food security

We ranked these measures based on five criteria- scale of impact, immediacy, readiness, risks of failure and stakeholder buy-in to select the five action agendas that might have the largest and strongest impact through ICT interventions. The results are shown below:

Selection of Top 5 Action Agenda for ICT led Interventions for COVID Recovery

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Digital cattle haat for Eid 2020	High	High	Medium	Medium	High
Digital tools to identify farmers who have been hit the worst by COVID and Amphan, and provide financial support through DFS	Medium	High	Medium	Low	Medium
National e-transport systems for agriculture	High	High	High	Medium	High
Promotion of rental services for agro machineries to address the challenge of labour shortage	High	Medium	Medium	Medium	High
Rental of government warehouses for private sector engaged in e-commerce or direct sales to the consumers/ establishment of a national e-commerce support system	High	High	Medium	Low	High
Remote training platforms for farmers facilitated by Union Digital Centers on safety, COVID awareness, e-Commerce	Medium	High	High	Low	Medium
Encourage agro-input sellers to go online through e-Commerce platforms	Medium	Medium	Low	Low	Medium
Encourage commodity exchange digital marketplace to ensure fair price for farmers and avoiding large gatherings in marketplaces	High	High	Medium	High	High
Encourage cattle insurance with machine-learning based digital cattle identification and monitoring	Medium	Medium	Medium	Medium	Medium
Yield predictions through processing of satellite images of cultivable land	Medium	Medium	Medium	Medium	Medium
Digital monitoring of market prices across the nation across a range of important products that may affect food security	High	High	Low	Medium	High

Based on the above assessment we conclude that the following five action agendas will have the highest impact on COVID recovery through ICT response in the agricultural market systems. The actions agendas club several of the aforementioned actions under one umbrella:

COVID 19 Challenge/Opportunity	Action Agenda/Intervention
Uncertainty with cattle trade on Eid UI Adha 2020	Cattle Kiosks and Public-private partnership to trade cattle directly from cattle markets to customers through e-commerce
Shortage of agricultural labour/ high price of labour	Development of an uber like system for agri-machinery rentals for irrigation, ploughing, seeding, weeding and harvesting
Disconnect with the markets for perishable items like vegetable, fruits, fisheries	Youth led local initiative to connect farmers with individual and institutional buyers in urban areas through e-Commerce platforms and social media (Facebook, WhatsApp)
Disconnected agri-extension systems	Digital query response, automated and localized agro-advisory and e-training platform for farmers
Volatility in demand and market price	Digital marketplace and commodity exchange along with quality control certification processes through PPP models

In addition to the above action agendas, the government should also intervene on the following issues that would facilitate ICT driven response to COVID recovery in agriculture food security systems:

Short-term

- Government can tap into farmer databases and vulnerability maps created by NGOs
- Digital grievance mechanism for farmers to report on adverse impact, exploitation by traders etc.

Mid to long-term

- Standardization of protocols for farmer data
- Policies on security and privacy of data on farmers
- Policies on traceability of certain agro products for food safety and fair price, particularly for export-oriented products
- Policies on financial inclusion

Part II: Operational Plans for the Action Agenda

Action Agenda 1: Cattle Kiosks on Mobile application and Facilitated E-Commerce for the Eid ul Adha Market through PPP and private sector-led models

Challenge/ Opportunity

The government has announced that there will be cattle markets to serve the demand for the Eid-UI-Adha 2020. But concerns remain on the health risks emerging from the cattle markets. An online survey undertaken for the purpose of this study shows that 40% of the consumers in Dhaka are still undecided (as of June 30th). Of those who are still undecided, 98% identified the uncertainty with coronavirus spread and the health hazard associated with it as the reason for remaining undecided. Furthermore, around 28% have decided not to sacrifice an animal. Of them 56% believe it will bring health hazards. Around 60% of the respondents said they are seeking e-commerce support to directly trade with the farmers or traders so that they do not have to visit haats. The Eid offers an excellent opportunity for the Ministry of ICT to set an example on how it can facilitate the other ministries to quickly adopt ICT solutions to tackle the challenges in its respective ministries.

Estimated quantitative impact

The intervention will have a direct impact on reducing exposure to COVID 19 outbreak. We do not have models to estimate the degree to which potential number of cases can be averted. However, this can be estimated ex post by accounting for the number of consumers who opted to trade using the platform that is proposed in this road map. For example, if around 100,000 people trade through the platform, who in turn would have exposure to at least 10 people in a very conservative estimate over a 14 day period since visiting the haat, around 10,00,000 people can be saved from potential risk of contracting COVID 19.

The intervention will also have a direct economic impact on the livelihood of the poor farmers and traders. There is no published account of the overall trade value in the Eid-UI-Adha market. As per DLS, 11.18 million livestock were stocked for Eid-UI-Adha 2019. Of this, 4.58 million were cows and buffaloes and 7.2 million were goats and sheeps. In our estimate, this market might shrink to half in 2020 if proper interventions are not undertaken. Furthermore, the average price is expected to drop by 20-30% given the low demand. The intervention can help create consumer confidence which in turn can stimulate the demand which is currently bleak. Again an ex post impact analysis could be undertaken. If 100,000 consumers trade through this platform and the average value of trade is TK 60,000, it can be estimated that the platform directly contributed to trade value of TK 600,000 crores.

Estimated qualitative impact

The qualitative impact would include reduced mental stress, improved confidence on the government and its management capacities, improved confidence on the City Corporations and Municipalities.

Summary

The ICT Ministry will fund development of a mobile application which will connect all the physical haats to the customers. Volunteers will help traders in every haat to register their cattle in the mobile app along with a photo and the price of the cattle or goat. Customers will be able to browse through the app and select cattle that they want to physically check before purchase. Once decided, the customer can either directly trade without visiting the haat or visit the haat and directly go to the designated space to physically check the cattle before making a purchase. The app algorithm will manage the appointment time and ensure the traffic flow within the haat remains under control to ensure safety measures. The ICT Ministry together with the Ministry of Information and BTRC will ensure widespread communication of the app through mass SMS, TV adverts, print media adverts. The City Corporations will also promote the app through its billboards. For rapid scale-up of the system across the country, the village haats can be linked to the app through the Department of Livestock and the Upazila Nirbahi Officers (UNOs) and the chairmen. In this system, the digital transportation service providers can link with local transportation service providers and ensure movement of the cattle across the country. This will also ensure that there is less need for movement of cattle from villages to haats in the city centers.

Timeline

Given the urgency of the situation, the app needs to be marketed by July 16th, 2020 and the associated systems need to be in place within that time.

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Development of the cattle kiosk app	- Ministry of ICT/ a2i	- All the City Corporations across the country - DLS - e-commerce platforms	July 5-July 12, 2020
Training of the relevant partner agency teams on deployment, marketing, management, troubleshooting	- Ministry of ICT/a2i	- All the City Corporations across the country - DLS - e-commerce platforms	July 12-July 15, 2020
Marketing to traders and farmers about enrollment in the app	- DLS - Local MFIs (For their respective borrowers) - UNO - Chairmen	- Ministry of ICT/a2i	July 15-July 20,2020
Enrollment and training of volunteers	- City corporations	- Ministry of ICT/a2i	July 20-July 23, 2020
Consumer marketing	- Ministry of ICT/ a2i	- MFS partners (Nogod, BKASH) - Ministry of Information - BTRC - Ministry of Health (DGHS)	July 20- July 31, 2020
Deployment and management	- All the City Corporations across the country	- Ministry of ICT/ a2i - DLS - e-commerce platforms - e-cab	July 15-July 31, 2020
Trade facilitation	- Registered e-commerce partners	- Ministry of ICT/ a2i - e-CAB - City Corporation/ haat management - DLS - Ministry of Road, Transport and Bridges Cabinet Division - MoLGRDC - MFS/DFS - Mol	July 25-July 31, 2020
Registration of the traders in remote haats	- UNO and Union Parishad	- Cabinet Division - DLS - Ministry of ICT/ a2i	July 20-July 25, 2020

Task	Anchor Agency	Partner Agency	Timeline
Certification of the cattle	- DLS	- City Corporation/ haat management	July 25-July 31, 2020
Transportation and logistics management and permits	- Ministry of ICT/ a2i	- Ministry of Road, Transport and Bridges - MoLGRDC	July 25-July 31, 2020
Health Check at haats	- DGHS	- City Corporations	July 25-July 31, 2020

Risks and Risk Mitigation Measures

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	The app can be quickly developed, tested and deployed, training and marketing activities can also be undertaken and the technical resources are available. However, the application will be new and its acceptability will be tested for first time	Undertake a rapid pilot before deployment and involve all agencies for a demonstration of all proposed activities	Low
Partnership	The action involves multiple public and private sector partners. Inter ministerial coordination and inter-agency coordination has always been difficult in Bangladesh.	Endorsement from the Prime Minister's Office will be Essential to ensure buy in and commitment from all the relevant ministries. While this should not deviate resources from the health systems, the successful implementation of this activity could potentially work in bringing moral back to the government agencies for tackling the corona crisis. The Ministry of ICT/ a2i will have to immediately deploy a team with capable leadership and senior professionals who can navigate through the bureaucracy.	High
Ethical	Traders might try to send the wrong cow to the buyers if there is no third party engaged in monitoring and tracking.	The option to physically check the cattle through appointment can work as a bridge between haat based and e-commerce based solution. All traders and farmers trading in the system will have to be registered and the registration will have to be verified through the Upazila Chairman for remote sales and or to the haat management committee for haat based direct sales.	High
Timeline	The timeline is very short	Immediately deploy the core team and create a project from existing project funds	High
Financial	The solution is resource intensive but is not expensive to built and operate	Funding can be managed from the existing funding windows under the agencies of the ICT Division.	Moderate

Scope of PPP

The system engages several public and private sector partners as explained under the implementation activity process. The role of the private sector will be pivotal in marketing and managing the system. The e-commerce platforms have the technical know-how in this regard and will have to play a key role in supporting the trade.

Technical and Financial Resources from Private Sector

There are different private sectors involved in the full process and their roles will vary as explained below

Private sector Agency	Technical Resources	Financial Resources
e-commerce platforms	<ul style="list-style-type: none"> - Training of volunteers - Technical direction on app development and features of the app - Marketing of the app - Trade facilitation between traders and buyers - Quality assurance and check - Augmented services which includes meat processing and home delivery - Halaal certification - Health management of the traders and buyers with support from DGHS 	<ul style="list-style-type: none"> - Costed under trade commission
DFS/MFS	<ul style="list-style-type: none"> - Marketing and promotion of the app - Partnership with the e-commerce platforms and the haat management committees for financial transactions between buyers and sellers 	<ul style="list-style-type: none"> - Fully costed in the service delivery model
e-CAB	<ul style="list-style-type: none"> - Endorsement - Engagement of its members as e-commerce service partners - Promotion of the app to consumers 	<ul style="list-style-type: none"> - Fully costed in its own activity budget

Action Agenda 2: Development of an uber like system for agri-machinery rentals for irrigation, ploughing, seeding, weeding and harvesting

Challenges/Opportunities

Bangladesh is facing acute labour shortage for agriculture and the situation became worse during COVID 19 shutdown when labours from one location could not travel to another location where the harvesting was being done. For Boro harvest, the government successfully handled the situation by facilitating access to labours from other territories. Besides, the private sector also provided support by lending mechanical harvesters. According to published reports, the Ministry of Agriculture (MoA) distributed around 1200 harvesters and reapers at a cost of TK 1.0 billion primarily in haors and low lying areas that are vulnerable to flash floods during the monsoon season in Bangladesh. Farmers are purchasing the equipment at subsidized rate (upto 70% of the actual cost). The government also has plans to procure more equipment. While the government support is laudable, the support provided by people from different occupations also needs to be acknowledged. People from all professions joined hands with the farmers to harvest the crop on time before flash flood in the haor areas. While such ad hoc measures can help to avert crisis at times, the solution is not systemic. By facilitating the private sector to develop agri machinery rental services, the government can create opportunities for high skilled jobs in rural areas. COVID 19 has forced a large number of urban populations to migrate to rural areas. They are young and tech savvy and adept in using mobile applications. They can be potentially targeted to manage such a rental service. The system can reduce cost of production and improve production and marketing efficiency.

Estimated quantitative impact

According to Kabir et. al (2017). The rental charges of reaper in harvesting rice ranged between Tk 500-550 per bigha, which were three to four times lower than that for manual harvesting of rice. A USAID study concluded that a local service provider or machine operator can earn upto TK 30,720 per bigha per year from Power Tiller Operated Seeder (PTOS) if used for wheat and TK 40,800 per bigha per year if used for onion. The study forecasted a demand for 15,179 Axial Flow Pumps (AFPs), 17,384 PTOS and 18,1919 reapers in 20 southern coastal districts in Bangladesh. In terms of COVID response, the agri machinery rental service will allow for investors to connect to markets which will lead to rapid scale up of the agri machinery markets in Bangladesh resulting in increased efficiency in production and reduced cost of production.

Estimated qualitative impact

The solution will help create aspirational jobs for men and women in the rural areas. In terms of COVID response, it would specially be suitable for youth who migrated to rural areas due to unemployment in urban areas. The app can eventually be scaled and the youth can also trade the produce from the farmers directly to end markets.

Summary of the solution

Machinery rental service already exists in Bangladesh. In the current system there are specialized service providers who own the small machines and travel from one district to another. For example, according to Kabir et.al (2017), a large number of service providers from Bogra district travel to Thakurgaon and Panchgarh district with their close drum thresher to thresh rice and wheat. They further reported that there is an entrepreneur group who rent out close drum threshers for threshing rice and non-rice crops. Kabir et. al (2017) reported that harvesting by reapers could reduce the cost of rice production. A study undertaken by USAID in 2016, forecasted a demand for 40,000 reapers in Bangladesh. Based on the study, Axial Flow Pumps (AFPs), Power Tiller Operated Seeders (PTOS) and Power Tiller Operated Reapers (PTOR) were found to be most prospective especially in the southern region of the country. As the ICT Ministry intends to support COVID 19 recovery, our proposal is to launch an app based machinery rental service which would allow for faster access to machines and agri equipment owned by entrepreneurs or other farmers or are in stock of the large agri machinery importers. If the app is available and functional and is widely used by farmers as well machine operators, then new entrepreneurs and investors are likely to emerge which will facilitate import of machines in the short run and fabrication and production in the medium to longer term.

Timeline

The service can be launched fairly fast through a public-private partnership model. The pilot launch in few targeted districts in the northern or the southern region in Bangladesh can be done by early November 2020 which will be on time for the Rabi Season.

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Selection of pilot locations, market viability and demand assessment	- Ministry of Agriculture/ Department of Agricultural Extension BADC	- Ministry of ICT	31st August 2020
Tender and selection of app developer; funding for app development	- Ministry of ICT/a2i	- Ministry of Agriculture - BADC	31st August 2020
App development by selected private sector organization	- Ministry of ICT/a2i	- Ministry of Agriculture - BADC	30th September 2020
Enrollment and training of machinery rental service providers on app usage in pilot locations	- Private sector app manager/ solution service owner	- Ministry of ICT/a2i - Ministry of Agriculture - BADC - PKS F PACE Project - PKS F RMTP 2 Project - USAID RDC Project	25th October 2020
Enrollment of equipment rental providers in pilot locations	- Private sector app manager/ solution service owner	- Ministry of ICT/a2i - Ministry of Agriculture - BADC - PKS F PACE Project - PKS F RMTP 2 Project - USAID RDC Project	25th October 2020
Pilot launch	- Private sector app manager/ solution service owner	- Ministry of ICT/a2i - Ministry of Agriculture - BADC - Development projects like RDC - Donors like USAID, DFID, I FAD - Apex public sector development agency like PKS F	1st November 2020
Promotion, marketing, monitoring	- Private sector app manager/ solution service owner	- Ministry of ICT/a2i - Ministry of Agriculture - Ministry of Industries - Ministry of Commerce - Development projects like RDC - Donors like USAID, DFID, IFAD - Apex public sector development agency like PKS F	25th October onwards

Risks and Risk Mitigation Measures

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Farmers might find it difficult to connect to the machine rental service providers using the app. Attractiveness would depend on availability of machineries and equipments which the farmers otherwise do not have access to	Developing a community manager for the rental service provider who can aggregate service demand for the farmers and use the mobile app for the purpose On board large machinery importers and have them rent out their machines through the app. Support the companies to set-up depots in strategic locations from which the machines can be quickly transferred to the field.	Medium
Partnership	The system would require public-private-community partnership to be functional.	Keep the partnership low key and allow the system to grow organically. The role of the Ministry of ICT is to fast track the app development, trial and launch and to provide the seed funding for product development, testing and marketing. Eventually, if the model succeeds, more private sector providers are expected to enter the market with varied services.	Medium
Ethical	No ethical risks are anticipated		
Timeline	The timeline is moderately intense but manageable if the pilot project is run under a2i	Make a2i the anchor for product development, testing and marketing; Partner with PKSf which has the relevant projects in which the model can be readily trialed.	Moderate
Financial	The total project should not cost more than a crores including market promotion.	Leverage private finance from the private sector contractor.	Low

Scope of PPP

Partnership with PKSf will allow access to farmers and communities where the app can be marketed and trialed. PKSf has several ongoing projects and the largest number of beneficiaries to reach the scale for the product. PKSf partner NGOs or the MFIs can play a key role in marketing the service to its borrowers. There are several USAID Feed the Future (F2F) projects that have experience in working with local service providers on machine rentals. They can also be partnered with to gather knowledge and insights to build the app. Funding can be drawn from some of these projects too. The support from DAE and BADC will be essential to coordinate the field trial. The Sub Assistant Agriculture Officers (SAAOs) are expected to play a key role in marketing the service.

Technical and Financial Resources from Private Sector

There are different private sectors involved in the full process and their roles will vary as explained below

Private sector Agency	Technical Resources	Financial Resources
App developer/ manager	<ul style="list-style-type: none"> - Engineers for app development - Knowledge and experience on agricultural market systems and machineries demand 	<ul style="list-style-type: none"> - Seed funded by Ministry of ICT
Agri machinery importers and manufacturers	<ul style="list-style-type: none"> - Enroll their products in the app and promote to take a market lead - They can potentially sell to large farmers or investors and have them enroll their machines on the app while they provide free technical support for maintenance 	<ul style="list-style-type: none"> - Fully costed in the service delivery model

Action Agenda 3: Local youth based initiative to connect farmers with individual and institutional buyers in urban areas through e-Commerce platforms and social media (Facebook, WhatsApp)

Challenges/Opportunities

Due to COVID 19, the demand for essential food, especially, poultry, fish and meat has declined for the low income population. Farmers were deeply affected as they were not able to connect to end markets during the shut down period. There has been large scale unemployment in the RMG sector and in the urban formal and informal sector. Youth (both men and women) are returning to their villages. Many of them are tech savvy and have access to smartphones. They are connected to social media networks like facebook and whatsapp. Many of them have friends in the urban areas who can work on their behalf to market rural produce. This opens up an opportunity for immediate COVID 19 response to connect farmers to end markets in a very low tech solution which also facilitates employment in rural areas.

Estimated quantitative impact

If successful, the solution can grow pretty fast. Assuming that about 150 young entrepreneurs are created in two months during pilot launch, and each entrepreneur trades with 100 farmers in his or her village, the pilot can support 15000 farmers. Assuming an average monthly trade value of TK 10,000 per entrepreneur, TK 15,00,000 worth of market can be created. After the pilot, partnerships between Ministry of ICT, Ministry of Agriculture, Ministry of Fisheries and Livestock, Ministry of Youth and Sports, Ministry of Women and Children's Affairs can help create a widespread network in which the youth can have registered buyers in their whatsapp group where they can trade directly the products from the farmers. They can ensure direct outreach to their friends working in the informal sector in major cities like Dhaka and supply weekly food essentials at a lower price. Only if the RMG sector is targeted and 5% of the RMG workers are brought under the network, it can potentially reach 175,000 low income households in urban areas in Dhaka, Gazipur, Savar, Narayanganj through 1750 social media merchants.

Estimated qualitative impact

The intervention will help improve dietary diversity of the low income population. This will directly contribute to their immunity which is important to control the virus outbreak. It will improve living and the livelihood of the unemployed/ underemployed young men and women in the rural and urban areas. The impact of this can be significant with respect to: (i) addressing youth unemployment (ii) fair market prices for farmers who can ensure food safety protocols (iii) enhancing food security (iv) efficient usage of e-Commerce portals and commodity exchange platforms in the long run.

Summary of the solution

There are two distinct adverse impacts of COVID: (1) disruption in the supply chain of agro-commodities leading to possibilities of exploitation by unscrupulous traders (2) large-scale youth unemployment coupled with massive return of immigrants adding to the economic pressure and unemployment burden. Keeping these phenomenon in mind, we propose an initiative to encourage and facilitate the growth of local entrepreneurs who can serve as aggregators and interface between low income population and farmers. If these young entrepreneurs are given business training, quality control training and access to innovative financing, this model can have significant traction in making a positive impact. Eventually they can also trade with e-commerce outlets selling agricultural produce from farmers to

Timeline

The pilot launch can be fast and immediate.

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Selection and enrollment of e-entrepreneurs in the rural areas	<ul style="list-style-type: none"> - PKSF (Onboarding, micro-credit for product aggregation) - I-Social (Kalyanis) (Onboarding) - Such other agencies which are working with youth (paikareesale.com, bhalo social enterprises etc.) 	<ul style="list-style-type: none"> - Ministry of ICT (idea dissemination) - Ministry of Youth (Onboarding partner) 	August 15, 2020
Creation of whatsapp group and facebook groups by the enrolled youth involving low income population in urban areas/ clusters	<ul style="list-style-type: none"> - E-Entrepreneurs (launch and management of individual whatsapp groups; marketing and enrollment of customers) 	<ul style="list-style-type: none"> - PKSF (facilitation) - I-Social (Facilitation) - Ministry of ICT (supervision) - BGMEA/ BKMEA (onboarding of customers) 	31st August 2020

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Partnership with transportation service providers like Truck Lagbe	- Ministry of ICT/ Start-up Bangladesh (Partnership facilitation)	- Truck Lagbe (Transportation service) - E-Post (Transportation service)	31st August 2020
Set-up of merchant accounts on MFS for the e-entrepreneurs	- Ministry of ICT/ Start-up Bangladesh (Partnership facilitation)	- bKash/ Nogod (accelerated)	31st August 2020
Collection, sorting, packaging, marketing, transportation	- E-Entrepreneurs	- Ministry of Agriculture (Training and in field support) - Department of Agricultural Marketing (DAM) (Quality assurance)	10th September 2020
Collection, sorting, packaging, marketing, transportation	- E-Entrepreneurs (supply)	- Ministry of ICT/a2i (monitoring/ supervision)	11th September 2020
Promotion, marketing, monitoring of the service for enrollment of more entrepreneurs and scale up	- PKSF	- Ministry of ICT/a2i (scale-up facilitation through partnerships) - Ministry of Agriculture (supply chain management and quality assurance support)	Ongoing

Possible risks and risk mitigation measures

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	<p>Aggregating demand through whatsapp or a facebook group might require some trial and error; if the first launch fails it might quickly lose traction and interest from both sides. Also, it needs to get to the scale at which it becomes visible, viable and impactful.</p> <p>On the other hand products might lose their quality during transportation or the traders might send wrong products to the wrong address</p>	<p>By partnering with BGMEA, BKMEA and such and by focusing on unemployed RMG workers who are currently in the village and who are currently in the urban areas, an eco-system can be developed which would reduce the risks resulting from the unknown.</p> <p>Start with small scale trials. Provide training on product sourcing, aggregation, packaging, transportation for quality assurance.</p>	Medium
Partnerships	There are several interconnected markets that need to be connected. Youth groups will not be able to navigate through all of these on their own.	ICT Ministry would have to bring onboard BGMEA, BKMEA, PKSF, DAE, DLS, Mobile Financial Service (MFS) Providers to support the eco-system to grow. Eventually Ministry of Youth can become the anchor agency and set-up a once stop service facilitation center in each district through which the youth can launch their own e-commerce system	Medium
Ethical	Low income customers will not be interested to pay first. There is a risk that some customers will not pay. Some of the e-entrepreneurs might send poor quality products sourced at lower price to make more margin.	Establish a quality assurance system in the full supply chain. The Department of Agricultural Marketing (DAM) could work as the anchor agency on quality control.	High
Timeline	Low income customers will not be interested to pay first. There is a risk that some customers will not pay. Some of the e-entrepreneurs might send poor quality products sourced at lower price to make more margin.	Allow the system to organically grow	Low
Financial	The project is not cost intensive. By onboarding PKSF, enterprise loan can be provided to the onboarded youth/ e-entrepreneurs		Low

Scope of PPP

A PPP has already been established between the Ministry of Youth and Sports and Paikarisale.com - a model which can be expanded with other players due to ensure healthy competition and fast growth given the urgency with COVID response.

Technical and Financial Resources from Private Sector

There are different private sectors involved in the full process and their roles will vary as explained below

Private sector Agency	Technical Resources	Financial Resources
e-entrepreneurs	<ul style="list-style-type: none"> - Technical knowledge to operate the system through social media - Financial management/ accounting 	<ul style="list-style-type: none"> - They might need to invest upfront if they are unable or unwilling to access micro-credit to finance the working capital
Mobile Financial Service Providers	<ul style="list-style-type: none"> - Opening merchant accounts for the youth 	<ul style="list-style-type: none"> - None
Transportation service providers	<ul style="list-style-type: none"> - Support on time and delivered as loaded quality to the customers - Assume any risk during transportation 	<ul style="list-style-type: none"> - Training on packaging for transportation

Action Agenda 4: Digital query response, automated and localized agro-advisory and e-training platform for farmers to accelerate new-normal in agriculture

Opportunities/Challenges

COVID 19 has adversely affected the agricultural extension system. To mitigate COVID 19 shock they require information and training on financial management. They need access to financial advisory services to be better able to invest in production. Otherwise they are at risk of further losing their investment in the market. The intervention will be able to facilitate the balance between health and economy by creating provision for both.

Quantitative Impact

Assuming that the system reaches 100,000 farmers with information on financial management for COVID response and minimizing health risks while engaged in production and marketing, the system can benefit more than 500,000 individuals in farm households from increased income and reduced risk to COVID.

Qualitative Impact

The intervention will reduce stress and improve quality of life of the farmers and accelerate the new normal in agriculture.

This will benefit the farmers in several ways:

- ensure timely and reliable access to advisory services and training
- reduced costs due to more preventive and timely measures

This will benefit the government in several ways:

- make advisory services to the farmers more cost effective
- ensure safety of extension officers
- ensure much wider coverage of advisory services

Summary text

Since extension services are severely impaired, farmers are often not getting access to the right and timely advisory services. Under the public-private partnership model, advisory services to the farmers must be ensured for food safety and security purposes. Also, remote training using tele-training tools may be used for training and awareness raising of farmers using Union Digital Centers.

There are already some laudable services developed by the government - AIS has an agricultural call center, and A2I has an initiative to route queries to the nearest extension center through phone call. Smartphone-based queries may also be encouraged since it allows for the queries to be submitted more systematically along with pictures and responses can also come digitally, which is easier to follow up on and implement.

Automated agro advisory on best management practices based on local weather conditions, soil type and farmer plantation dates can also add tremendous benefits to the farmers. Most importantly the system will allow for financial literacy training and health risk mitigation training and information services which would accelerate adoption of new normal practices in agriculture.

Timeline

The intervention can start fairly sharp if it builds on existing platforms and leverages the network of the different development projects on agriculture that are currently on going. If it relies on SMS based services to registered farmers, the outreach can also be immediate which is essential to ensure confidence amongst the farmers.

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Registration of farmers/ creation of a farmer database	- DAE (Engagement of SAAOs for registration; curation and management of the database; continuous update)	- Ministry of ICT (setting up the registration system and training of DAE officials at district, upazila and union level) - PKSf (support for registration through DAE system and engagement of its partner NGOs for registration of the farmers) - ERD and Planning Commission together with the multilateral and bilateral development agencies (mandating all development partners engaged in agricultural services to support DAE in developing the farmer's database)	July 15-August 31st, 2020
Development of content on new normal for agriculture - this involves financial literacy, loss assessment, investment calculation, market demand assessment etc.	- DAE (contracting a private sector agency to develop the e-learning module and set-up the Learning Management Systems (LMS);	- DGHS (support on information/ content development for farming while reducing COVID risks) - Ministry of ICT/ a2i (Technical supervision) - Bilateral/ multilateral agencies (funding) - PPPA (potential contracting authority)	31st August 2020
Training of DAE staffs at district, upazila and union level and the SAAOs to implement the LMS)	- Private sector agency (Training service delivery)	- Ministry of ICT/ a2i (Technical supervision)	31st August 2020
Roll out	- Registered farmers are to be reached by agencies that have onboarded them; this will ensure faster outreach and leverage of existing resources with the NGOs and projects that have ongoing interventions in the field	- DAE (roll-out supervision) - Ministry of ICT/ a2i (technical supervision)	1st September 2020- onwards

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Monitoring and upgradation	- PKSF (contracted/ funded by a multilateral or bilateral agency funding the project)	- DAE (roll-out supervision) - Ministry of ICT/ a2i (technical supervision)	1st September 2020 onwards

Possible risks and risk mitigation measures

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	We might not have local know how or existing content that can be repurposed for the farmers for COVID response.	Seek technical assistance from countries or private sector agencies that are working on similar initiatives in South Asia or South East Asia	Medium
Partnerships	The system would require a strong multi-stakeholder engagement including procurement of private sector service provider which would manage the full system;	The project can be anchored with PKSF which has the capacity for fast roll out of such large scale projects. Gradually the LMS can be rolled out to different input companies and e-commerce platforms which can make it a part of their operational module	High
Ethical	There is no ethical risks expected in the action		Low
Timeline	The project has to be delivered quickly if it has to remain relevant to COVID response and the impact in the agriculture and agribusiness sector in Bangladesh	- Leverage resources from different public, private sector agencies and the NGOs; leverage knowledge existing with established players like Agriculture Information Services (AIS), ICT Division, A2I, Private sector agro-advisory organizations such as Practical Action, mPower, ACI, BIID	High
Financial	The project would require significant cost and this has to be approved fast for the project to be relevant and viable	- Engage planning commission or ERD in negotiation with multilateral and bilateral agencies - Undertake a rapid assessment of the prospective impact and value for money against the investment - Develop a full project plan through technical experts	High

Scope of PPP

There is already an established PPP model for this between Practical Action and AIS. This model can be expanded upon with more players and more methods of advisory services based on multiple ICT channels such as smartphone apps, phone calls and IVR, and based on market forces so that the services become sustainable.

Technical and Financial Resources from Private Sector

The private sector is expected to play a pivotal role in the establishment and delivery of the project.

Private sector Agency	Technical Resources	Financial Resources
Online agricultural content development and learning application developers	- Human resources trained on developing similar content - Network with international organizations to hire relevant technical expertise - Technological competence and capacities	- They might have to invest upfront for bid purposes to win the contract
Agribusinesses	- Promotion of the knowledge to their farmers as a strategy to attract farmers to invest in production	- They would have to invest on developing promotional materials by using the content

Action Agenda 5: Digital marketplace and commodity exchange through PPP and private sector led models

Challenges/Opportunities

Bangladesh agricultural marketing systems and the value chains depend on fragmented channels. COVID 19 showed that this system is unsustainable in the long run as the problems with price volatility, demand fluctuations became manifold during the crisis as farmers failed to connect with the end markets. The commodity exchange will address the issues of price volatility, information asymmetry between the buyers and sellers. Farmers will not have to depend on prices set by the local paikers or wholesalers. The localized controls on price and syndication can be addressed. The commodity exchange will connect the farmers with both paikers and wholesalers and the e-commerce platforms or institutional buyers in national and regional markets.

Estimated quantitative impact

Jayne et. al (2014) concluded that “food value chains exhibiting rapid private investment and new entry, commodity exchanges can add value in many ways. They can indirectly encourage the financial sector to invest in the agricultural value chain and contribute to technical innovation and productivity growth. They can indirectly improve farmers’ access to credit. They can produce valuable public price information that levels the playing field among actors at all stages of the value chain. They can improve farmers’ access to markets and encourage greater competitiveness at various stages of the value chain.” Bangladesh has observed sustained growth and investment from the private sector in agriculture, agribusiness and agro allied industries in the last two decades. There is a vibrant financial market and increased interest in digital financial services. Mobile financial services have matured. Agent banking networks are expanding in rural areas. Internet usage and smartphone penetration has increased in rural areas. In such context, the agro-commodity exchange will have a strong impact on economic growth by facilitating a chain reaction of better margins for farmers, increased flow of finance across the value chain, creation of new technology service providers in the market.

Estimated qualitative impact

In relation to COVID 19 impact on the agricultural value chains, the agro-commodity exchange can help establish confidence of both the buyers (paikers, wholesalers, institutional buyers, e-commerce systems and the sellers (farmers). It requires efficiency across the whole agricultural value chain. As such, establishment of the agri commodity exchange in a public-private partnership model whereby several private sector agencies can be contracted to operate several commodity exchanges, it can boost investment and encourage competitiveness across the whole agricultural value chain. This competition is expected to spill over as benefits to the farmers. This can impact in several important ways: (i) ensure fair prices for farmers (ii) allow farmers who adhere to quality control to get more visibility and business (iii) ensure greater food safety (iv) ensure more options for wholesalers and retailers (v) allow new entrepreneurs to get into the agricultural trade and create job opportunities.

Summary of the solution

The United Nations Conference on Trade and Development (UNCTAD) defined commodity exchanges as markets “in which multiple buyers and sellers trade commodity-linked contracts on the basis of rules and procedures laid down by the exchange.” A digital commodity exchange will connect the farmers with the buyers real time; they will have access to information on price and volume supplied from across the country on the agricultural produce in the exchange. There can be multiple exchanges in place at the same time operated under public-private partnership. Some of the commodity exchanges could be for cash crops like maize, jute or cereals (wheat and paddy) while others could be for vegetable and fruits. A commodity exchange can also trade all the different products or opt to trade only one produce.

Digital marketplace and commodity exchange may be strengthened at national, regional and sub-regional levels to allow for transactions to happen at various layers of the agricultural supply chain. There is an initiative by A2I called Food for Nation that is already underway and has laid the initial foundation - but for this initiative to be more effective, an eco-system of services has to be established around it with strong monitoring and moderation.

Quality certifications may be developed by relevant government entities so that buyers can purchase with trust, sellers that adhere to quality standards are able to get high scores and visibility, and intermediaries are able to check for quality. Strong measures must be ensured for food safety and rooting out sub-standard products from digital marketplaces must be in place for people to trust these platforms. There must be a mechanism to disapprove traders who are not adhering to the standards.

There also needs to be a mechanism to popularize this and train users to use the platform so that this is available nation-wide so that it can also serve as a source of reliable market price information so that there is less chance of price exploitation by unscrupulous traders.

Timeline

Establishing a fully functional agricultural commodity exchange system in Bangladesh will take time. It requires several parties to come together and a strong PPP model. The ideal scenario would be to address bottlenecks in an existing system that can constrain the agri commodity exchanges’ performance while the Public Private Partnership Authority (PPPA) is engaged to develop and administer the contract for the commodity exchange. This will ensure that the partial benefits are already visible and are impacting the ability of the national aggregators and the e-commerce platforms to aggregate at scale across the nation.

Process of Implementation

Task	Anchor Agency	Partner Agency	Timeline
Publish national policy for quality standards for different agro commodities in Bangladesh	- MoA - MoLF	- ICT Division (technical support to incorporate the policy in the agricultural LMS) - Development partners/ IFAD/ PKSF (contracting of international and local experts to develop the quality standards and monitoring system)	August 2020-December 2020
e-complain registration system to ensure monitoring of quality standards	- ICT Division (development, roll out, maintenance and management of the system)	- MoA, MoLF (endorsement of the system)	August 2020-December 2020
Set-up web portal one stop support services (logistics, finance, transportation, storage)	- ICT Division (development, roll out, maintenance and management of the system)	- MoA, MoLF (endorsement of the system)	August 2020-February 2021
National agro-commodity exchange policy	- Planning division	- MoA (technical support) - MoLF (technical support) - Development partners (technical and financial support)	August 2020-February 2021
Public-private partnership procurement project for set-up of agro-commodity exchange	- PPPA (hiring of national and international technical resources to develop the project plan, contracting and performance monitoring policies)	- MoA (technical support) - MoLF (technical support) - Development partners (technical and financial support)	August 2020-February 2021
Contracting of service provider under PPP act	- PPPA (tender, hire, performance evaluation)	- MoA (technical support) - MoLF (technical support) - Development partners (technical and financial support)	February 2021-May 2021
Set-up and launch of the agro commodity exchange across 64 districts	- PPPA	- MoA (technical support) - MoLF (technical support) - Development partners (technical and financial support)- NGOs	May 2021-December 2021

Possible risks and risk mitigation measures

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Lack of local expertise in managing agro commodity exchange	Engage international contractors to train local policy makers on the management of agro commodity exchange	High
Partnerships	The system would require trust on the private sector; the public sector may not be interested to restrict its role to regulation only	Engage international contractors to train local policy makers on the management of agro commodity exchange and provide advisory support to develop the national agro-commodity exchange policy	High
Ethical	Traders and farmers defy quality standards to reap short term benefits	Strict supervision and quality control mechanism in place	High
Timeline	The project cannot be delivered in a short time-line. Its impact on COVID response might not be immediate.	Take a phased approach to develop the exchange so that the benefits can continue to accrue	High
Financial	The project would require significant cost	- Engage planning commission or ERD in negotiation with multilateral and bilateral agencies - Undertake a rapid assessment of the prospective impact and value for money against the investment - Develop a full project plan through technical experts	High

Scope of PPP

The proposed model is fully based on the PPP model where the private sector is expected to deliver the service while the government pays for the service. An alternative could be a loose PPP model in which a local government entity takes on the roles of aggregation, and quality control while private sector players take care of market transactions and transportation logistics. However, such arrangements may not work in the long run as the local government actor will be resource constrained and will not be able to operate at scale.

Technical and Financial Resources from Private Sector

The private sector is expected to play a pivotal role in the establishment and delivery of the project.

Private sector Agency	Technical Resources	Financial Resources
Contractor of the agro commodity exchange	<ul style="list-style-type: none"> - Need to invest on technical and technological resources required to managed a digital ago-commodity exchange 	<ul style="list-style-type: none"> - May have to invest upfront on building key competencies and technical and technological resources to be competitive for the bid
Agribusinesses	<ul style="list-style-type: none"> - The players in the agro supply chain eco-system will have to be the driving force in using the platform but they have to be engaged in a way so that they see benefit in using this platform and both sellers and buyers have strong incentives. Other private sector players may be engaged for independent quality certifications and traceability solutions, and local young entrepreneurs may be engaged for digital training of potential users of the system. 	<ul style="list-style-type: none"> - Costed in existing services

Post COVID-19 ICT Roadmap for Bangladesh

Health and Well-being

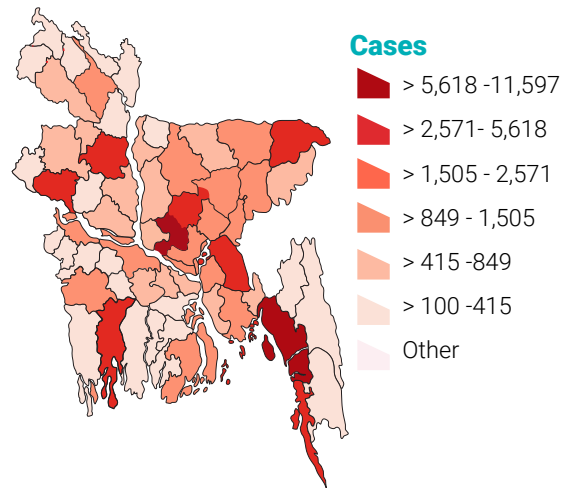
Post COVID-19 ICT Roadmap for Bangladesh: The Health Sector of Bangladesh

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Health sector is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Health Sector

COVID 19 has revealed significant gaps in the capacity of the public, the private and the NGO led health systems in Bangladesh to respond to a pandemic. The pluralistic health systems proved to be a success to achieve the health goals related to MDGs. However, it proved insufficient to address the systemic challenges posed by the pandemic. It proved challenging to establish a coordinated response. Public sector led response for test and treatment appeared inadequate due to the sheer scale of the impact or the burden. Private sector response was affected because of poor regulation of service provision. The coordination between health systems and the local governance systems appeared weak. This resulted in poor management of shut-down measures. On the flip side, these also mean that strengthening the health systems response to COVID 19 can bring forward positive changes in the overall health systems in Bangladesh. More importantly, it can bolster the country's preparedness and response to such pandemic in the future. This is specifically important given the forecasted second wave of COVID 19 at the end of 2020 and beginning of 2021.



District wise case map on 18 July, 2020
Source: www.corona.gov.bd

Impact of COVID-19

COVID 19 has increased out of pocket health expenditure for the population of Bangladesh. This has threatened the Government of Bangladesh's pledge to reduce the out of pocket health expenditure. The disruption in the health system has reduced the rate of facility based delivery and delivery by skilled birth attendants. Antenatal and postnatal health care services have been disrupted. Nutrition of children is being affected as the poor population are not being able to meet the nutrition requirement of children and adolescents. Treatment services for Non communicable diseases have been largely affected as the facilities struggled to keep up with the rising demand for COVID 19 related services while ensuring proper safety measures for the patients and their attendants.

Constraints

Weak governance system is identified as the major systemic barrier by the stakeholders who were consulted for the purpose of the development of this roadmap. Some of the most critical governance issues include weak regulation and policy enforcement, lack of grievance handling system, system fragmentation, lack of a national governing body and health financing. Poor quality of data, lack of coordination, lack of an effective referral system, lack of focus on mental health, inventory management, bureaucratic processes are identified as some of the management related issues. COVID 19 also showed that the dependence on private health system and out of pocket health expenditure might not work in favor of an inclusive health system. It proved difficult to regulate the quality of service provided by the private health care providers.

Health Sector Issues

Management

Governance

Private Sector Management

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic and (ii) the existing systemic and regulatory shortcomings of the public health sector and ICT, the ICT Division is proposing a range of short term and medium term action agenda.

Title	Establish a robust referral system with medical history management, followed up from primary level to different tertiary level facilities.	Connect all private facilities with the GoB system to get real time data on patients, ICU, HDU and other facilities.	Establish inventory management system for all facilities and introduce decentralized procurement.	Develop a grievance mechanism policy and addressing system using ICT where sufferers can submit their complaints and receive solutions.	Introduction of telemedicine in a coordinated & standardized manner involving community clinics and pharmacies, policy revision to ensure service quality through government bodies, keeping mental health at the forefront.
Why (To address :)	Overburdened tertiary health facilities, underutilization of primary and secondary healthcare facilities, unable to track patient inflow data, patient transition and lack of insight from macro level data.	Lack of data on private sector facilities resulting in many different challenges and operational issues. The picture of the health system is not complete without the data from the private sector.	Manual process of managing inventory is inefficient and easy to manipulate. It also does not provide the real picture on the demand and supply. The lengthy centralized procurement means delay for the hospitals to get the required medicines or equipment.	There is no grievance mechanism within the sector. This resulted in many malpractices in the private sector starting from medical crimes to exorbitant pricing. Without a grievance mechanism, many concerns with the public sector remain unsolved.	The people in rural areas are far from health facilities and many times the nearby health facilities are not able to help. The rural people or marginalized people turn to pharmacies for solution. And thus, many times they get exploited by drug sellers. Also in case of disasters like flood or pandemic when travelling is not possible, telemedicine can play a crucial role to save valuable lives. There are very few channels for psychological support and to provide more people access to mental wellbeing services, technology can play a role.
What	A digital tracking system of the patients with patient history	A dashboard and monitoring system for private sector facilities and operations	An inventory management system up to primary clinic level that would provide macro level data and insights	A hotline, app and web based grievance mechanism system that can work in parallel to 999	Telemedicine as pre-primary screening and psychological counselling
Lead Agency	DGHS	DGHS	DGHS	MoHFW	MoHFW
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Partners	DGHS, DGDA, DGFP, MoHFW, BTRC	DGHS, DGFP, MoHFW	DGHS, DGFP, DGDA, MoHFW	DGHS, DGFP, BTRC	DGHS, DGFP, DoICT, BCC, BTRC, iDEA Project
Non-Government Partners	NGOs, private sector hospitals, clinics, private sector entities	NGOs, private hospitals, clinics, individual patients	Organizations providing tele-counselling services, ICT companies	NGOs, corporations, creative agencies, WHO, UNICEF, individuals	WHO, relevant international organizations, foreign governments
Financing and modality	GoB, PPP, embedded in the cost of services	GoB financing, PPP, embedded in the cost of services	PPP, GoB financing, private sector model for app/game, cost recovery model	PPP, GoB funding, donations	GoB funding, revenue budget

Post COVID-19 ICT Roadmap for Bangladesh

Health and Well-being

Thematic Paper

1. Sector Overview:

The health system of Bangladesh has gone through a number of reforms and established an extensive health infrastructure in the public and private sectors since the independence. Bangladesh has achieved remarkable improvements in population health status by achieving MDG 4 by reducing child death before the 2015 target, and rapidly improving on other key indicators including maternal death, immunization coverage, life expectancy and survival from some infectious diseases. The health system of Bangladesh has been facing some challenge starting with -“shortage, inappropriate skill mix and inequitable distribution” of its health workforce. Health workforce is skewed towards doctors with a ratio of doctors to nurses to technologists of 1:0.4:0.24, in stark contrast to the WHO recommended ratio of 1:3:5, Estimated 58% of the medical doctors working in the private sector, formal health workforce (doctors, dentists, nurses) is mostly concentrated in the urban areas, There are only 1.1 doctors per 10 000 population in rural areas, compared to 18.2 per 10 000 in urban areas, Less than 20% of health workers serve over 70% people living in the rural areas and many more. The World Bank and the World Health Organization’s joint report, 'Global Monitoring Report on Financial Protection in Health 2019' highlighted that over 60 per cent of total health expenditures in Bangladesh are paid directly out-of-pocket by households, among the highest rates in the world. This has major consequences. It is estimated by WHO that every year 7% of households in Bangladesh are pushed into poverty as a result of out-of-pocket spending on health. The health sector of Bangladesh has some major achievements like reducing maternal and neonate death, immunization coverage but at the tertiary level the achievements are less visible and universal healthcare is another area of challenge.

The breakout of Covid-19 pandemic has made the scenario even more challenging. Bangladesh has been entangled in fighting Covid-19 for more than three months now. As of June 28, more than 137,000 confirmed cases and 1783 deaths. What is most concerning is, Bangladesh was among the fastest in the world to reach 20,000 cases, reaching the figure in just 40 days after its first case on March 8. Globally, only Italy reached this figure faster.

2. Impact of COVID 19 on the sector

We assessed the impact on the ability of the sector to serve the people and the support systems as well as the national policies and the regulatory environment.

Increased out of pocket expenditure

- In the health care system of Bangladesh the out of pocket expenditure is a reasons for serious concern. The people of Bangladesh spends more than 70% of the total health expense as out-of-pocket expenditure. It is the highest in South Asia.
- According to the DGHS' National Preparedness and Response Plan for Covid-19, Bangladesh's overall spending on health is around 3% of GDP. However, the government contribution under the current budget is only 1.02%, According to the Ministry of Finance, the overall allocation for health in the FY 19-20 budget is 4.9% of the total budget, which is one of the lowest in South Asia. It fails to meet World Health Organization (WHO) standards of 15 percent of total budget (or five per cent of the GDP), and has been stagnating since 2015.
- COVID 19 has disrupted the health system as a whole and the people who are affected are needed to spend exorbitant amount of money for basic services or treatment. The government treatment facilities are inadequate and many time without any vacant bed. To provide the due medical care and support to the patients the family is bound to spend money for the treatment to only in the facilities.
- Government has imposed test fee for Covid-19 testing which is free till writing the report. This would be added to the increasing expenditure for the people.

Impact on Supply and demand trends

Some disturbing trends could be followed due to the Covid-19 pandemic outbreak. It looked like the treatment and equipment's were available only to the wealthy who could afford the treatment.

- Before the outbreak the common medicines and some medical devises were widely available. But immediately after the outbreak the supply of disinfectant, certain medicines, nebulizers, oximeter, oxygen cylinder etc. ran short. This is due to the panic buying and hoarding mentality.
- The number of people experiencing stress has skyrocketed. In a study conducted by CARE it was found that 83% of respondents reported experiencing mental stress. A new vulnerable group identified for mental stress are the children. Due to the change in the lifestyle like not being able to go to school, not being able to meet friends or play outside a large number of children are experiencing mental stress. With women being primary caregivers and all family members bound to stay at home, the increased workload can lead to additional mental pressures on women.
- The CARE Study has found out that Child Helpline 1098 has seen a 4-fold increase in calls in the last two weeks of April due to COVID-19. This is a clear indication that violence against women and children is on the rise.
- Many businesses found this as an opportunity to charge higher price and make profit by increasing price of common medicines like vitamin C or charging three times as much price for an ambulance trip. As the infected people or the people who did not have any other option but to give in to these demands to save lives.
- The demand of testing and treatment skyrocketed. But the amount of time it takes to get the result from Covid1-9 test, there would not be much possibility of any treatment.
- However everything was available at a much higher price for those for whom price was not a concern.
- According to UNDP more than 73.9% of total expenditure is out-of-pocket (OOP) expenditure.

Breakdown of the healthcare system

It was quite apparent and clear that the healthcare system broke down even before the confirmed Covid-19 cases reached 100,000.

- Denial of treatment to public as well as private facilities have come quite common. Even an additional secretary of the government died from travelling from one hospital to another without getting any treatment. So the situation of the common people is quite understandable.
- The study done by CARE found that 45% respondents reported that health facilities are inaccessible.
- Private sector hospitals refused to admit or provide treatment to serious patients without Covid-19 test result. It takes more than a week to get the result so many patients are not receiving any treatment.
- There were main complaints that the private sector health facilities asking extortionate amount for basic treatments.
- Maternal mortality and morbidity expected to increase, along with unmet needs for family planning, and reduction in clinical management of rape.
- Lack of maintenance of water and sanitation services specially in climate vulnerable areas and urban slums which could lead water borne disease
- Community level solid waste management workers could fall into high health risk
Lack of PPE may result in reduced availability of midwives, and worries of infection will lead to pregnant women avoiding hospitals, resorting to home deliveries without access to skilled care.
- Many patients with kidney diseases, heart diseases, TB, asthma, cancer who require regular medical treatment are dying because neither government or private facilities are providing treatment to them. They are the indirect victims of Covid-19 due to the failure of the health system
- The rise of malnutrition may lead to an increase of widespread of different diseases. In the CARE study the following scenarios came up
 - 75% respondents mentioned without sufficient access to food at home.
 - 91% don't have sufficient money to buy food.
 - 66% reported that main challenge was closed markets.
 - 70% indicated they couldn't provide a varied diet to children between 6 and 23 months.
- The acute shortage of ICU, oxygen, ventilators and other necessary equipment became visible.
- The centralized testing, very few testing and long delays in results are making the whole system questionable.
- In the midst of the ongoing pandemic Bangladesh faced a super cyclone and further flooding along with cyclones are being anticipated. These will create even more serious challenges with the already cracked health system and the people in the climate vulnerable areas would end up paying the price.
- Significant increase in OOP for health services as people needed to pay more just to get basic services, the full impact is yet to be measured.

Policy, Governance and Management of the sector

The policies adopted, the governance and the management of the sector became under question because of the results and outcome in the fights against the pandemic.

- The first three known cases were reported on 8 March 2020 by Institute of Epidemiology, Disease Control and Research (IEDCR). Even before that the situation was neither ideal nor controlled. From February to March more than 150,000 expatriates came to Bangladesh along with many foreigners. There was no proper tracking system to identify them once they left airport. Later in March there were some checking mechanism were introduced but the lack of coordination and effectiveness of the measures were quite visible.
- The first lockdown was introduced on March 26th for 15 days and since then there were some sporadic lock down. These lock downs were neither strongly enforced nor clearly communicated. Later in June zone system was introduced, which turned out to be ineffective to contain the infection. Whatever measures were taken the measures were not very successful, the rising number of cases are the proof. From 2 infections in March 6th the number of infection crossed 100,000 by June 18.
- The visible lack in the coordination among different ministries of the government is resulting in serious consequences.
- A national disaster is knocking at the door and at this moment what required is national unity. A ministry of the government cannot fight against a pandemic. Rather the effort should be a joint effort by government, private sector, development partners and the people. However from the centralized policy making and steps taken, it seems that the fight is only for DGHS.

3. Review of Critical Constraints of the Overall Health Sector

COVID 19 has adversely impacted every sector and health sector should be leading the charge against the pandemic. Unfortunately there are some critical constraints in the health sector that are hindering the ability of the sector to evolve to a pro-poor service delivery sector that can lead through any pandemic. The critical constraints identified are divided into three major categories.

These critical constraints are governance, management and private sector regulations. Constraints of the each category discussed below.

Governance

- **Policy Enforcement:** There are many wonderful policies for health services and governance of the sector but the enforcement part is very weak.
- **Corruption:** There are many allegations of corruptions and some newspapers did expose on certain allegations but there was no strong reaction from the policy makers to set an example.

- **No grievance addressing mechanism:** Within the health system there is no grievance addressing mechanism. There are many malpractices done by the private sector and they get away with those without any consequences. This is because for any grievance the needs to go through court and complex legal procedures. These are expensive and time consuming. There should be a mechanism within the health sector to address the grievances.
- **Imbalanced input mix – doctor centric health system:** At present the health system of Bangladesh is Doctor centric. But for a functional health system there should be a proper mix of doctors, nurses, technicians, paramedics, public health professionals etc. Long term vision and planning is required to move the health sector towards a healthy mix of inputs.
- **Lack of a national level governing body:** There is no national governing body for health who would ensure that the health sector planning and implementation moving towards the right direction.
- **System Fragmentation:** The health system in Bangladesh is fragmented by urban and rural health through different ministries, as a result the people suffer because of the low quality of the services.
- **Perception of the national health sector:** There is a clear lack of confidence in national health system. Policy makers taking treatment and health checkup abroad does not help to gain the confidence of the people in the public health system. The unfortunate truth is because of the situation in the public-private health system of Bangladesh most of those who can afford opt to take treatment abroad. Which is a dangerous trend and we have seen what might happen during a pandemic if national health system is not ready.
- **Health Financing –** Health financing has turned out to be a very serious issue and Bangladesh is the highest in OOP expenditure among South Asian countries for health issues. WHO recommends a minimum of 15% of the total budget for health allocated for health whereas in FY 2019-20 the allocation was only 4.9% of the total budget. A model like Cambodia or Bangladesh's SSK (Shasthyo Shuroksha Karmasuchi) model could be explored further for this particular issue. Medicine costs are majority of OOP expenses, hence policies for drug price and revision on essential drug lists are over due to reduce the expense burden on the people.

Management

- **Lack of quality data:** There are significant lacks of quality data, specially from the rural areas. This hinders the planning the does not help in understanding the total picture.
- **Ineffective decisions:** The lack of quality data results in ineffective decisions. Which eventually results in wastage of public resources.
- **Lack of coordination:** The lack of coordination between different ministries and MoHFW is a challenge. It was clearly visible during the pandemic.
- **No effective referral system:** The lack of an effective referral system is causing tertiary facilities to be overburdened with patients on the other hand the secondary facilities are often underutilized.
- **Inventory management:** This is an issue for all the facilities of all levels. This hampers effective service delivery and increases out of pocket expenditure for the patients.
- **Lack of focus on mental health:** Before the pandemic there was not much of a focus on mental health. This is an area that is highly important and needs to be considered as a mainstream health issue.
- **Bureaucratic processes:** In case of pandemic preparedness there are many incidents where the processes slowed down the response or created roadblock for the response.

Private Sector

- **Lack of Regulation:** There is a serious gap and lack of regulation on private sector. As a result private sector can get away with almost anything without any consequences.
- **Lack of enforcement:** Whatever regulations are there for private sector those are not enforced. As a result private sector is becoming reckless.
- **Lack of accountability:** The accountability for the private sector is an issue. There are too many incidents of private sector disregarding rules and regulations totally.
- **Lack of service quality assurance mechanism:** There is no effective mechanism to ensure the service standardization, quality assurance and pricing policy related to the service quality. As a result private sector can charge anything for any quality of service.
- **Private sector role in case of pandemic:** In spite of government order private sector blatantly refusing treating patients that resulting in death. No measures were taken so far against any private sector organization.
- **Malpractice and corruption allegations:** There are many serious malpractice and corruption allegations on the private sector.

Altogether these critical constraints are turning the health sector of Bangladesh to a something that can neither protect the people nor serve the national interest.

4. Evolving Opportunities for ICT Response in health and Local and Global Cases in this Context

Literature review of the global initiatives have showed that there are some opportunities that can be realized by using ICT. From reviewing WSIS Stocktaking mid-term report provides a good insights on what has been happening around the world on responding to Covid-19 technology.

Following are the thematic areas for opportunities

- Distant learning using phone or computer
- Contact tracing, Covid-19 tracker and screening apps
- The rise of e-commerce for health supplies
- The health information & Telemedicine
- Social media tools like catboats for interactive information dissemination
- Updated news on availability of different health services
- Opportunity to transform the health sector to a robust and service focused system

We have found that in Bangladesh there many commendable initiatives were taken. Some of the initiatives were taken by the government and most of the initiatives were taken by the private sector or NGO's. In many cases the initiatives are driven by the effort to do something against the pandemic and without a sustainability or business plan.

4.1 Local Cases

The following cases illustrate how some of the Bangladesh local solutions were developed to respond to the COVID19 Challenges and what opportunities they bring.

1. COVID-19 Tracker with localized content (http://covid19tracker.gov.bd)	
Type of solution: information and statistics	It is a web based data/information collection system that shows the collected data through maps. It exposes API (Application Programming Interface) to be integrated with external systems, and it is connected to the National e-Service Bus platform. Therefore, any other system or organization (if needed) can get updated information on Corona virus infections in real-time. The main purpose of this system is to ensure authentic information delivery for the citizens of the country.
Solution Impact	It provides real-time data using GIS mapping.
Organization	Bangladesh Computer Council, ICT Division
Key features of the solution	We have identified several key features: <ul style="list-style-type: none"> - Local language content - The Tracker collects data from authenticated National/International sources - Graphical representation of data and country comparison - Full screen map view, bubble map view and change map legends - Mobile friendly - Option to search, sort, filter and export data from tabular format - The Tracker refreshes automatically every 5-10 minutes.
Beneficiaries	The project is developed to provide authentic information service to General People, Journalists, Scientists and Statisticians, and Decision Makers in Bangladesh. It is also beneficial for the general public as a result of provision for displaying or searching in Bengali.

2. Live Corona Online Based Testing System (http://livecoronatest.com)	
Type of solution: Health information	A self-testing system based on symptoms of corona.
Solution Impact	The solution provides a tool for anyone to check if the person has the symptoms of Corona.
Organization	IUSOFT Technology
Key features of the solution	We have identified several key features: <ul style="list-style-type: none"> - Free private sector solution - Easy to use and uses Bangla - App and web based
Beneficiaries	General public

3. DGHS and CMED (https://cmed.com.bd/dss/)	
Type of solution: Covid-19 screening and information	An app based system for potential Covid-19 patient screening.
Solution Impact	The solution is being used to identify high risk and potential patients in rural areas. The app is being used in the community health clinic to identify and track the patients who would require the tests and treatment for Covid-19.
Organization	CMED
Key features of the solution	We have identified several key features: <ul style="list-style-type: none"> - Use of AI in the protocol algorithm - Basic treatment information - Connecting to the call centers for the next steps - Easy to use and uses Bangla - App and web based
Beneficiaries	General public and the government

Apart from these we have found many other different types of solutions. And most of these solutions came out from private sector or NGO. These solutions are essentially repetition, addressing the same problem. This approach might have some fragmentation and information disparity.

Following is the list of the solutions we have come across. This list is not exhaustive and it was observed that many organizations including public or private are providing the exact same solution.

4. ICT Division and a2i (www.corona.gov.bd)

Type of solution: Information and service	An online based one-stop solution for Covid-19 related information, statistics, good practices, government directive and appointment system for treatment.
Solution Impact	The solution is being used to share the information with the public, expatriates, journalists and international sources. This is one location from where one person can get every type of information on Covid-19.
Organization	ICT Division, a2i, Cabinet Division, UNDP, DGHS, IEDCR, P&T Division, NTMC
Key features of the solution	We have identified several key features: <ul style="list-style-type: none"> - Single place for multitude of solutions - Information on latest government directives - Treatment suggestion - Call center suggestions - Information for expatriates - Registration for doctors - Registration for volunteer organizations - Easy to use and uses Bangla - Web based
Beneficiaries	General public and the government

Apart from these we have found many other different types of solutions. And most of these solutions came out from private sector or NGO. These solutions are essentially repetition, addressing the same problem. This approach might have some fragmentation and information disparity.

Following is the list of the solutions we have come across. This list is not exhaustive and it was observed that many organizations including public or private are providing the exact same solution.

Solution	Type of Problem Addressed	Organization/Solution
Type of solution: Information and service	Self-testing based on symptoms. government directive and appointment system for treatment.	ICT Division, Digital healthcare solutions, Doctoroncall, Dr. Bot 24/7, Banglalink, coronareportbd, Bangabandhu Parishad, CallaDoctorBD, eGeneration Beat Corona, P&T Division, a2i, Tappware Solutions Ltd., ObhaiSheba, coronatestbd.com and many others. practices, government directive and appointment system for treatment.
Chatbot	Interactive solution for information, screening and support	ICT Division, BloodMan, Mita Chatbot – Banglalink, Robi, GP, Preneur Lab, Panda Chatbot, Know Corona bot, eGeneration Beat Corona and many more.
Website	Information on corona and providing guidance	ICT Division, a2i, DGHS, covid.geobd.com, helpus.ai, coronabd.xyz, www.iedcr.gov.bd, covid19.diu.ac, covid19.cramstack.com, coronainbangladesh.com and some more
Health specific e-commerce	Medicine delivery through online order	Jeeon, Pharmacy.com.bd, Emedi.com.bd, BanglaMeds.com.bd, Oshud.com and some more
Telemedicine	Providing online doctor's support and counselling for mental welling	DGHS, Digital Healthcare foundation, Moner Bondhu, BestAid, Tonic Digital, Maya, Doctorola and many more.
Contact tracing	Tracing of infected or potentially infected persons.	ICT Division and Shohoz.com
Video content	Providing audio visual information for the public on Covid-19	corona.gov.bd
Fake news check	Access to on demand knowledge on crops and fisheries production	mPower coronabd.net
Project Ventilator Innovation Challenge	To design a low-cost, simple, easy-to-use and easy-to-build ventilator that can serve Bangladeshi COVID-19 patients,	https://www.facebook.com/groups/projectventilator?_rdc=1&_rdcr
Testing booth location mapping	Testing booth location mapping on google map	Individual effort – https://www.google.com.bd/maps/@23.5392395,90.3002892,7z/data=!3m1!4b1!4m3!1m2!2s1H-liwEiyv9QRgk19kSVleNlopYRu2g13e3
Hospital mapping	Covid-19 treatment facility mapping	Individual effort – http://youthhub.global/Covid-19/
Plasma collection	Plasma donation through social media groups so that infected patients/family can request plasma.	There are more than 6 active groups in facebook and blood donations groups are also working for plasma donation.
Probashi Help Line	Call center support for corona treatment for Bangladeshi expatriates in different countries.	Ministry of Foreign Affairs.
Helpline	Call center support for screening and basic treatment guideline	A2i, IEDCR, DGHS, MoHFW, BITID, ICDDR, BSMU, Obhai Solutions and few others

A very interesting finding is that many organizations are providing exactly similar services on information or screening. This tendency of repetition of exact same services should be discouraged and for every type of service there should be an official service provider preferably from the government. This would leverage the resource and free up much necessary resources to focus on important solutions that did not receive much focus.

4.2 Global Cases

Based on online literature, we can identify several cases of using ICT as a response to mitigate COVID challenges. Following is a curated list of solutions:

Name	Type of Solution	Country of Origin	Key Features
self-quarantine safety protection	Quarantine monitoring	South Korea	South Korea has developed a mandatory government-run smartphone app that tracks the location of all new arrivals to the country. Their government plans to roll out location-tracking wristbands for people who violate quarantine orders. The health officials are also developing "smart city" tools to bolster existing networks of testing and contact tracing, but some privacy advocates are pushing back.
NCOVI	Covid-19 Information and health update	Vietnam	The app lets the public update their health status daily. It also shares 'hotspots' of new cases and gives its user 'best practices' for staying healthy. The app was supported by an online reporting system, developed by the Health Ministry, to monitor suspected and confirmed cases of COVID-19. These combined efforts have ensured that new infections are reported and subsequently isolated.
COVID-19 Emergency Response	Automated screening model	Mexico	Mexico City has developed a thorough strategy consisting of several coordinated actions that aim to solve some of the issues derived from the pandemic. The automated screening model was launched to provide attention to people that suspected to have coronavirus. Users of this service enter their contact information and symptoms, following an automated flow of questions. According to their responses, the system formulates a general diagnosis. This system allows for better patient monitoring and follow-up care and is available via SMS, online, through the city's official app, and by dialing the city's call center, Locatel.

5. Roadmap

The Covid-19 had pandemic thrown a lot of challenges to the health sector of Bangladesh and unearthed a large number of systemic issue within the health system of the country. The issues are complex, interconnected and interdependent. These issues cannot be solved overnight and these issues were created over the years due to many different reasons. The role of ICT still stays nominal in the health sector of Bangladesh. It is generally being used for some data collection but adopting the ICT as the core philosophy of the sector to transform the health sector towards twenty first century health sector.

The Covid-19 pandemic has showed how the health sector of Bangladesh is falling short and letting the people down. The issues like denial of treatment, lack of PPE, lack of testing, reckless private health facilities and corruption allegations are plaguing the sector. There are lots of things that could have been done by the health sector with more transparency and inclusion. Incorporation of ICT would ensure that the system has transparency, quality data and critical insights to fight a pandemic like this one.

Throughout the process of the study many long term challenges were identified that are plaguing the health sector and hindering the transformation of the health sector to a modern twenty first century health sector that works for the benefit of the people. These critical issues were discussed in Section 3

Can be used for Covid-19 response in the short term	Relatively low to medium tech	Contextual solution for Bangladesh	Should be able to reach a large number of people	Inclusiveness and access
Average deployment time is 20 days for most of the solutions	High tech complex solutions will take time to develop	The solutions needs to be contextual, a European solution may not work in Bangladesh	Considering our population density the solution should be scalable	Rural and urban population Smartphone and feature phone compliant

Most of these issues require mid and long term approaches. And the role of ICT reaming as supporting because to solve the issues the first focus should be on fixing the governance and management framework. If these two frameworks are redesigned then a lot of problems can be solved automatically. The role of ICT would be to support the governance and management framework along with service delivery to the people. But for the pandemic short term initiatives are needed to be taken.

Pandemic Response: Looking at the pandemic condition, the challenges with the health sector some of the characteristics of the pandemic response mechanisms were identified. The objective was to use this framework to classify any response for pandemic based on its applicability and usability within a very short time.

Following are the characteristics identified for pandemic response.

The proposed Short Term Measures for Covid-19 response using ICT

1. Wider data collection mechanism:

- Covid-19 data collection should be done in collaboration with private sector actors, private hospitals, clinics and pharmacies. It is of critical importance to engage private sector organizations for data collection to get the right picture.
- It can be app based/OCR/semi manual system to ensure inclusiveness

2. Digital assistance from test to treatment:

- It has been observed that for government tests, it takes hours of waiting for the patients to get the Covid-19 test done.
- A map based online system based on patient traffic to choose where to go for the test with less waiting time.
- The test results should be sent via SMS, email and automated calls.
- The positive patients should be getting proactive calls from the tele counselling for physical and mental support.
- In case of positive patient deterioration informing the hospital and suggest the patient where to go via call center.
- Support through 999 for assistance in case of denial of treatment.

3. Psychological wellbeing:

- A coordinated approach is needed to bring the organizations providing psychological support using phone and app.
- There should be one single app combining all initiatives and one single toll free hotline number to access various service providers.
- The data needs to be collected from these sources for national level planning.

4. Addressing social stigma and promoting healthy habits:

- To eliminate social stigma, specially in rural areas social media campaigns, chatbots, broadcast media campaigns, SMS and automated call campaigns should start.
- Similar campaigns should start for promoting healthy habits during pandemic like wearing mask, washing hands, social distancing etc.
- The telecom operators and other organizations with large outreach should be engaged.
- Engage the youth through technology for awareness creation and fake news prevention as 'Digital Volunteers'.

5. Crowdsourcing Data:

- Using youth to engage in providing data so that policymaker can take better decision.
- Suspected corona patients, lockdown breach, not following social distancing guidelines should be reported through an app with photo/video.
- This would provide an opportunity for the citizens to contribute directly.
- This will also help to measure the effectiveness of the policy decisions.

6. Monitor inter & intra district as well as zonal travels:

- Utilize the aggregate data from the mobile phone operators to make decisions based on how many people are travelling regularly across districts.
- Having clear idea about how many people are travelling to and from yellow and red zones to green zones.
- This data can help to strengthening lockdown measures.

7. Official Whatsapp & messenger bots:

- These bots needs to be in Bangla (English is optional)
- They should be providing Covid-19 information to the users
- Platforms to verify viral news related to Covid-19
- It should proactively provide fake news alert
- Should be tied to the campaigns

8. Behavior change through gamification:

- App based games to change health behaviors
- The target group is children and young adults
- The objectives are to instill healthy behaviors through gamification, create awareness and reduce stress
- Some type of reward/recognition mechanism should be incorporated
- The initiative should also help to increase knowledge and understanding of Covid-19 pandemic and reduce stress

9. Introducing free data for Covid-19 related services:

- Similar to 0.facebook.com there should be arrangements with mobile phone operators so that Covid-19 related apps/solutions do not cost money.

10. Introducing toll free hotlines:

- For making calls related to Covid-19 services to the government call centers / facilities the call charges should be waived.
- There should be special low rates for taking psychological counselling through mobile phones for Covid-19 related psychological issues through the government platforms.

11. Regular Online training on Covid-19:

- In community clinics and upzilla level health facilities across the country there are capacity issues regarding Covid-19 pandemic among the health professionals.
- Online training/video content on their safety, patient safety, treatment protocol, referring to next level of facilities, protocol for community transmission should be delivered regularly.

Some of the above mentioned initiatives may have started but in a sporadic manner, many times as standalone private sector initiatives and many time redundant as well as duplicated. The leadership from the government to bring everyone to a single platform and lead the initiatives would be critical for the fight against Covid-19. Hence the above mentioned short term measures are proposed to strengthen the fight against Covid-19. One very important reminder is that Covid-19 is a global pandemic that created national crisis. It is not possible for a particular ministry or a sector to address this crisis. It has to be a coordinated joint effort involving different government agencies along with private sector organizations.

Immediate policy measures to support the proposed initiatives

Another important key area for fighting against the pandemic is the policy challenges. In the present scenario to implement the proposed short term measures some policy changes would be required. Following are the proposed policy change measures for the initiatives proposed earlier.

1. Data flow policy:

- For private sector to innovate solutions and to assist government there should be free flow of data policy where private sector can access anonymized data to develop analytics solutions.
- In return the private sector will also add data to the repository and provide the solution at a lower cost to the government.
- Relevant Ministry: ICT Division, MoHFW

2. Policy for free access for Covid-19 related services using ICT:

- Similar to 0.facebook.com there should be arrangements with mobile phone operators so that Covid-19 related apps/solutions do not cost money.
- For making calls related to Covid-19 services to the government call centers / facilities the call charges should be waived. For the emergency scenario private sector services should also be allowed through the same mechanism.
- There should be special low rates for taking psychological counselling through mobile phones for Covid-19 related psychological issues through the government platforms.
- Relevant Ministry: MoHFW, ICT Division, Telecom Division, DGHS

3. Service integration policy:

- To fight against Covid-19 the private sector services needs to be brought under national service delivery mechanism to ensure that :
 - There is a single point of accessing many services
 - There is no wrong information being spread through the services
 - The private sector services come through a vetting process to be offered through the government channels
 - To reduce pressure on government services as these are getting overwhelmed
- Under this policy for private sector services that are using call center should be accessible through a single hotline number like 333 or 999.
- The app-based solutions should be integrated in a single app so that the people can install one app by the government get different services
- Relevant Ministry: ICT Division, Telecom Division, MoHFW

Mid and Long term Action Agenda Items

The top Action Agenda items are explained in this section. These action agenda items are mid and long term. However these proposed measures have the possibility of transforming the health sector of Bangladesh. We ranked these measures based on four criteria- scale of impact, immediacy, readiness, and risks of failure to select the five action agendas that might have the largest impact through ICT interventions. The results are shown below:

Selection of Top Action Agenda items for ICT led Interventions for Covid-19 Recovery

Intervention	Scale of Impact	Immediacy	Readiness	Risks	Stakeholder Buy in
Provide connectivity to primary healthcare facilities with infrastructure to establish a referral system that can be followed up to different facilities of tertiary level.	High	High	Low	Medium	High
Connect all private facilities with the GoB system to get real time data on patients, ICU and other facilities.	High	High	Low	Low	Medium/Low
Establish inventory management system for all facilities and introduce decentralized procurement	High	High	Low	Medium	High
Develop a grievance mechanism policy and addressing system using ICT where patients can submit their complaints and receive solutions.	High	High	Medium	Low	High
Introduction of telemedicine in a coordinated & standardized manner involving community clinics and pharmacies with policy revision & establishing the governing body to ensure the service quality. Mental health should be at the forefront of the initiative	High	High	Medium	Low	Medium
Bringing in pharmacies under a formal platform for data collection as well as pre-primary screening	High	Medium	Low	High	Medium

Based on the above assessment we conclude that the following five action agendas will have the highest impact on COVID recovery through ICT response in the national health systems. The actions agendas are interconnected and well as interrelated. And when implemented they can be connected to one another and provide very valuable insights for the policy makers.

- Provide connectivity to primary healthcare facilities with infrastructure to establish a referral system that can be followed up to different facilities of tertiary level.
- Connect all private facilities with the GoB system to get real time data on patients, ICU and other facilities.
- Establish inventory management system for all facilities and introduce decentralized procurement
- Develop a grievance mechanism policy and addressing system using ICT where patients can submit their complaints and receive solutions.
- Introduction of telemedicine in a coordinated & standardized manner involving community clinics and pharmacies with policy revision & establishing the governing body to ensure the service quality. Mental health should be at the forefront of the initiative

Vision for the digitized Health Sector:

This is the high time for the health sector of Bangladesh to adopt the philosophy of “Digital Bangladesh” not only with aggregate data but considering the 3rd pillar of Digital Bangladesh which is “Digital government for pro-poor service delivery”. For a digital government it is of utmost importance that service deliveries should be going digital and digital channels will be given equal priority for service delivery. However the health system of Bangladesh need to make a long journey to reach the service delivery using digital platform and digital government based on data.

It has been observed how the health sector has fallen short to provide support to the public during the ongoing Covid-19 pandemic. Even though there were much talking before the pandemic hit Bangladesh the actual preparations to tackle a pandemic was surprisingly inadequate. There were many challenges with the preparations starting from the coordination among different ministries to lack of data. The rest of the world based the fight against the pandemic on data whereas in Bangladesh the quality of the data was being questioned from the very beginning. Even after 3 months of pandemic fighting could not provide the required data. The total data and district wise data shared by DGHS does not add up, generally there are difference of 50,000 to 40,000 patients. This tells that the situation is uncertain as the agency who are supposed to lead the fight against the Covid-19 pandemic is either not aware of the actual situation on the ground or someone is making a mistake every day while adding the data.

Among many other issues with the health sector of Bangladesh the lack of coordination with different ministries has always been an issue. In many cases these coronations are only on paper. Also in strategic documents the cooperation’s exists but in real life the cooperation’s are lost in the entanglement of the infamous red tape of the bureaucratic machinery and lack of ownership. One such example is that use of ICT for modernizing the health sector of Bangladesh. In Health chapter of the 7th Five Year Plan the exploration of the full potential of ICT for service delivery and data collection was mentioned. But in the same chapter when the cooperation and coordination with other ministries were mentioned the name of ICT Division was not present. This anecdotal evidence suggests that the disjoint among government ministries.

The action agenda items can transform the health sector of Bangladesh if they are implemented with the right intentions and the data is used for decision making. These action agenda items are interlinked with each other and they can make a huge difference in the health sector of Bangladesh.

The technology part of the action agenda items are the easiest part. The actual challenge in ensuring that the technology is being used for the purposed it was intended for. To deploy the action agenda items there should be separate dedicated, empowered and highly skilled teams. The teams would be working in coordination with the relevant government agencies but need to be devoid of the bureaucratic processes so that they are focused on the results.

The interconnectedness of the action agenda items are key to the success of the total health system. These systems need to be connected with one another and transfer data on a regular basis to ensure the peak performance. The following diagram shows the data flow of the Action Agenda Items 1 to 5.

Data Flow among the Action Agenda Items

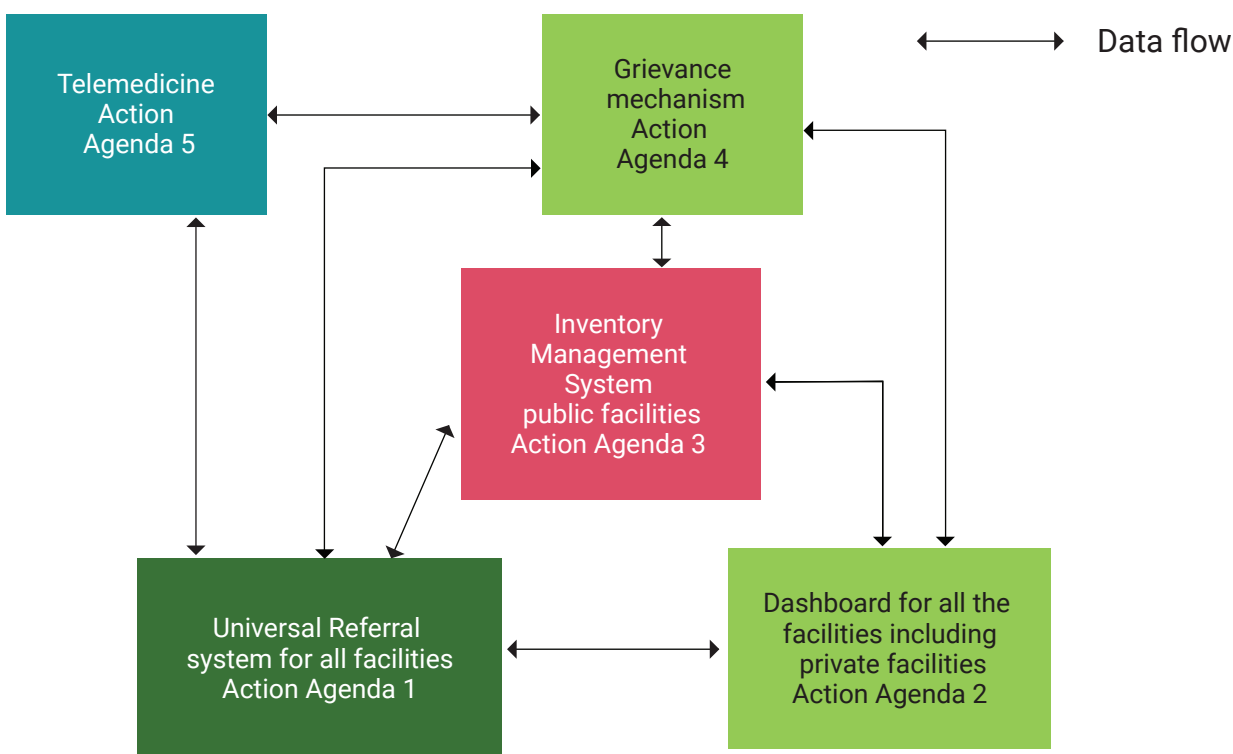


Diagram 1: Data Flow Diagram for Action Agenda

Once these action agenda items are designed and deployed in a manner where these systems can interchange data with one another, provide warnings and generate insights the health system of Bangladesh will truly transform to a different level.

If we look at the health sector as an interconnected system of complex functionalities, it becomes quite apparent that everything in the system is connection to something else and one area impacts not only one but few other areas. Hence it is important to address the overarching issues that can make the whole system functioning better. Because these are not separate systems and to create macro level impacts all the sub-systems within the health system should be aligning with the national level objectives. One critical challenge for that is to ensure policy enforcement. This is a legacy issue of Bangladesh and it is one of the biggest concern for one simple reason; without enforcement policy means nothing.

The following diagram on shows the relationships of the action items, their data usage, private sector involvement and public sector role.

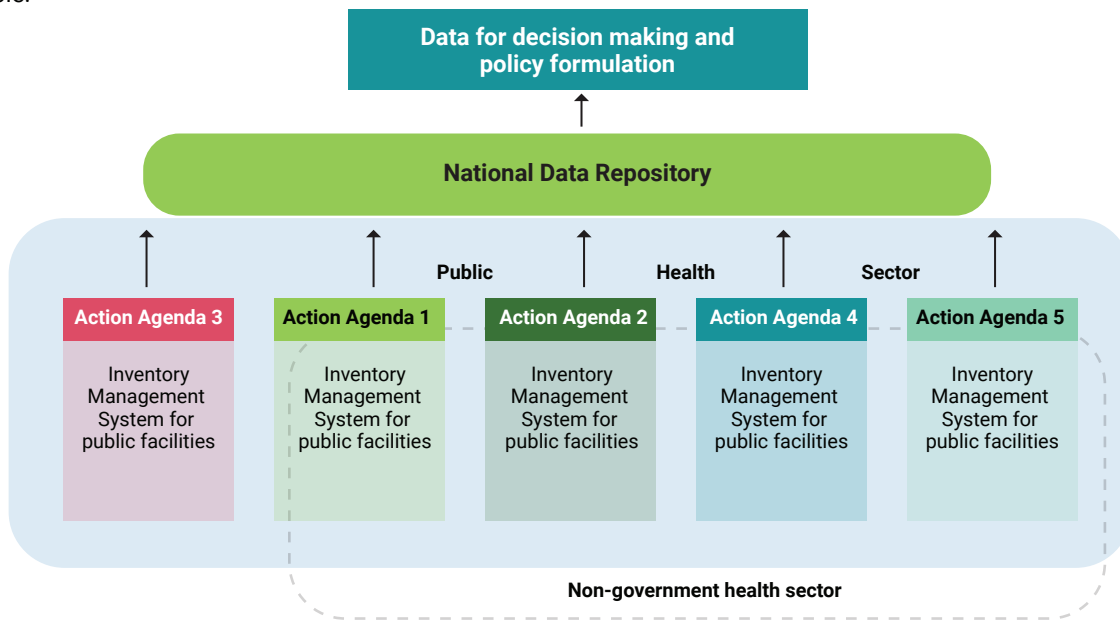


Diagram 2: Action Agenda Items in the Health System

The above diagram shows how the proposed action agenda items fit together where the public sector working together with non-government health sector to ensure that for macro level data is generated for the policy makers of the highest level to understand the actual scenario of the health sector as a whole. The system also provides feedback to the non-government sector players on the issues and patterns. The access and flow of data makes the system harmonious, inclusive and better functional. And most importantly the system is geared towards leveraging the full potential of ICT to facilitate service delivery, education, information gathering and management efficiency as suggested in the health chapter of the 7th Five Year Plan. This proposed action agenda items will only work if these technology based solutions are supported by the proper policy formulation and policy implementation. Following will be the key issues that the policies need to address through enforcement.

- Data security and access policy
- Private sector regulations
- Health Financing
 - Universal healthcare policy and enforcement
 - Drug price administration and enforcement
 - Private sector pricing regulation and enforcement
- echnology adoption and coordination with public & private stakeholders
- ransparency, accountability and monitoring of the sector
- Encouragement of research
- Grievance mechanism
- Policy compliance
- National level governing body of the health sector involving all stakeholders for transparency and accountability
- Stringent policies as well as enforcement to ensure transparency and accountability
- Collaboration and co-creation with no-government stakeholders
- Telemedicine – policies and regulations
- Pharmacies as an access point
- Mental wellbeing as a mainstream issue
- Nurturing innovation and startups for health sector

Once these policies are in place then technology can help to enforce the policies and transparency as well as accountability.

To make the vision of 'Digital Bangladesh' a reality ICT Division can play the role of the catalyst, adviser, mentor and in some cases implementer but it is the MoHFW who needs to own this and lead the charge forward. ICT Division should take the first step and guide MoHFW throughout the journey towards Digital Health Sector.

Key Challenge 1:

- Overburdened tertiary health facilities, underutilization of primary and secondary healthcare facilities, unable to track patient inflow data, patient transition and lack of insight from macro level data.

Action agenda 1

Establish a robust referral system with medical history management, which can be followed up to different facilities of tertiary level starting from primary level facilities.

What it means: It means that any patient coming to any health facility should be registered uniquely and the medical history should be stored electronically in the cloud. If the patient needs to visit a secondary/tertiary facility then she/he could also be identified in those facilities and the medical history could be accessed from those facilities. Along with then direct visit to the tertiary facilities needs to be discouraged and eventually eliminated without reference from a secondary or primary facility. Since the patient/caregiver does not need to carry any information or not in a condition to provide the critical medical information it would not be an issue for the doctors because the patient history would be stored online and can be accessed by identifying the patient. The patient's journey from the primary to tertiary or vice versa could be tracked and if the patient comes back after a few years then the previous medical history will be available to the doctors to consult. The data created by this system would provide very valuable insights on disease type, treatments prescribed, medicines disbursed, equipment usage etc. that can lead to efficient budgeting and procurement planning.

Why is it being proposed: This is one of the key issues came up in the KII's where the domain experts suggested that an effective referral system would be required to get more data, to understand the transition of the patients and to reduce the pressure on the tertiary facilities along with utilizing the capacities of secondary and primary facilities.

The importance is even greater for Covid-19 situation as there is no proper contact tracing and patient monitoring this solution can make a huge difference in the fight against any pandemic. At present for the fight against Covid-19 we are using temporary and hybrid solutions. Many cases are not being even properly followed up or the way the number of cases are increasing in the near future we will face a serious challenge in managing the cases.

This solution can transform the health sector to an organized sector with vast amount of data led insights for decision making. If every person has an identification mechanism and the data is stored in the servers so whenever a person visits a facility the case history is readily available for the doctors to consult and provide better treatment.

At present the data from the primary and secondary facilities are not highly reliable. At the same time the availability of the data is a challenge. Hence the decision made on partial data are not being very effective. This may lead to deterioration of the health sector as a whole impacting the whole nation.

The proposed solution could be the foundation of digitization of the health sector of the country that would lead to a plethora of innovation and collaboration with private sector.

Key Activities: This is by nature is an ambitious as well as long term initiative. It can be considered a mega health project that would be covering the total population of Bangladesh. The initiation of such an activity should begin with the policy alignment.

Analysis the existing policies as well as related and identify the changes needed for a referral system to function properly. Note that the system has to be mandatory for both public and private sector facilities.

Engage the public sector policy makers, the public health professionals and representatives from the private sector for policy recommendations. The policy would also ensure the standardization of the data storage, transfer and analysis protocols. The policies should be addressing the issues like the following

Classification definitions, standards and resource requirements of the health facilities of different tiers.

Budgetary challenges

Post project revenue budget adjustment

Enforcing mechanism for the referral system for the entire medical sector of the country.

Regularization of training to use the system – all health professionals of the facilities should be able to use the system. There should not be any separate position created to enter the data like computer operator.

Data security, data management, data quality, use of analytics, access to the data, data based decision making etc.

Implement the recommended policies that would make the following things mandatory for the entire health system

Using a referral system that would store patient data.

Mandatory connectivity at the all public facilities and all non-government facilities.

Training and use of the system.

Engage the private sector and other organizations working in health sector to engage in requirement assessment

Once the requirement assessment is done the system design needs to be completed

Development of the prototype and testing in some of the facilities

Development of the national implementation plan

Phase wise Implementation

Phase 1

Implement the system in public tertiary health facilities

Conduct the trainings

Implement in the non-government facilities of the divisional cities

Use the data for insights

Phase 2

Evaluate the system and make the changes required

Check the data quality and system readiness

Implement the systems in the secondary health facilities

Implement the systems in the non-government health facilities of all districts

Conduct trainings

Use the data for insights and decision making

- Phase 3
 - Evaluate the system and make the changes required
 - Check the data quality and system readiness
 - Implement the systems in the primary health facilities
 - This can be done phase wise (district/division/region etc.)
 - Conduct the trainings
 - Implement the systems in the non-government primary health facilities
 - Use the data for insights and decision making

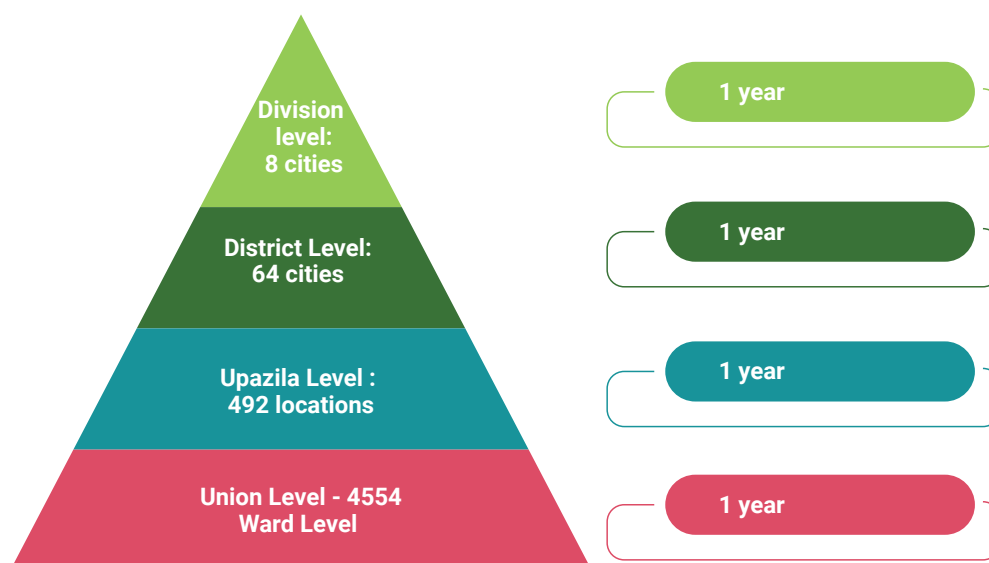
Timeline of the activities: Implementing the Action Agenda 1 will require national mega project that spans multiple years. This project can transform the health sector of Bangladesh and the quality of care. The implementations will span over few years. As the number of primary health care facilities are greater than secondary health care facilities and tertiary health care facilities are the smallest in number it would be practical to approach it from the tertiary health facilities for the following reasons.

- They are better equipped and have required manpower
- Some of them might have the connectivity
- They have the resources to continue the referral system within revenue budget

Policy Revision timeline – Total 1 year

- Review the existing policies – 4 months
- Make the recommendations and review consultation – 3 months
- Final policy recommendations and implementation of the changes - 5 months

Implementations timeline



Some part of the implementation can be done parallel once the district level facilities are connected. The timeline presented is indicative from literature study, however in the real scenario once the implementation plan is done based on the feedback from the field the timeline can be finalized. Total duration 11 years for project implementation and 1 year for policy changes.

Key stakeholders:

Broad Group	Specific Entities	Role and Implementation
Government agencies	Ministry of Finance	Ensuring the budgetary issues are acknowledged, prioritized and allocated. And later for revenue budget.
	ICT Division – BCC, a2i, DoICT	Initiate the discussions, lead the policy changes required, ensure buy in from MoHFW. Engage IT experts and support implementation as well as maintenance of the system.
	Cabinet Division	To ensure policy support and governance of the sector.
	Ministry of Planning	To align with the plans of the sector and way forward of the sector
Private agencies	Top ICT companies of the country who are capable to add value in developing such a system.	Brining in implementation and operation issues from private sector perspective and participate in development process
Development organizations	WHO, UNFPA, UNICEF, DFID, CIDA, World Bank, JICA, USAID, GIZ, KfW, Save the Children, SIDA, HPNSDP Consortium	As official development partners of MoHFW the development agencies can bring international perspectives, policy insights, policy recommendation, field implementation support and resources.

Role of ICT Division:

- ICT division can be the initiator and the driving force behind this action agenda.
- ICT Division can take the lead role in policy formulation and system standardization.
- ICT Division can engage the private sector, startups and bring in technical expertise to develop the solution
- ICT Division can and should lead the data related policies along with technical standardization
- ICT division should ensure the overall ethical usage of the data
- ICT Division should lead the policy implementation and enforcement in partnership with the Cabinet Division and other relevant agencies.
- Post implementation period ICT Division can play the role key role in monitoring and evaluation.

Resource Requirements: This is a national scale project and the technical resources would be required to design and implement the project from public sector as well as private sector. The project proposed is a government owned and controlled project to transform the health system of Bangladesh hence the resources should be coming from the government. Depending upon the planning bilateral or other financing schemes can be used to develop such a system. It is strongly recommended that the solution should be developed in country as the capacity exists in the country. In some modules or in case of technical capacities international organizations can be engaged.

Risk Assumptions and mitigation measures: Designing and development of such a system would come with some serious risks and these risks should be addressed to ensure that the project is successful. Following are the anticipated risks.

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Policy loophole	Not having strict policies on data and mandatory system usage.	The policy analysis and the implementation plan should be developed with the non-compliance scenarios. The enforcement should be ensured through the Cabinet Division.	High
Perception	There might be policy issue that might hinder the implementation of the project	There might be policy issue that might hinder the implementation of the project	Medium
Size of the project	The project is colossal and lengthy. It might lose focus.	The commitment from the top needs to be ensure to implement the project and the national level of importance should be emphasized on regular basis. The benefits of the implemented parts of the project need to be made visible. The benefits of the informed decision making should be made clear to all the stakeholders. Dedicated project implementation team comprising of public and private sector will be required.	Medium
Lack of ownership by MoHFW	If MoHFW does not own the project as their own then the project will not give the desired benefit.	MoHFW needs to be involved from the very beginning and the budget should be coming from them. ICT Division needs to play the role of the coordinator and guide to implement the project. It needs to be completely owned by MoHFW otherwise once the project is completed the regularization of the operational expenses will be a challenge and the project will be failed. From the very beginning it needs to be ensured that MoHFW is engaged and committed to implement the project.	High
Training	As the proposed system needs to be used by the existing medical professionals providing training to everyone may be challenging.	The system should be designed considering the chaotic environment of a medical facility. The system needs to be simple and easy to use for the health facility staff. The system needs to be in Bangla primarily. The training designs should be in-person, online and video based. So that the health professionals can learn the system at their own pace.	Medium
System related issues	Such a large and complex system might have many challenges and unforeseen issues.	Robust 24/7 support system should be designed with the system. This support would be critical from the success of the project. And for the project duration as the new facilities come under the system there may be issues that would require technical support. Hence involving 24/7 technical support via call center would be very important. This would also help the medical professionals to get the assurance that their everyday issues are being taken care of.	Low
Reluctance to use	Any new technology is adopted only a few percentage of the users. The rest would not want a change. It is the human nature.	The policy level interventions and government's commitment for Digital Bangladesh need to be reemphasized. Also the lack of conforming should be dealt with consequences. Once the message is clear from the top that the system needs to be adopted, these resistances will start to vanish.	Medium
Security	There might be security related issues as the system covers all the facilities.	The policy level interventions and government's commitment for Digital Bangladesh need to be reemphasized. Also the lack of conforming should be dealt with consequences. Once the message is clear from the top that the system needs to be adopted, these resistances will start to vanish.	

The technology can provide solution to some extent, but it cannot provide the complete solution as the human factor is the critical for the success of any technology in real life. Hence the buy in form MoHFW is critical for this project and that should be the starting point.

Key Challenge 2:

- Lack of data on private sector facilities resulting in many different challenges and operational issues. The picture of the health system is not complete without the data from the private sector.

Action agenda 2

- Connect all private facilities with the GoB system to get real time data on patients, ICU, HDU and other facilities.

What it means: It means that there should be a government platform that would connect all non-government tertiary and secondary facilities so that the government at any given time aware about the capacity of the facility, the total number of patients taking treatment, how many patients are admitted, how many patients are in ICU or HDU, how many operations took place and every other information in real-time. This would help government to understand the true extend of the capacity of the non-government facilities at the same time for an interconnected health system this would provide very valuable insights. This system will also be interfacing with the Action Agenda 1 so that the patients can be referred from non-government hospitals to government hospitals and vice versa. This implies that by default the system will be applicable for all government tertiary and secondary facilities.

Why is it being proposed: The demand of the health services are far too challenging for the public sector to address alone. As a result a dominant private sector in health has been established due to the high demand of private services. Almost 70% of the tertiary treatments are being done by the private sector and 46% of all health facilities are privately run. This leads to a very critical role of the private sector in the health system of Bangladesh at the same time the importance of the data from the private sector becomes obvious.

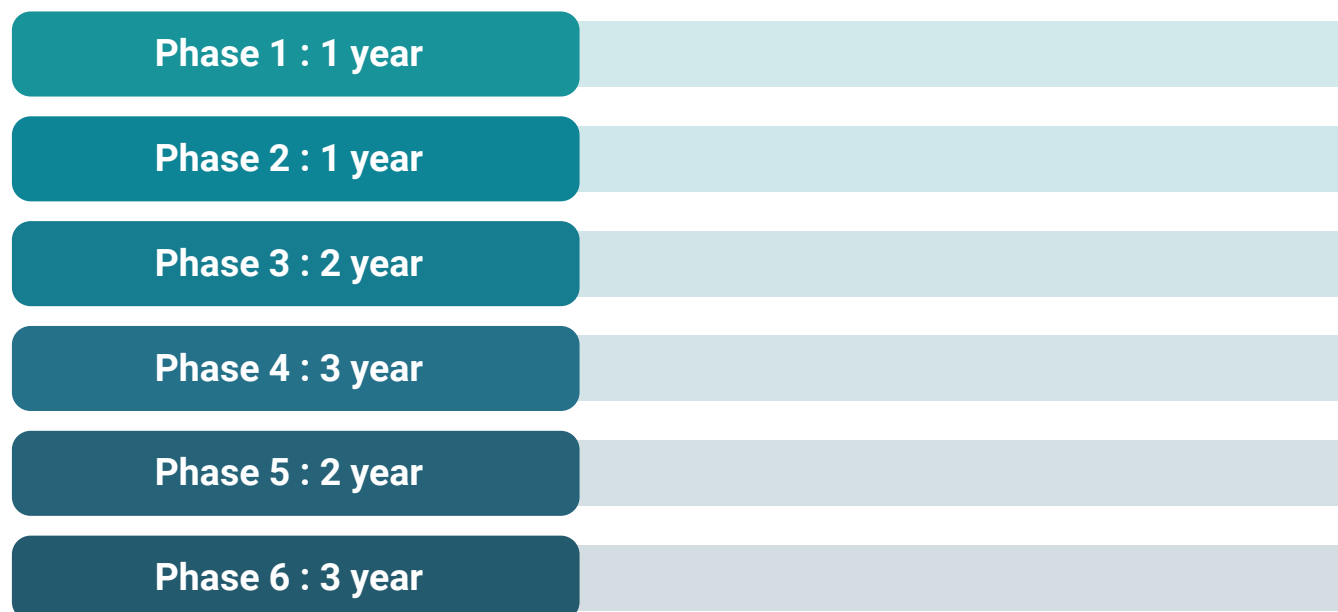
The challenge comes when the critical information about the private sector is not known by the government and private sector is not being regulated effectively. In the present pandemic situation it has been observed that private sector blatantly refusing to follow government directives. It has been seen that private sector is denying treatment of the Covid-19 patients in spite of government directives. In another instance where the Supreme Court asked government to share information about the private sector facilities. Asking for absurd prices for care has always been an issue with the private sector. All these indicates that the government need to know the information from the private sector clearly, in real-time and more accurately. In a future pandemic scenario if the government wants to take control of all health facilities in a district or a certain area the dashboard would provide the government the right and real-time information on the private sector facilities of that location.

This proposition also links with the Action Agenda 1 to ensure that patients could be referred from private to public facilities and vice versa. This solution will ensure proper monitoring of the private sector facilities, their capabilities and would establish an interconnected system with public sector.

Key Activities: This is a comparatively shorter and easier initiative compare to Action Agenda 1. This can be done in two phases. At the beginning the policy analysis and policy formulation would be required. And then the system can be implemented. Like the Action Agenda 1 the policy alignment would be critical for this project to succeed.

- Analysis the existing relevant policies
- Identify the changes needed for an interconnected system for the private sector to function properly. Note that the system has to be mandatory for private sector facilities. And later for public sector.
- Engage the public sector policy makers, the public health professionals and representatives from the private sector for policy recommendations.
- The policies should be aligned with the policy changes/formulations required for Action Agenda 1 and there should not be any conflicting policies.
- The policies should ensure the standardization of the data storage, transfer, ownership, privacy, access, compliance and analysis protocols. The policies should be addressing the issues like the following
 - Timeframe for non-government health facilities to connect.
 - Training, system maintenance and upgradation.
 - Definitions, standards and regulations
 - Handling non-compliance related consequences
 - Data breach related measures and addressing protocols
- Once the policies issues are analyzed and addressed the actual development work should begin.
- Private sector of Bangladesh is quite capable of delivering a solution like this, hence the private sector organizations should be engaged following the government procedures.
- Private sector will work closely with the non-government facilities and the government to design a system.
- Once a system is designed it needs to be pilot tested for at least 6 months with at least 10 different non-government secondary and tertiary health facilities in different parts of the country.
- Once the pilot is completed based on the feedback and results the required modifications should be done.
- After the modifications when the system is ready to launch the MoHFW need to issue the order that would make it mandatory for non-government secondary/tertiary facilities to start connecting with the system and within a given timeframe the connections should be completed.
- The activities can be clubbed in 5 different phases
 - Phase 1 : Policy Analysis and policy issues resolved
 - Phase 2: Pilot project implementation
 - Phase 3: All non-government tertiary facilities are connected
 - Phase 4: All non-government secondary facilities are connected
 - Phase 5: All government tertiary facilities are connected
 - Phase 6: All government secondary facilities are connected

Timeline of the activities: Following is the timeline of Action Agenda 2



What important note is here is that, these phases are not mutually exclusive except Phase 1 and Phase 2. Once these two phases are completed the project can start multiple phases in parallel. Hence with a realistic projection the total. Altogether to complete these phases it is quite possible to complete the total implementation within 5 years.

Key stakeholders:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division – BCC, a2i, DoICT, iDEA Project	Start the discussions, lead the policy issue identification and policy formulation, engage MoHFW, Cabinet Division, MoF and MoP for the project.
	Ministry of Health and Family Welfare - DGHS, DGFP, Health Economic Unit (HEU)	Lead agency for implementation and governance.
	Cabinet Division	To ensure policy support and governance of the sector.
	Ministry of Planning	To align with the plans of the sector and way forward of the sector
	Ministry of Finance	To ensure the action agenda item has the required budget and for future operations the allocation for revenue budget.
Private agencies	Top ICT companies of the country who are capable to add value in developing such a system. Startups that are working with data security, analytics, big data, AI.	Bringing in implementation and operation issues from private sector perspective and participate in development process. Use the emerging technologies for the analytics, insight generation and decision support system.
	Secondary and tertiary health facilities.	They need to be involved for the policy discussions and later for the system implementation, data security and compliance.
Development organizations	WHO, UNFPA, UNICEF, DFID, CIDA, World Bank, JICA, USAID, GIZ, KfW, Save the Children, SIDA, HPNSDP Consortium.	As official development partners of MoHFW the development agencies can bring international perspectives, policy insights, policy recommendation, field implementation support and resources.
	Local NGO's who have secondary or tertiary health facilities	They need to be involved for the policy discussions and later for the system implementation, data security and compliance.

Role of ICT Division:

- ICT division can be the initiator and the driving force behind this action agenda.
- ICT Division can take the lead role in policy formulation and system standardization.
- ICT Division can play the role of the coordinator by bringing in all the government agencies together.
- ICT Division can engage the private sector and bring in technical expertise to develop the solution
- ICT Division can and should lead the data related policies along with technical standardization
- ICT division should ensure the overall ethical usage of the data
- ICT Division should lead the legalization policy enforcement in partnership with the Cabinet Division and other relevant agencies.

Resource Requirements: This is a national scale project and the technical resources would be required to design and implement the project from public sector as well as private sector. The project proposed is a government owned and controlled project to transform the health system of Bangladesh hence the resources should be coming from the government. Depending upon the planning bilateral or other financing schemes can be used to develop such a system. It is strongly recommended that the solution should be developed in country as the capacity exists in the country. In some modules or in case of technical capacities international organizations can be engaged.

The role of ICT for providing training through online, offline and in traditional mechanism would be very critical for the success of the system. Hence there will be significant resource requirements for the training and policy measure could be taken to ensure that the private sector invests for their trainings.

Risk Assumptions and mitigation measures: The risks and mitigation measures mentioned in the Action Agenda 1 will also be applicable for this action agenda. However the specific risks and mitigation measures only for Action Agenda 2 are presented in the below table

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Resistance from private sector	There might be strong resistance from the private sector and considering their influence it may be possible the project is slowed down or even cancelled.	The buy in from the top executive office of the country is needed for this particular challenge. And the policies needs to be developed as Acts so that non-compliance is an offence. Once that could be done then the private sector would be compelled to comply. The private sector should get the strong message that this is non-negotiable and this must be complied.	High
Reluctance from the public sector	There might be reluctance from the public sector health facilities to comply because of the natural resistance to change and increased transparency.	Similar to the private sector facilities policy measures and commitment from the government need to be communicated to the relevant stakeholders. At the same time performance of a facility should be measured based on the data from the facility through the system. There should be consequences for the non-performing facilities. Once it is clear from the top that the system has to be adopted, these resistances will start to vanish.	Medium
Maintenance	The maintenance of the system at the facility level and at the centralized level would be challenging.	The system needs to be designed in a manner that it requires low maintenance and web based hence any device with internet connection with the facility should be able to access the system. For maintenance of the system national data centers can be used.	Medium

Good governance and good management would be the key for the success of Action Agenda 2.

Key Challenge 3:

- Manual process of managing inventory is inefficient and easy to manipulate. It also does not provide the real picture on the demand and supply. The lengthy centralized procurement means delay for the hospitals to get the required medicines or equipment. The current system did not provide macro level insights by collecting real time data directly from the facilities.

Action agenda 3

Establish inventory management system for all facilities system for all facilities and produce decentralized procurement

What it means: It means that there should be inventory management system to all government health facilities starting from tertiary to primary health facilities. This system would be robust and would generate real-time data on medicines and device inventory, usage and request for medicines or equipment could be submitted through the system. This system would be used to monitor inventory stock of the facilities and crosschecking distributions of medicines with the patients coming for treatment. This action agenda will be integrated with Action Agenda 1 to understand medicine and equipment requirements of the facilities comparing with the patient data. This second part of the action agenda is proposing to decentralize the procurement for tertiary and secondary facilities. This is to ensure the speedy procurement of the required medicines, equipment and devices. Also decentralization would help to assess the demand against each facility and procurement planning can be done based on the requirement of each facility. The justification of the procurement can be assessed from the patient data. However for very high value items that cost above a certain range or very specialized devices, the procurement should be done centrally.

Why is it being proposed: The present system of centralized procurement is not being effective and has raised a lot of concerns about the lack of transparency as well as accountability. Two other very important things came up from the KII's and the workshop, which are the lack of demand assessment and the lack of feedback mechanism from the facilities. These resulting in procuring devices that were not requested, delaying in procuring equipment and devices that were requested urgently. And sadly the case of procuring of medicines that were neither prescribed nor requested rather wasted after the expiration date, is quite common. These all leading to serious wastage of public resources. And this should come to an end. For a country like Bangladesh utilizing very limited resources efficiently is critical for the country's future.

As the pandemic situation is becoming grimmer the importance of such a system is being increasingly evident. At present there are complaints and reports in the different media channels or social media that many facilities did not receive enough PPE's or other necessary medicines or equipment as per demand. Since there is no such robust real-time system that can track the distribution and usage of these in many cases the government is not getting the right data hence the decision are not being effective.

An inventory management system connecting all the government facilities from primary to tertiary would make the government understand the demand from the facilities, the supply side issues, the real time stock and procurement planning. At the same time with decentralized procurement the hospitals would be able to quickly collect their required medicines and devices. The system should also be connected with the patient referral system (Action Agenda 1) that would give a concrete view of the patient flow and against that medicines disbursed.

This proposition also links with the Action Agenda 1 to ensure that patients could be referred from private to public facilities and vice versa. This solution will ensure proper monitoring of the private sector facilities, their capabilities and would establish an interconnected system with public sector.

Key Activities: Like the previous action agenda this one should also start with the policy analysis. Following are the key activities for Action Agenda 3.

Analysis the existing relevant policies for health related procurements.

- Identify the changes needed to ensure that the tertiary and secondary facilities can procure independently. The policies that would be required for ensuring establishing the online based inventory management system needs to be formulated.
- Engage the public sector policy makers, the public health professionals and domain experts from the private sector for policy recommendations.

The policies should be aligned with the policy changes/formulations required for Action Agenda 1 because for ensuring that agenda procurement and maintenance of ICT related equipment's would be crucial. The policies related to data should be covered by Action Agenda 1's activities.

Once the policies issues are analyzed and addressed the system development work should begin.

- ICT sector of Bangladesh is quite capable of delivering a solution like inventory management or ERP (Enterprise Resource Planning), hence the private sector organizations should be engaged following the government procedures.

Private sector will work closely with the government to design a system.

- Once a system is designed it needs to be pilot tested for at least 1 year in 10 different government secondary and tertiary health facilities in different parts of the country.

Once the pilot is completed based on the feedback and results the required modifications should be done.

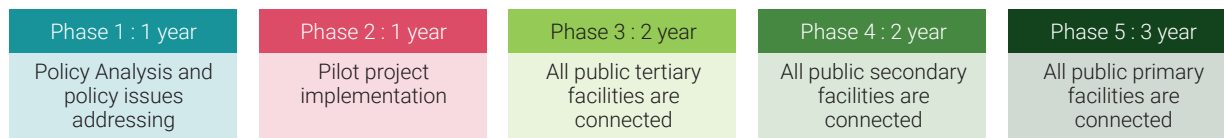
- After the modifications when the system is ready to launch the MoHFW need to issue the order that would make it mandatory for government secondary/tertiary facilities to start adopting the system within certain timeframe.

The training for the system to be adopted should start in parallel to the implementation. The training mechanism should be using the ICT technologies to leverage the access and train large number of health professionals efficiently.

The activities can be clubbed in 5 different phases

- Phase 1 : Policy analysis, policy issue identification and policy formulation
 - Phase 2: Pilot project implementation
 - Phase 3: All public tertiary facilities are connected
 - Phase 4: All public secondary facilities are connected
 - Phase 5: All public primary facilities are connected

Timeline of the activities: Following is the timeline of Action Agenda 3



What important note is here is that, these phases are not mutually exclusive except Phase 1 and Phase 2. Once these two phases are completed the project can start multiple phases in parallel. Hence with a realistic projection the total. Altogether to complete these phases it is quite possible to complete the total implementation within 5 years.

Key stakeholders:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division – BCC, a2i, DoICT,	Start the discussions, lead the policy issue identification and policy formulation, engage MoHFW, Cabinet Division, MoF and MoP for the project.
	Ministry of Health and Family Welfare – DGHS, DGFP, Health Economic Unit (HEU), Transport & Equipment Maintenance Organization (TEMO), Health Engineering Department(HED)	Lead agency for implementation and governance.
	Cabinet Division	To ensure policy support and governance of the sector.
	Ministry of Planning - Implementation Monitoring and Evaluation Division (IMED, Central Procurement Technical Unit (CPTU)	To align with the plans of the sector and way forward of the sector. To support in the relevant policy changes and policy implementation.
	Ministry of Finance	To ensure the action agenda item has the required budget and for future operations the allocation for revenue budget.
Private agencies	Top ICT companies of the country who are capable to add value in developing such a system.	Brining in implementation and operation issues from private sector perspective and participate in development process.
Development organizations	WHO, UNFPA, UNICEF, DFID, CIDA, World Bank, JICA, USAID, GIZ, KfW, Save the Children, SIDA, HPNSDP Consortium.	As official development partners of MoHFW the development agencies can bring international perspectives, policy insights, policy recommendation, field implementation support and resources.

Role of ICT Division:

- ICT division can be the initiator and the driving force behind the Action Agenda 3.
- ICT Division can lead the buy in for the Action Agenda 3 from Cabinet Division.
- ICT Division can take the lead role in policy formulation and system standardization.
- ICT Division can play the role of the coordinator by bringing in all the government agencies together.
- ICT Division should lead the legalization policy enforcement in partnership with the Cabinet Division and other relevant agencies.
- ICT Division can support the implementation and post implementation enhancement in partnership with MoHFW.

Resource Requirements: This is the only action agenda item that focuses enhancement of the supply chain, inventory and procurement management of the public sector. There is not much relevance of the private sector in this action agenda implementation. Rather private sector can participate in developing the system and maintenance through proper processes. The inventory management would require investment in the system itself, equipment in the facilities, connectivity and training. The MoHFW can invest from their budget to develop the system. Bangladesh has the required technical capacity to design and implement the system, hence it is highly recommended that the local IT companies are an engaged for developing the solution. Once the system is in place the maintenance, upgradation and costs for using the system at the facility level needs to be accounted for in the revenue budget of MoHFW.

Risk Assumptions and mitigation measures: The risks and mitigation measures mentioned in the Action Agenda 1 will also be applicable for this action agenda. However the specific risks and mitigation measures only for Action Agenda 2 are narrated below

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Resistance from MoHFW	It is highly plausible that MoFHW would not want to give away the control at the facility level. This might seem as reducing their direct power and influences.	The MoHFW needs to be assured that what would be happen at the facility level would be monitored and can be intervened in case of any concern. The policy makers and the top leadership of the country must communicate that this is required to make sure the health system is agile, responsive and more effective. The buy in form the top level would make MoHFW understand and accept that the need of Action Agenda 3 and the greater good.	High
Resistance from CPTU or IMED	There might be resistance CPTU or IMED on such drastic changes.	There might be resistance CPTU or IMED on such drastic changes.	Medium
Decentralized corruption	There might be cases of corruption at the facility level.	The inventory management system would provide data and connected with the referral system the whole scenario at the facility level would be clearer. Hence in case of corruption it could be easily identifiable centrally and mitigation measures could be taken. Establishing the system in parallel to Action Agenda 1 and 2 this would make the operation transparent and corruption difficult. With the use of data analytics and intelligent monitoring system flagging suspicious patterns could be identified and measures could be taken quickly.	High

Like previous action agenda items good governance and good management would be the key for the success of Action Agenda 3.

Key Challenge 4:

- There is no grievance mechanism within the sector. This resulted in many malpractices from the private sector starting from medical crimes to exorbitant pricing. Without a grievance mechanism many concerns with public sector remains unsolved.

Action agenda 4

Develop a grievance mechanism policy and addressing system using ICT where sufferers can submit their complaints and receive solutions.

What it means: It means that there should be a mechanism of grievance addressing within the health system using the currently available technologies like 24/7 call centers, app and web based complaint registration system. The system would also ensure that the complaints are acknowledged, addressed and resolved quickly within the purview of the health system. This needs to be the primary measure and if any party is not satisfied with the resolution she/he can pursue further using legal system. The system proposed is an arbitration mechanism based on technology and involving the health system experts. The data collected from the system would be critical to identify challenges of the health system of Bangladesh and can provide valuable insights on required policy changed.

Why is it being proposed: In the health system of Bangladesh there is no grievance addressing mechanism. Whatever solution is there involves court and lengthy legal procedures. The lack of a grievance mechanism system has actually fueled many malpractices and in many times a reckless private sector who knows that there would not be any repercussion legally or from the government. For example according to the World Health Organization the current C-section rate in Bangladesh is 31%. The number is a lot higher for urban population. According to the Save the Children study between 2016 and 2018 the number of operations increased by 51% and most of it is done by the private sector. This is just one issue, there are many such issue starting from the open heart surgery to other critical medical procedures to keeping patients unnecessarily in ICU for extra billing. The unfortunate fact is these practices are widespread and increasing alarmingly as there is absolutely no consequences. In public sector health facilities there are also many major concerns and the system should be addressing the grievances with the country's health system.

The challenge is the issues are very technical in nature and it is not possible for a court to understand to situation and provide a remedy quickly. On top of the judiciary system of Bangladesh is neither very fast nor very accessible to the masses. So the wealthy private sector armed with their army of lawyers can drag cases for years. Hence the only solution is to establish a grievance addressing mechanism within the health system of the country. If the system cannot provide the adequate solution then the victim can take legal action. But in the majority of the cases it is expected that such a system would be able to provide a solution. The three major features required for such a system to be successful are ease of access using available technologies, fast resolution and using the data for policy decisions to prevent as well as discourage certain behaviors.

With the increasing pandemic situation it is being observed that people are being denied treatment in private sector facilities or charging irrational amounts for simple care. Private sector has invested money in health care to make profit but the regulations are needed to ensure that the profit motive does not surpass national interests. Multiple deaths were reported in newspapers as well as social media as private and public sector facilities refused to treat patients. With the pandemic situation becoming more dismal such scenarios will be more frequent. Event after the direct directive from the government the private sector has been oblivious as there was no direct consequence of their action.

The proposed system should be directly connected to the Action Agenda 1 and Action Agenda 2. A system that would address the grievance of the people would actually be welcome by the people and the confidence on the health system of Bangladesh would be restored to a large extent.

Key Activities: For this action agenda the policy is the most important part and implementation would be comparatively easier because if the policy issues are addressed then establishing the system would not take much time. But more time and emphasize needs to be given in the resolution mechanism.

Following are the key activities for Action Agenda 4.

- Analysis the existing relevant policies for health related grievance mechanism.
- Identify the changes needed to ensure that the complaints can be addressed within the health system.
- Engage the public sector policy makers, the public health professionals, legal experts and private sector experts from the private sector for policy recommendations.
- Review international best practices, regional practices and develop contextual solution for Bangladesh.
- Formulate the policies in such a manner that it is binding and with severe consequences.
- The policies should be aligned with the policy changes/formulations required for Action Agenda 1, 2 and 3 because for ensuring that the right complaints are being registered and the validity could be verified through the system.
- Once the policies are finalized the system can be designed and implemented fairly quickly. As there are already systems like 333 and 999, this system can be connected with these systems and data can be collected in the same manner. As there are similar systems with different functionalities this system would be much easier to implement. However the governing of the system and the speed of the resolution of the issues would be the key to success.
- The activities can be clubbed in 5 different phases
 - Phase 1 : Policy analysis, policy issue identification and policy formulation
 - Phase 2: The grievance management framework establishment
 - Phase 3: Pilot project implementation
 - Phase 4: National level implementation

Timeline of the activities: Following is the timeline of Action Agenda 4



This is probably the easiest Action Agenda in terms of technology readiness. However it will be quite difficult in terms of policy and implementation to ensure that the purpose is served. Another very important thing is that this Action Agenda should be interrelated with the all three action agenda described before. With a dedicated team working to implement Action Agenda 4 it is possible to implement the action agenda in 3 years.

Key stakeholders:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division – BCC, a2i, DoICT,	Start the discussions, lead the policy issue identification and policy formulation, engage MoHFW, Cabinet Division, MoF and MoP for the project.
	Ministry of Health and Family Welfare – DGHS, DGFP, Health Economic Unit (HEU),	Lead agency for implementation and governance.
	Cabinet Division	To ensure policy support and governance of the sector.
	Ministry for Law, Justice and Parliamentary Affairs - Law and Justice Division	Support in policy formulation and developing arbitration mechanism.
	Ministry of Commerce- Directorate of National Consumer Rights Protection	For private health facilities the monitoring of the system and ensuring the compliance.
	Ministry of Finance	To ensure the action agenda item has the required budget and for future operations the allocation for revenue budget.

Broad Group	Specific Entities	Role and Implementation
Private agencies	Consumer Association of Bangladesh (CAAB)	Provide consumer's perspective on grievance, present policy issues, expected solutions and a partner in implementation of the system. They can also act as the whistleblower in case of the system is being skewed against the target beneficiaries.
Development organizations	WHO, UNFPA, UNICEF, DFID, CIDA, World Bank, JICA, USAID, GIZ, KfW, Save the Children, SIDA, HPNSDP Consortium.	As official development partners of MoHFW the development agencies can bring international perspectives, policy insights, policy recommendation, field implementation support and resources.

Role of ICT Division:

- ICT Division can bring in the experience and expertise of designing and implementing the national helpline 999. The expertise and the experience would be very helpful to design a system for health sector.
- ICT division can be the initiator and the driving force behind the Action Agenda 4.
- ICT Division can lead the coalition of the public agencies and CAAB to ensure that the system is implemented and managed properly.

Resource Requirements: This is a national level project to protect the rights of the citizens and to restore the confidence hence this project has to be owned by the government, to be more specific MoHFW and guided by ICT division along with Law and Justice Division. The technical (ICT) resources are already available in the country and the resolution framework needs to be developed. This would require more domain expertise and financially this project would be easy to bear by any ministry or division.

Risk Assumptions and mitigation measures: The risks and mitigation measures mentioned in the Action Agenda 1 will also be applicable for this action agenda. However the specific risks and mitigation measures only for Action Agenda 4 are narrated below

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Conflict of interest	It is highly possible that the persons involved in arbitration would have certain conflicts of interest regarding issues raised against certain public/private sector organization.	The MoHFW needs to ensure that the framework of dispute resolution is designed in a manner that it eliminates the possibility of such conflict of interest. In case of such an issue if the person involved does not disclose conflict of interest, then the person should be removed from the panel of arbitrators. The panel should be large and there should be balanced mix of public sector repetitive, NGO representation and private sector representation. However for each case persons needs to be assigned randomly.	High
Professional collusion	It has been observed in Bangladesh that professionals of certain professions form a comradery (through association or interest groups) which may lead to syndication and eventually working against the national interest.	This is a probable scenario specially for medical professionals and it may hamper the arbitration. In this case the MoHFW and the government need to ensure that the framework of dispute resolution has enough scope of revision and address this challenge. Any attempt of using professional syndicate to hamper national interest needs to be handled by the government.	High
Lack of speed in deliver solution	It might happen that because of the overwhelming number of complaints the system might become slow to respond and provide solution.	The framework needs to ensure that the cases are handled on priority basis. Once the priority framework should be clarified to the complainant and possible resolution process needs to be made visible to each complainant.	Medium
Corruption	For high stake issues with private sector there might be corruption challenges.	It is imperative that the policy could be covering this. Also for assigning the individuals for complaint resolution background check and previous history need to be checked for possibility of corruption. There should be check and balance mechanism to ensure that the persons involved in arbitration are evaluated against their neutrality.	High

The success of this agenda item is entirely dependent on governance and management. Technology can provide the platform, insights and means to solve issues, however it is not possible for technology to solve the problem unless the willingness is there through just governance.

Key Challenge 5:

- The people in rural areas are far from health facilities and many times the nearby health facilities are not able to help. The rural people or marginalized people turn to pharmacies for solution. And thus many times they get exploited by drug sellers. Also in case of disasters like flood or pandemic when travelling is not possible telemedicine can play a crucial role to save valuable lives. There are very few channels for psychological support and to provide more people access to mental wellbeing services technology can play a role.

Action agenda 5

Introduction of telemedicine in a coordinated & standardized manner involving community clinics and pharmacies with policy revision & establishing the governing body to ensure the service quality. Mental health should be at the forefront of the initiative.

What it means: It means that government should develop the laws, regulations and guidelines for providing telemedicine services through national telemedicine platform. Along with these development start providing telemedicine service as one of the mainstream services from government service delivery channels and bring non-government stakeholders to be involved in the telemedicine service delivery under one single platform. Two critical factors also needs to be addressed. Firstly for the people who do not have the technology to access should be considered in the designing of the system. There should be public access points for telemedicine services like primary clinics, model pharmacies, non-government facilities etc. Secondly, the mental wellbeing has be considered as one of the high priority issues and just like other health issues government needs to use telemedicine to its full potential to ensure the psychological wellbeing of the people.

Why is it being proposed: In Bangladesh there has always been an acute shortage of doctors. And with the increasing population the shortage continued to increase. According to the WHO the current doctor-patient ratio in Bangladesh is only 5.26 to 10,000, that is the second last position among South Asian countries. As a results many traditional practices, unscientific solutions, nonqualified medicine sellers and quacks get the opportunity to exploit the people. As the access to health services are not easy for the rural population they resort to the alternative means of treatments. As per BTRC's data for March 2020, the total number of internet subscribers are 103.253 million. And out of these 95.168 million are mobile internet subscribers. The total number of mobile phone subscribers were 166.114 million in February 2020. The mobile phone has penetrated every nook and corner of the society. This creates a unique opportunity to take the health services to the people at their doorsteps using telemedicine for physical as well as psychological wellbeing. With the spread of technology and increasing access this is the right time to take a renewed look at the possibilities of telemedicine. The telemedicine had never the opportunity to flourish due to many complex legal as well as policy issue.

The pandemic has exposed the lack of access to the health services by the rural people and people in remote areas along with the urban population. The demand of telemedicine has never been higher. Telemedicine can play a crucial role in ensuring that these marginalized population comes under a wider net of the health system. The rise of psychological issues during the pandemic has been exponential and many age group or demographic group who never faced such issues have become seriously vulnerable. Specially the children are being severely affected during the lockdown situation. The impact on their mental health is simply vicious and many may develop long term psychological issues. To support them gamification, app and call center based counselling services are being very helpful. Tele-counselling has already become quite popular among the people and the demand is increasing. There is no denying the fact that in spite of adequate demand there were not many services were available in a pre-pandemic situation. However at present the demand is increasing and people from different age groups and parts of the society are availing the services.

Similarly the formalized introduction of telemedicine would help the health sector to increase its outreach as well as gaining some strategic ground by ensuring access. There are policy issues as well as developing standards and regulations are needed. A common service delivery platform or connectivity with government's platform would enable the government go get very valuable data and drive insights from it. This would also help establish different public access points and help increasing access of the rural people to quality services at a low cost. The Union Digital Centers, Community Clinics, Model Pharmacies should be playing key roles in ensuring the access of the people to telemedicine services. Those who have smartphones or computer with internet connection should be able to access the services on their own. In an ideal scenario the telemedicine service could serve as the pre-primary screening mechanism.

For psychological issues there are many social challenges related to perception, stigma and acceptance are prevailing in the rural as well as urban parts of the country. A lot of focus would be required to promote mental wellbeing as a mainstream health issue to initiate the perception change along with behavior change of the people. For the psychological wellbeing the integration of the services to a single platform to ensure that data is being collected as well as the services are standardized. The regulation of the service delivery mechanisms are of critical importance to make this successful. In a 'post pandemic normal' the mental wellbeing would be of utmost significance to ensure long term complete wellbeing.

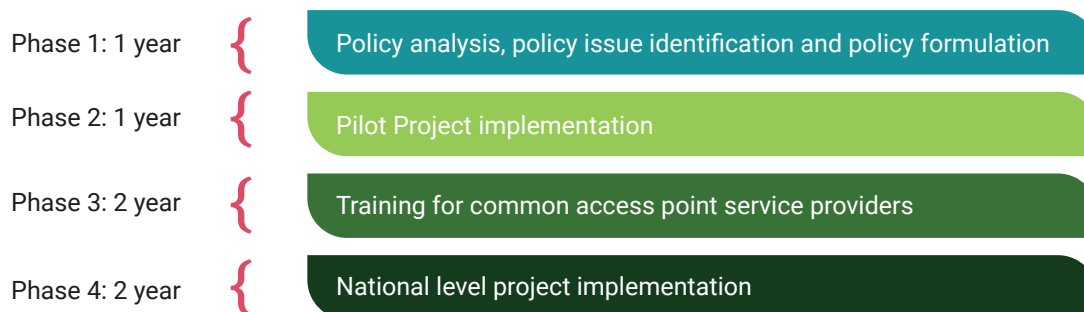
Key Activities: Just like the previous action agenda for this action agenda the policy is the most important part and implementation would be easier because if the policy issues are addressed then establishing the system would not take much time or effort. But more time and emphasize needs to be given to develop the policy framework.

Following are the key activities for Action Agenda 5.

- Analysis the existing relevant policies for telemedicine and mental wellbeing.
- Identify the changes needed to ensure that a public sector acknowledges telemedicine as a formal channel for delivering health services with a strong focus on mental health.
- Service integration and establishment of national telemedicine platform would be key policy focus.
- The policy would also ensure that there are provisions for common access points like The Union Digital Centers, Community Clinics, Model Pharmacies etc. can be utilize access points for the marginalized population.

- Engage the public sector policy makers, the public health professionals, legal experts, technology experts, psychologists and private sector experts for policy recommendations.
- The data related policies should be aligned with previous action agenda items and data policies need to be formulated.
- Formulate the policies in such a manner that it is flexible, inclusive and acknowledge the realities of the twenty first century.
- The policies should be aligned with the policy changes/formulations required for Action Agenda 1 to ensure data consistency as well as accuracy.
- Once the policies are finalized the total system can be designed with two components, one is online system another one is voice based system.
- The private sector health actors would start to establish the requirements at their end to connect with the national telemedicine platform. Similarly the public sector organizations need to prepare themselves for service delivery using national telemedicine platform.
- Training for the common access point would be very crucial to ensure the access of telemedicine services to the marginalized population.
- Once the pilot project is completed with public as well as private sector stakeholders the system should go live and MoHFW and ICT Division should be doing extensive promotions of the system.
- The activities can be clubbed in 5 different phases
 - Phase 1 : Policy analysis, policy issue identification and policy formulation
 - Phase 2: Pilot Project implementation
 - Phase 3: Training for common access point service providers
 - Phase 4: National level project implementation

Timeline of the activities: Following is the timeline of Action Agenda 4



Note that, Phase 3 and Phase 4 can run parallelly to each other. That would make the total implementation time frame of 4 years.

Key stakeholders:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division – BCC, a2i, DoICT, iDEA Project	Start the discussions, lead the policy issue identification and policy formulation, engage MoHFW, Cabinet Division, Ministry of Law and Justice, MoF and MoP for the project. Engaging private sector/startups for innovation.
	Ministry of Health and Family Welfare – DGHS, DGFP, Health Economic Unit (HEU), Bangladesh Pharmacy Council (BPC), National Institute of Population Research and Training (NIPORT), Directorate General of Drug Administration (DGDA), National Institute of Mental Health and Hospital (NIMHH)	Lead agency for implementation and governance. Introduce policies for mental wellbeing through telemedicine platforms. Providing details of the support required to incorporate telemedicine as one of the service delivery channels.
	Cabinet Division	To ensure policy support and governance of the sector.
	Ministry for Law, Justice and Parliamentary Affairs - Law and Justice Division	Support in addressing legal challenges for telemedicine services.
	Bangladesh Telecom Regulatory Commission (BTRC)	Support in service integration and connectivity cost related issues.
	Ministry of Finance	To ensure the action agenda item has the required budget and for future operations the allocation for revenue budget.
Private agencies	Companies that are offering some form of telemedicine and interested to expand the services.	Provide private sector's perspective and the challenges faced, entry barriers and growth barriers faced by the private sector. Recommend on how the challenges can be addressed through policies.
Development organizations	WHO, UNFPA, UNICEF, DFID, CIDA, World Bank, JICA, USAID, GIZ, KfW, Save the Children, SIDA, HPNSDP Consortium.	As official development partners of MoHFW the development agencies can bring international perspectives, policy insights, policy recommendation, field implementation support and resources.
	Local/Intl. NGO's that are working with telemedicine and mental wellbeing.	Provide the perspective of the users, access related issues, global good practices and contextualization for Bangladesh.

Resource Requirements: This is a national level project to introduce the single platform for telemedicine service delivery hence this should be developed by the MoHFW with the technical support from ICT Division and specialized ICT companies. The action agenda would create national platform for telemedicine services, connect facilities and provide training on the platform usage to the public sector officials. The private sector should invest to be able to match the required standards for service delivery through national telemedicine platform and train their staff for capacity development in using the platform. For the common access points the MoHFW should partner with ICT Division to provide the training. The trainings can be done on cost sharing basis or subsidized. The budget of managing the system should be coming from the revenue budget of MoHFW. ICT Division can support by providing data center and connectivity supports to MoHFW.

Risk Assumptions and mitigation measures: The risks and mitigation measures mentioned in the Action Agenda 1 will also be applicable for this action agenda, specially regarding the data. However the specific risks and mitigation measures only for Action Agenda 5 are narrated below

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Lack of interest from MoHFW	There are possibilities that MoHFW would not be interested to consider national telemedicine platform as their own rather a technology burden.	The MoHFW needs understand the importance of telemedicine and the window of possibilities that telemedicine presents. Telemedicine would reduce the pressure on tertiary facilities. The philosophy of telemedicine and the role it can play for mental wellbeing has to be presented to MoHFW from the national level policy makers, may be involving Cabinet Division to ensure that MoHFW understands the possibility and importance of telemedicine.	High
Private sector monitoring	As private sector would be leading the telemedicine service delivery there are possibilities that the prevailing malpractices in the conventional healthcare through private sector may be introduced in the telemedicine.	A strong monitoring and governance mechanism has to be established. For a risk like this good governance and good management are the key factors to tackle the challenge. That can only happen when MoHFW has owned the national telemedicine platform and there is transparency in the operation.	Medium

Appendix 1

List of strategic documents consulted for this report

1. 7th Five Year Plan, General Economic Division (GED), Planning Commission
2. Strategic Priorities of Digital Bangladesh, A2I
3. e-Government Master Plan for Digital Bangladesh, BCC, ICT Division
4. Health Care Financing Strategy 2012-2032, Health Economics Unit, MoHFW
5. Citizen Charter 2017, DGDA

Post COVID-19 ICT Roadmap for Bangladesh

Education

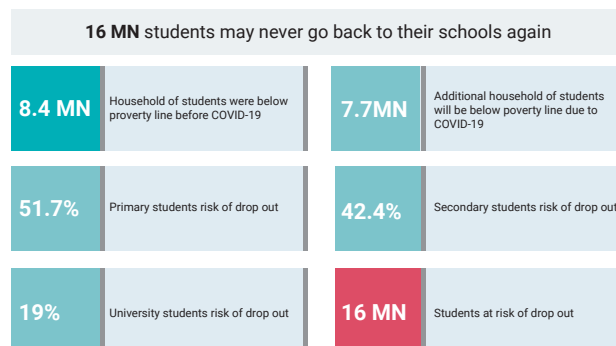
Post COVID-19 ICT Roadmap for Bangladesh: The Education Sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Education is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Education Sector

34 million students in Bangladesh face the harsh reality where they may never get back to their classrooms in the way they have been used to. With poverty levels expected to rise to 40.9% as a result of the post-pandemic economic fallout,⁵ 16 million of these students are at risk of never returning to their classrooms.⁶ 17 million primary school students, 13 million secondary & higher secondary students, 1.6 million SSC examinees, one million HSC candidates, 850 thousand university students, and 25 thousand students pursuing higher studies face a multitude of obstacles in the coming days ranging from session jams to even dropping out. Educational institutions in Bangladesh not only serve as places of learning, but also act as safe havens providing social protection and health, nutrition, and psychological support to young minds.⁷

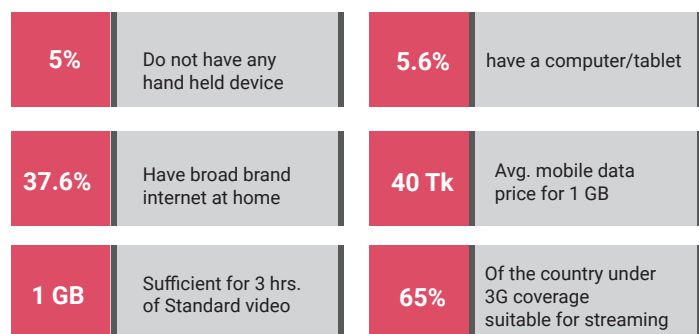


Impact of COVID-19

The widespread socioeconomic effect of COVID-19 did not spare even educational institutions, which faced shutdowns like the rest of the engines of the economy - offices, marketplaces, factories, and all forms of businesses. This has put a sizeable number of students, especially those in the public education system, at risk of dropping out, partaking activities pertaining to child labour, or even facing underage marriage, especially in the case of girls. Young students, who suddenly find themselves idle from lack of academic learning and cognitive engagements, are more susceptible to take part in anti-social activities like stealing, drug peddling, and drug abuse. University and vocational students also face session backlogs which delays their graduation, entry into the workforce, and eventual income generation.

Many private schools have not been able to keep operational and this has put teachers, who are not on the government payroll and rely on the salaries from school or after school coaching classes, in dire financial crises. As this pandemic lockdown continues so do the woes of the teachers with little to no alternatives for sustenance.

In Bangladesh online Classes are easier said than done for students



Source: GSM Arena, MICS (2019)

and are now disconnected from the formal education system. Many urban and semi-urban institutions with the financial and infrastructural ability have transferred to some form of online classes. The majority of nationwide students are, however, unable to avail this.

Constraints

The education system in Bangladesh is heavily dependent on rote learning methods which are unsuited to develop the skills requirements for today's world, especially with the advent of the Fourth Industrial Revolution. Education disparity between urban and rural areas is vast not only in terms of teachers' competence, but also due to the lack of up-to-date educational infrastructure like poor internet connectivity and computing devices.

Not having a national edu-tech agenda further hurt the sector as there were no alternatives to mitigate the situation effectively. Most students are unable to access online classes, either due to connectivity or affordability,

5. South Asian Network on Economic Modeling (SANEM) 2020, SANEM researchers assess poverty impacts of COVID-19, 01 May, Retrieved: 08 August 2020, from <<http://sanemnet.org/sanem-researchers-assess-poverty-impacts-of-covid-19/>>

6. Bangladesh Bureau of Statistics (BBS) 2018, Household Income Expenditure Survey (HIES) 2016, September 2018

7. Uddin, M. 2020, 'How would the COVID-19 pandemic affect the education sector in Bangladesh?', Thinking Aloud, Volume 7, Issue 1, June 1, Retrieved: 13 July 2020, from South Asian Network on Economic Modeling (SANEM) Publications Online

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the education-sector and ICT in the education-sector, the ICT Ministry is proposing the following five interventions in the immediate and short term:

Title	Policies to facilitate the growth of blended learning before 2021	Multisectoral participation and infrastructure development for popularizing virtual school (blended learning) before the end of 2020	Develop IT infrastructure and give incentives to support tech based learning in partnership with private and public education institutions till the end of 2021	Group education method to prevent children falling out of education in rural Bangladesh	Create an investor friendly environment for private entrants in the Education sector so that by 2030 the country can ensure improved access to education for all
Why (To address:)	To ensure an effective and efficient blended education system, whereby all of the stakeholders and governing bodies can take a holistic approach in improving the education sector	The traditional brick and mortar education system is failing to meet the demands of the ever changing education landscape both in terms of theoretical learning and skill development	Distant learning and edutech is the way forward- only if supporting tools and technologies are widely available to the masses	Due to limited access to internet and devices to access online classes, students in rural areas are facing the threat of quitting if the lockdown situation persists for another three months	Lack of private sector investments and FDI is hindering the education sectors growth
What	By supporting edu tech startups, digital products such as LMS (Learning Management System) can be developed for local needs which will ensure the teachers to assign and check the tasks of the students, a LMS platform will act as a pivotal tool to manage both the academic and managerial responsibilities of running a class online	Lead the multi-sectoral collaboration to enhance the learning infrastructure and tools associated with it. Infrastructure development being very capital intensive, the government's initiative or subsidy can help in taking this forward	Develop cluster based internet/public wifi services whereby students can come to a designated place to learn at their time of convenience with their own devices or devices available at learning centres. Initiate programs like zero.edu (same as zero Facebook) websites where the government will subsidize and provide free internet access to learning platforms and content providers	Assigning one teacher to each area where they reside to teach the kids in that particular area and also hiring high school kids to teach primary school kids in the neighbourhood can be practiced to reduce fallout	The government's initiative to encourage private sector players in the education sector will open doors to both domestic and international investors to enter this market and improve i
Lead Agency	Ministry of Education	Post & Telecommunications Division	Post & Telecommunications Division	Ministry of Education	Ministry of Finance
Actor	Schools, Colleges, University, Technical & Vocational Institutes, Madrasas, Consulting Firms, Technology Firms, Education Foundations, Education Research Institutions	Schools, Colleges, University, Technical & Vocational Institutes, Madrasas, Consulting Firms, Technology Firms, Education Foundations, Education Research Institutions, edu tech platforms, TELCOs, ISPs	TELCOs, ISPs, WiMax Service Provider	Schools, Colleges, University, Technical & Vocational Institutes, Madrasas	Ministry of Commerce, Govt. & Public Education Institutions
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Partners	Ministry of Primary and Mass Education (MoPME), Madrasah & Technical Board, Ministry of Communications, Post and Telecommunications Division	Ministry of Education (MoE), Ministry of Primary & Mass Education (MoPME)	AMTOB (Association of Mobile Telecom Operators of Bangladesh), Broadband Internet Service Providers, WiMax Internet Service Providers, Bangladesh Telephone Regulatory Commission (BTRC)	MoPME, UNICEF, UNESCO, BRAC	MoE, MoPME, Ministry of Communications
Partners	Private University Association, Private School Association, English Medium School Association of Bangladesh, Startups: 10 Minute School, Bohubrihi, Yoda, Repto, UNICEF, UNESCO, ADB, JAICA	Aga Khan Development Network (AKDN), Private University Association, Private School Association, English Medium School Association of Bangladesh, Startups: 10 Minute School, Bohubrihi, Yoda, Repto, UNICEF, UNESCO, ADB, World Bank, Bill & Melinda Gates Foundation	Startups: 10 Minute School, Bohubrihi, Yoda, Repto, For grants and loans: IFC, ADB, WB	Private School Association	Development partners/ IFAD/ PKSF, MoA, MoLF
Financing and modality	Government Funding: Cost for the research and development of the policy and initial roll out testing.	PPP for content and technical development; cost of the edu tech platforms development, content development, and maintenance	PPP; Investment for Technological & Infrastructure Development; Funds to set up new internet networks up to the root level	Government and Donor Partner Funded; to provide allowances, PPE, mask and disinfectants for the visiting teachers and students.	Private Sector Investment; Private sector players to have confidence in the policy and ease of taking returns to their native country

Post COVID-19 ICT Roadmap for Bangladesh

Digital Commerce

Thematic Paper

Post-COVID-19 ICT Roadmap: Education

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh [in collaboration with the Access to Information (a2i) Program, Innovision, LightCastle Partners, and DataSense @ iSocial] is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Education is one of the 14 priority sectors selected based on impact of COVID-19 and potential for transformation of economy and society.

1. Why is Education Important?

Education is one of the most powerful agents of change that improves health and livelihoods, contributes to social stability and drives long-term economic growth. Education is also essential to the success of each of the 17 SDG goals set by the United Nations.

The role of education in poverty reduction is instrumental. It boosts economic growth and increases the GDP of a country. It even reduces infant mortality rate by increasing human life expectancy. A child whose mother can read is 50% more likely to live past the age 5 (Global Partnership in Education, 2019).¹ Education is an important investment in a country as there are huge benefits. Education guarantees lifetime income; it promotes peace and reduces drop-out rates from schools and colleges and encourages healthy competition. According to a research by Global Partnership in Education in January 2019, 420 million people would be lifted out of poverty with a secondary education. The same source reported that one additional year of school can increase a woman's earnings by up to 20%.

A research revealed that a dollar (USD) spent on early education can generate a return worth of USD 17 for the most disadvantaged children (Zubairi and Rose, 2017, p. 5).² This indicates the role early stage education plays in developing countries.

At present, on any given school day, over 1 billion children around the world head to class (UNICEF, 2019).³ More children and adolescents today are enrolled in pre-primary, primary and secondary education than ever before. Yet, for many of them, schooling does not lead to learning. A lack of trained teachers, inadequate learning materials, makeshift classes and poor sanitation facilities make learning difficult for many children. Others come to school too hungry, sick or exhausted from work or household tasks to benefit from their lessons.

An estimated 617 million children and adolescents around the world are unable to reach minimum proficiency levels in reading and mathematics – even though two thirds of them are in school. This learning crisis is the greatest global challenge to preparing children and adolescents for life, work and active citizenship. Roughly one in five school-aged children are not in school at all. Children and adolescents are excluded from education for many reasons. Poverty remains one of the most obstinate barriers, with children from the poorest households almost five times more likely to be out of primary school than those from the richest.

Children with disabilities and from ethnic minorities are also more likely to be left behind. For girls in some parts of the world, education opportunities can be especially limited. According to UNICEF, only 66% of countries have achieved gender parity in primary education. Harmful gender norms can have severe effects for boys, too. Location also keeps children from school. Children from rural areas are more than twice as likely to be out of primary school than their urban peers. In conflict zones, 27 million children are out of school.

Without skills for lifelong learning, children face greater barriers to earning potential and employment later in life. They are more likely to suffer adverse health outcomes and less likely to participate in the decisions that affect them – threatening their ability to build a better future for themselves and their communities. A well-educated citizenry is an economic and social necessity. Policy makers, educators, and parents all over the world want students to understand and be able to apply their knowledge of math, reading, and science. Yet improving educational outcomes has proved elusive. Some countries, states and municipalities have made great strides, but many continue to struggle. Educators continue to debate what matters and what works.

2. Situation Analysis before COVID-19 Outbreak - Global

As of 2020, USD 6.5 TN is being spent on education globally which is expected to be USD 10 TN by 2030 (Holon IQ, 2020). 3% is being spent in Ed Tech now which is expected to reach 11% by 2020 (European Pro, n.d.). As per the Ed Tech team of the World Bank, there are more than 100+ free learning platforms globally, which is aided by ~60% internet penetration in developing countries and ~90% in developed countries. The Ed Tech market has the potential to reach 1 TN USD by the end of 2030 (The World Bank Group, n.d.).

With an increasingly thriving global education culture, the days of 'one size fits all' teaching methodologies such as repetition learning and copying are growing numbered. Critical thinking, reasoning and communication skills in students are more significant in the long-term goal of producing an intelligent workforce than gearing lessons purely towards achieving a pass grade in the next examination. Thus, the world's top universities are instilling a global perspective in students to best prepare them for an increasingly borderless business environment.

3. Situation Analysis before COVID-19 Outbreak - Bangladesh

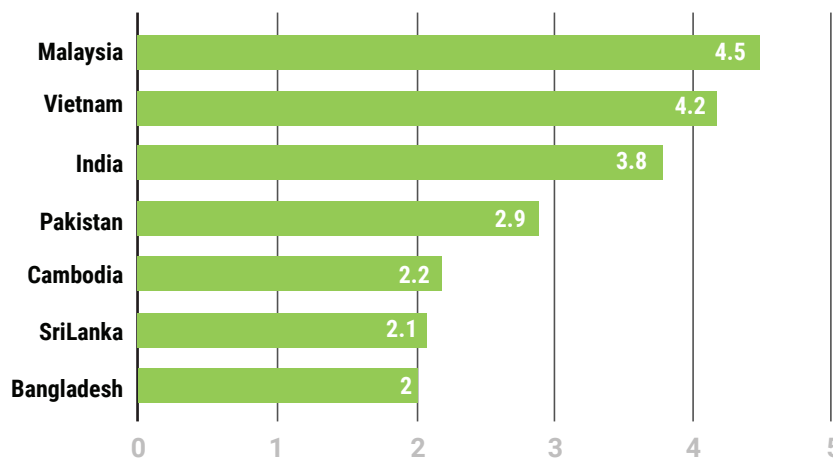
Compared to peers, Bangladesh is lagging behind in education spending from the annual GDP with a meagre 2% - resulting in falling behind Sri Lanka (2.1%), Cambodia (2.2%), India (3.8%), Vietnam (4.2%) and Malaysia (4.5%).

1. What makes a Great Education, Global Partnership in Education, January, 2019

2. Financing Primary Education, Theirworld, Bright and Early, June 2017

3. UNICEF, 2019

% off GDP Spent on Education



Source: Bangladesh Bureau of Educational Information and Statistics

In Bangladesh, 17.2 million students are enrolled in primary school, 1.6 million students of SSC are direly expecting their results, and 1 million HSC students do not know when they can sit for their board exams which were scheduled in April. In the higher education category, 850,000+ students in 104 universities across the country are unable to attend classes (Bangladesh Bureau of Educational Information and Statistics, Chapter Eight).

Education in Bangladesh has three major stages – primary, secondary and higher education. The primary education system in Bangladesh is one of the largest centralised authorities in the world. Over 17 million students are taught by around 400,000 teachers in almost 79,000 schools. High schools are managed either by government or private individuals or organizations. Most of the privately managed secondary schools provide co-education. Students of English Medium streams also sit for their respective public examinations conducted by Edexcel Pearson/ London/Cambridge University to qualify for further education.

Higher secondary is followed by graduate level education in general, technical, engineering, agriculture, business studies, and medical streams requiring 5-6 years to obtain a Masters Degree. Higher education in the technical area also starts after higher secondary level. Engineering, agriculture, business, medical and information and communication technology are the major technical and technological education areas. In each of the courses of study, except for medical education, a 5-year course of study is required for the first Degree.

Different Streams in Education

- Primary level education is provided under two major institutional arrangements (stream) – general and Madrasah.
- Secondary education has three major streams: general, technical-vocational and Madrasah.
- Higher education, likewise, has 3 streams: general (inclusive of pure and applied science, arts, business and social science), Madrasah and technology education.

Madrasahs (Arabic for educational institution), functional parallel to the three major stages, have similar core courses as in the general stream (primary, secondary and post-secondary) but have additional emphasis on religious studies.

Bangladesh will need to create at least 2.25 million jobs per year to accommodate a near doubling of the labour force from its present size. Many existing institutions do not have adequate resources to provide education/training of proper quality.

The government has put more emphasis on vocational and technical education in the new National Education Policy 2010. This is to meet the local skill requirement, but also for the fact that overseas employment has become a significant source of employment with migrant workers now numbering some 3 million. The jobs that these people are required to do in Southeast Asia or the Middle East are more skilled than in the past – there is a need to develop these required skills locally. Improving the market relevance of education, and specifically vocational education and training, will require significant reforms.

Education in Bangladesh is basically state-financed. Development in the education sector has been strongly supported by the donor community. Donors have given a high priority to primary education and increasing access for girls. Besides EU countries, multilateral institutions like the Asian Development Bank (ADB), The World Bank (WB) and United Nations Children's Fund (UNICEF) have helped fund and redefine the orientation of the education sector programs. Cooperation with external development partners will continue to be a key element of educational progress in Bangladesh. The scale and diversity of the education system is striking with public and private institutions, NGOs, faith-based schools and community learning centres active in education.

For Bangladesh, the key to achieving high rates of economic growth and at the same time ensuring that the fruits of economic growth are equitably shared by the population lies in development and utilisation of human resources. Education therefore has been recognised as a priority sector by all Governments since independence.

4. Situation Analysis after COVID-19 Outbreak

The global pandemic unfolded by the novel coronavirus has created a global learning crisis in addition to a global health crisis. Over 82% of all the students across the world are no longer participating in traditional schooling or education programs due to the national school closures worldwide.

According to the Education Ministry, there are about 17.2 million students at the primary school level in Bangladesh. While 1.6 million candidates are waiting for their SSC results, a million more are waiting to sit on the HSC exams. The unprecedented event now threatens the millions of HSC and SSC candidates as well as younger students of losing an academic year due to the suspension of schools and exams in order to halt the spread of the virus. In 2016, 126,615 primary schools provided primary education to nearly 19 million children throughout the country (Directorate of Primary Education, 2016).

Since 17 March 2020, all the educational institutes in the country have remained closed. Undeniably, the direct and most immediate impact of the Covid-19 on the education sector is the loss in learning opportunities. More than 36 million students (including 17 million in the primary) are now out of school. Finance minister AHM Mustafa Kamal, in his budget speech in the national parliament, also said that Covid-19 has essentially caused discontinuation of the regular academic curriculum of around 40 million students across the country.

However, the loss in schooling hours is not the only impact looming out from the Covid-19 crisis. On top of learning, schools are also a vital source of social protection, nutrition, health as well as psychosocial support to children and young adults. Therefore, on top of loss in learning, school closures have far-reaching impacts on social and economic issues such as school dropouts, digital divide, food insecurity and malnutrition, childcare, as well as disability services.

A broader and deeper consequence of the Covid-19 pandemic on the education sector might emerge from the economic downturns being ignited by the pandemic control measures. SANEM estimates based on the latest Household Income Expenditure Survey (HIES) shows that - before the crisis, 23.90% (or 8.4 million) of the students' families were below the poverty line. As the crisis prolongs, assuming a three months long lockdown since 25 March 2020, therefore a 25% fall in annual per capita income, as many as 43.9% of the students' families could fall below the poverty line (for primary: 51.7%, secondary: 42.4%; SSC/HSC: 30.20%; and university: 19%). Hence, there could be as many as 7.70 million additional students' families falling below the poverty line during this crisis, taking the total number of students below the poverty line to 16 million (South Asian Network on Economic Modeling, 2020).

5. Global Scenario and Relevance for Bangladesh

As of 4 May 2020, 12 countries had reopened schools, 52 had announced plans to reopen them during the current academic year, and 7 had announced plans to reopen them in the next academic year. The remaining 128 countries have not announced any school reopening date. During the lockdown, the governments of a majority of countries have focused on deploying distance-learning strategies that would work for both students with and without internet connectivity. Some of the prominent solutions across countries include online learning, take-home packets of reading and writing assignments, lessons broadcast over radio or television and through texting. East Asian countries are the frontrunners at expediting remote learning swiftly, as a response to the crisis resulting from the pandemic (Evalueserve, 2020, p. 3).⁴

North America

USA & Canada: The majority of US states have announced that they would keep K-12 facilities closed for the rest of the school year, and potentially even longer. Scenarios for higher education institutions show that the US could resume face-to-face instructions earliest by fall 2020 and latest by fall 2021. All major international examinations – Cambridge International and International Baccalaureate (IB) – required for university entry have been suspended. The government issued an emergency pack to aid both higher education institutions and students and partially mitigate the damages (value of approximately USD 14 billion). The next stimulus packages to aid state governments are expected soon. Quebec is the only province to have announced school reopening in the second part of May. The education industry (especially higher education) has initiated discussions with decision-makers to solicit financial support for the sector.

EMEA (Europe, Middle East and Africa)

Europe: Recently, some schools opened across Denmark and Norway and a few others are expected to follow suit (e.g., in Germany, France, and Norway). More cautious countries (e.g., Italy, Spain, and Romania) have announced that their schools will remain closed for the rest of the school year, or at least until June (UK). Some countries have already announced intentions to relax visa requirements to aid international student mobility and speed up the recovery of the higher education sector.

Middle East: Israel and Iran have gradually started reopening schools. The UAE has announced that it would open schools in September. Starting May, both public and private schools in the UAE will undergo Distance Learning Evaluation, in an effort to assess the quality of online learning implemented in early March.

Africa: The region's underdeveloped infrastructure leads to higher disruption than in developed regions. The consequences could be similar to the Ebola outbreak in 2014–15 when disrupted education resulted in high drop-out rates as well as a rise in teen pregnancies.

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Europe: Recently, some schools opened across Denmark and Norway and a few others are expected to follow suit (e.g., in Germany, France, and Norway). More cautious countries (e.g., Italy, Spain, and Romania) have announced that their schools will remain closed for the rest of the school year, or at least until June (UK). Some countries have already announced intentions to relax visa requirements to aid international student mobility and speed up the recovery of the higher education sector.

Middle East: Israel and Iran have gradually started reopening schools. The UAE has announced that it would open schools in September. Starting May, both public and private schools in the UAE will undergo Distance Learning Evaluation, in an effort to assess the quality of online learning implemented in early March.

Africa: The region's underdeveloped infrastructure leads to higher disruption than in developed regions. The consequences could be similar to the Ebola outbreak in 2014–15 when disrupted education resulted in high drop-out rates as well as a rise in teen pregnancies.

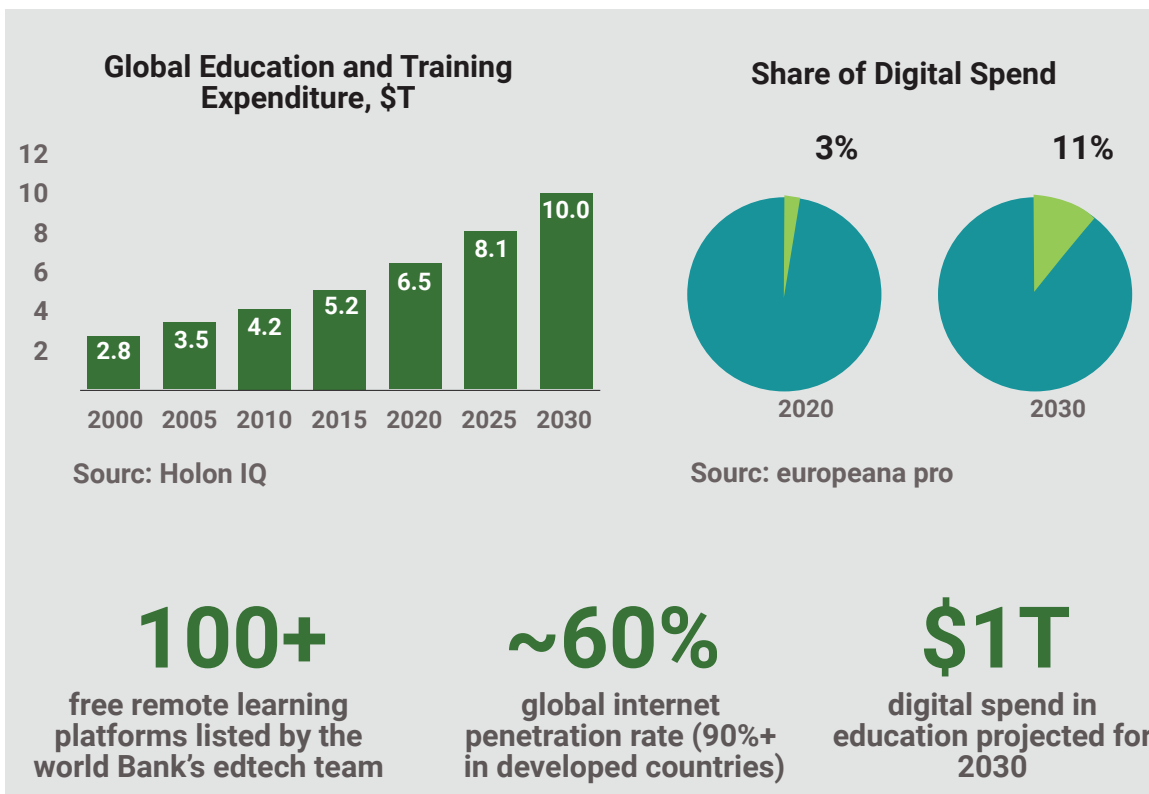
APAC (Asia-Pacific)

Schools in APAC to reopen: China, Japan, Vietnam and New Zealand have started reopening schools. South Korea and Singapore have also announced plans to reopen facilities later in May. Australia released an emergency package for higher education (value of AUD 18 billion) focusing on domestic students. This will aid upskilling programs and waive regulatory and loan fees.

Rapid responsiveness: Countries in East Asia have shown greater resilience during repeated crises. They have switched to online learning relatively more easily than in other regions. A positive example is the Chinese government, which has invested heavily in setting up the infrastructure (online tools, mobile apps, TV broadcasts) necessary for remote education.

Strength of Ed tech: Asia is the largest market for ed tech investment (China alone accounts for over 50% of ed tech VC funding). Ed Tech adoption is relatively higher in China, Indonesia and India, where the population is spread out geographically and public education systems suffer from the scarcity of good quality teachers.

UNESCO recommends online learning and remote education technology to keep the students engaged, entertained, and stay connected to their education. Technology definitely has a crucial role to play, whether through virtual classrooms or helping parents quickly adapt to homeschooling.



Funding for education startups has been skyrocketing globally and will undoubtedly see a relative spike due to the nature of COVID-19. India's Byju's alone has raised USD 1.4 billion in hopes of making learning easier and more efficient in the country.

Bangladesh, thankfully, has its own share of educational companies. Here are some examples and what they do:

1) App-based learning is a scalable model that allows for people to learn on-the-go, with many having the systems connected to schools and teachers, allowing for homework to be done in an interactive manner. Examples: Classroom, Shikho

2) Sometimes, finding ways to finance education is half the battle. Companies can find creative ways to solve this problem by matching do-gooders with children's forward-looking educational needs. Example: AlterYouth

3) Remote learning allows students and professionals to learn from experts around the world. A Bangladeshi child in Khulna will no longer be limited by who is available locally—they can reach out to someone in Dhaka or even in London or Boston. Example: Yoda, Zanvent, Jaago Foundation

4) Not all education has to be about youth as professional experience also has an impact on the country's ability to move forward. In addition, supplementary education for undergraduate studies is offered through programs like digital marketing, data analytics, machine learning and coding as universities are lacking in offering future skills-oriented curriculum. When global economies resume and start hiring labour, Bangladesh should be prepared by developing skilled workers who can support digital economies remotely. Example: Upskill

5) Video Streaming technology/platforms can allow the facilitation of virtual classrooms to go live with cloud recording for students to watch later. Classes can be accessed on their mobile phone, and they can interact live as well as through comments. Local video streaming platforms who provide Live TV and video-on-demand streaming services can provide similar services in the education space including using open source Classroom settings or similar applications like Zoom and Webex. It requires heavy infrastructure such as servers (Storage, Encoding, CDN), internet peering at the internet exchanges and scaling experience to handle concurrency at the application level. IP telephony services can also be used that reduce the reliance of the internet where students can dial to listen to class lectures in case internet connections drop. Example: Bongo, Dhaka Live.

Some of the leading Ed-tech Startups from the Bangladesh Market

Company	Content/ Platform	Type	Focus	Global Comparable	Current Traction / Scale	Key Investors
Agami	Content	Non-profit	Nat'l STEM curriculum in Bangla Khan Academy Primary edcommerce and it's benefit over offline channels	Khan Academy		Philanthropy
Alokito Hridoy Teachers	Content	Non-profit	Teacher training			Funder: Build Bangladesh / Impress Group
AlterYouth	Platform	For-Profit	Scholarships for unprivileged children from donors based on their academics		1,023 Literacy Scholarships, 150 BDT SC per scholarship	GP Accelerator
Cholo Pori by HerStory	Content	For-Profit	Online learning platform at the primary level	IXL/ Raz Kids		
Classroom	Content & Platform	For-Profit	Provides SSC & HSC subject contents, and has both student & parent app	Byju's		
e-Aarohan	Content	For-Profit	Connects students to a teacher online and sets up a digital classroom with all interactive content. Courses for SSC following National Curriculum and Textbook Board (NCTB), Bangladesh curriculum that are rolled out are: Physics, Chemistry, English, Mathematics and Biology	Dreambox		Pietro Zanotelli, Jonas Vetter
EduHive	Content & Platform	For-Profit	Digital Learning Platform (content from renowned teachers & top coaching centers through B2C subscription model)	Byju's	Partnership with 80+ teachers & coaching centers	
Esho Shikhi	Content & Platform	For-Profit	Provides SSC, HSC, University Admission & BCS lectures, notes & model tests - including Science content according to HSC curriculum, also taking live classes on science, physics, chemistry, maths, biology according to HSC curriculum; also courses on basic English grammar for class 8-12 based on the national curriculum	Byju's	BD Venture & Bangladesh Angels	
Light of Hope	Content & Platform	For-Profit	K-6 - teacher & parents training, content, after school workshops on creativity/life skills	Educational Innovation 360	BD Venture & Bangladesh Angels	Self-Funded

Company	Content/Platform	Type	Focus	Global Comparable	Current Traction / Scale	Key Investors
Onnorokom Pathshala	Content		Video classes for NCTB syllabus (Class 8 - 12)	Khan Academy		OnnoRokom Group of Companies
Repto	Content	Non-profit	Online Skill development courses	Linkedin / Lynda.com		Angels
Upskill	Content & Platform	For-Profit	Online Skill development courses. Also Learning Module (LMS), Video learning platform, Online Class Management Platform	Edx / Lynda.com		Startup Dhaka, SBK Ventures

6. Estimated Negative Impact

Emanating from the economic crisis, there is a good chance that the country might see a resurface of higher rates of child-labours, child marriages, or even transactional sex for children and adolescents - all phenomena leading to higher dropout rates. As a result, out of the 16 million students from poor families - many might never come to schools ever again. Notably, the dropout rate in Bangladesh is still too high for secondary (37.60%) and post-secondary education (19.60%) (Bangladesh Bureau of Educational Information and Statistics, n.d.). Nevertheless, the impact would be disproportionately higher for female students.

The crisis could also be more threatening for students with special needs (around 39,000). Estimates from HIES data suggests that almost 24.50% of the students with special needs are from poor families. Due to the pandemic, more than 45% of such students' families might fall below the poverty line. However, irrespective of their income status, with school closures, these children might face additional challenges than others. When deciding on continuation of education, they could be the first to be left out of the school system.

Nonetheless, there is also a nutrition aspect where this Covid-19 pandemic might hinder the progress. The World Food Programme (WFP) estimates that the economic impact of malnutrition in Bangladesh sums up to USD 1 billion each year. To combat the challenge, the Government of Bangladesh (GoB) with technical assistance from the WFP runs a School Feeding Programme in 104 most poverty-prone Upazilas in the country reaching nearly 3 million children (World Food Programme, n.d.). Since the beginning of the crisis in March, the GoB has managed to deliver the micronutrient enriched 'biscuits' to all recipients in bulk. However, as this support does not reach the children out of school, if the dropout rates in the poverty-stricken areas increase due to the pandemic, this effort might fall short then.

After the pandemic, the crisis will not be any easy for the students remaining at school either. Due to fall in income at large, overall out-of-pocket expenditure in education will inevitably fall, particularly for the families from the lower-income deciles. Quality of teaching might also fall. Many students might shift from low-cost private schools to already overburdened public schools. The low-cost private schools that serve the lower-middle-class families, and run on small margins, might face an existential crisis. Moreover, with a fall in pays, it could be the best teachers in schools who might switch jobs first.

In combating the loss in learning, one frequently suggested option is online teaching. However, going online for learning is not a feasible option for Bangladesh yet. There are around 5% of the households who do not have a mobile phone (UNICEF, 2019). In the case of computers/tablets: only 5.60% of the households have one. However, having a computer/tablet is not sufficient: with only 37.60% of the households having internet access at home (urban: 53.10% and rural: 33.20%), options for exploring this option seems bleaker. Besides, there are clear regional and income dynamics at play here: rural areas and poorer regions have less access to these ICT than the urban and richer regions. This is also true for poorer households. Based on the latest HIES and updating it to 2020, we could estimate that around 12.70% of the poor households do not have a single mobile phone. With such a high digital divide, going online for all would only widen the existing gap in learning inequality.

While online education can bridge this gap, significant challenges might affect the implementation of blended approaches.

a. Devices - Mobile and computer. Given Bangladesh's scenario, most students will have access to mobile devices but their screen size and reliability in hosting online sessions is going to be a challenge.

b. Internet - Data consumption in Bangladesh is primarily used for entertainment purposes. For lower-income people, data consumption for education will seem like a luxury or something they can't afford. So, this requires partnership from telcos for special data pricing specifically for online education.

c. Access - The level of tech knowledge required does not often match the users, particularly in the last miles. Access to devices that can support is not omnipresent. Language remains a key barrier as ed-tech startups are yet to adopt not only Bangla but the local flavours and nuances.

d. Content - Content needs to be super engaging over a long period of time to build the users' habit.

e. Free tools - Internationally available free tools for education have temporary cost relief so when it switches back to fee model after 6-7 months, we will get into trouble of being locked into a platform and also being charged in dollars to keep the service active. Additionally, tools like Google classroom are available but are complicated if one doesn't have a mobile. The majority will not know how to use it. Simple apps can be made for simple interactivity to find lessons, plans and do assignments.

- f. Culture/Mindset - Resistance to change. Supervised, teacher-led vs self-paced learning requires high trust and a long runway to build a brand. Lack of respect for IPR makes it tough.
- g. Technology adoption - high acquisition and retention costs. However, partnerships with GoB can help reduce adoption costs given the right kind of mobile light applications.
- h . Infrastructure: Reliable electricity and internet.
- i. Cost prohibition - parents are already burdened. One more payment to subscribe/pay for edtech may be prohibitive as parents have not fully understood/embraced edtech as the solution
- j. Ecosystem - at the start it works better if in combination with a physical environment. Payments are not optimised for e-commerce in general, more complex for edtech. OTT platforms are evolving and might be able to expedite the adoption provided that they are bundled for education or zero-rated by ISPs/telcos.
- k. Incentives for purchasers - often seen as a competition by teachers, tutors and schools. School purchases are decided by committees that are usually resistant to new ideas.
- l. Common standards and lack of benchmarks - lack of standardization in most of the online programs make it hard. What curriculum to follow? Who signs off on the standard or quality? How to be assured of the standard and accuracy? Who can take what measures if found to be poor quality?
- m. Where is the money? - yet to have the validation even for the most prominent ones that ed-tech indeed makes money. In India, most successful ones are largely in the space of "test prepping and certification"."Co-curriculum" appears to be an easier starting point over curricular. Continuing education is probably another vertical that will see rapid growth.

7. Estimated Opportunities

The National Education Policy, 2010 prepared in achieving the objective of Article 17 (Free and compulsory education) as set out as a Fundamental Principle of State Policy in our Constitution, envisages creating a knowledge-based economy by providing quality education for all. The Master Plan for Information and Communication Technology in Education (2012-2021) [the "Master Plan"] of the Ministry of Education builds on the National Education Policy and aims to develop the quality Education system based on and by mobilising and utilizing information technology platforms and through the comprehensive use of ICT in Education, as part of Bangladesh's "Vision 2021".

The overarching rationale for the Master Plan is to:

- a. Ensure education for all;
- b. Improvement of the Education standard of education across the of our country;
- c. Produce a skilled workforce;
- d. Produce a skilled workforce;

Addressing inter-ministerial synergies, it is to be noted that the National Policy for Information and Communication Technology, 2009, also focuses on the use of ICT in Education management and on implementing a higher standard of ICT education, training and usage for students and schools alike.

The ownership of the Master Plan is with the Ministry of Education, while the objectives set out specifically for the Ministry of Primary and Mass Education in the Plan is to be addressed by the latter Ministry. The Ministry of Information and Communication Technology is to offer necessary cooperation in the implementation and monitoring of the Master Plan.

Support is needed to create a Masterplan and have a point of contact. Reviewing the master plan the key areas addressed are below; in addition to these, there needs to be a sub-committee and personnel assigned as a lead.

ADVOCACY - The Education ministry needs to become the primary advocate for Online education and play the role of educating the market in adopting this new channel. The parents need to be swayed, hence require a marketing and PR plan around this push for online education. The partners need to be endorsed by the ministry so the public trusts the partnership.

BUDGET - The schools can allocate some budget for online education service as their physical infrastructure is of no use and govt. can also allocate budget to schools to roll out online-based education and cover the costs to avoid the discussion around budgetary issues. There can be special grants to pilot the initial online education deployment in partnership with Donor agencies. The schools should not be developing anything, it has to be private sector-led to bring speed and efficiency - they subscribe to a SAAS model which will keep transparency in cost as well.

COORDINATION - Since there will be multiple partners involved, Startup Bangladesh can lead the coordination among the two ministries and private partners. Without clear communication and direction the progress will not happen, in time.

Buy from startups or deploy their solutions at scale - fast track sourcing of already available solutions and capabilities such as video streaming, contents and courses. Expand platforms like p2p transfer systems to send safety net support to the last mile.

Bangladesh first - encourage the products, solutions and services built and offered by Bangladeshi startups when available. It could be a great momentum to expedite local solutions, local jobs and local market expansion for our own products and services.

A National EdTech Strategy - needs to be championed. There has been a big vacuum in terms of the understanding of the technology and new realities and therefore a lot of push backs from educational institutions which can be mitigated through a forward-looking digital education strategy.

As the crisis prolongs and the economic impact deepens, so does the future of millions of students: the lower the income declines they are from, the grimmer looks at their future. Socio-economic impacts stemming from Covid-19 will have long-term consequences. The lifetime income and productivity of the current age-cohort would be severely constrained if the government does not step in with bolstered short-term and long-term public policies as follows.

a. When opening up the schools, healthcare protocols should be strictly followed. WHO and UNICEF have already prepared such guidelines. Many schools might not have proper hygiene facilities at all. It is high time the government facilitated adequate hygiene infrastructures even at the remote schools. The focus should be on developing good health behaviours such as covering coughs and sneezes with the elbow and washing hands frequently.

b. Ensuring return to school for each student. Active public policies such as revamping the existing stipend programmes, exploring the options for 'education loans', communication campaigns, active engagement with families in distress, etc. should be prioritised.

c. Supplementary nutrition programmes such as the school feeding programme and midday meal programmes should be rolled out nationally. Such measures might help to curb down the dropout rates as well.

d. Measures should be taken to reduce the digital divides across income groups as well as across regions.

e. The government must increase allocation in education. Bangladesh's expenditure in education, both as a percentage of Gross Domestic Product (GDP) and as a percentage of total tax revenue is one of the lowest in the world.

When the pandemic crisis is prolonging, such contraction in education expenditure contrasts with what this sector needs. The pitfalls of low spending in this sector to mitigate the Covid impacts will be long-lasting. With so little to spare, the country might face more chronic 'long-term consequences' in this sector as an aftermath of the pandemic than the comparators. If the challenges are not addressed properly, the demographic dividend for Bangladesh might turn into a demographic burden in the future.

Combating the challenges would require a stronger collaboration between the Government, NGOs, and the development partners. However, it is the GoB who needs to take the lead in steering up from this crisis. If adequate actions are not taken now, it will be too late to correct it later.

8. Road Map

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the education-sector and ICT in the education-sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Policies to facilitate the growth of blended learning before 2021,	Multisectoral participation and infrastructure development for popularizing virtual school before the end of 2020.	Develop infrastructure and give incentives to support tech based learning in partnership with private and public education institutions till the end of 2021.	Group education method to prevent children falling out of education in rural Bangladesh	Create an investor friendly environment for private entrants in the Education sector so that by 2030 the country can ensure improved access to education for all
Why (To address:)	To ensure an effective and efficient blended education system, whereby all of the stakeholders and governing bodies can take a holistic approach in improving the education sector	The traditional brick and mortar education system is failing to meet the demands of the ever changing education landscape both in terms of theoretical learning and skill development	Distant learning and edutech is the way forward- only if supporting tools and technologies are widely available to the masses	Due to limited access to internet and devices to access online classes, students in rural areas are facing the threat of quitting if the lockdown situation persists for another three months	Lack of private sector investments and FDI is hindering the education sectors growth
What	By supporting edu tech startups, digital products such as LMS (Learning Management System) can be developed for local needs which will ensure the teachers to assign and check the tasks of the students, a LMS platform will act as a pivotal tool to manage both the academic and managerial responsibilities of running a class online.	Lead the multi-sectoral collaboration to enhance the learning infrastructure and tools associated with it. Infrastructure development being very capital intensive, the government's initiative or subsidy can help in taking this forward.	Develop cluster based internet/public wifi services whereby students can come to a designated place to learn at their time of convenience with their own devices or devices available at learning centres. Initiate programs like zero.edu (same as zero Facebook) websites where the government will subsidize and provide free internet access to learning platforms and content providers	Assigning one teacher to each area where they reside to teach the kids in that particular area and also hiring high school kids to teach primary school kids in the neighbourhood can be practiced to reduce fallout.	The government's initiative to encourage private sector players in the education sector will open doors to both domestic and international investors to enter this market and improve it.
Lead Agency	Ministry of Education	Post & Telecommunications Division	Post & Telecommunications Division	Ministry of Education	Ministry of Finance

Actors	Schools, Colleges, University, Technical & Vocational Institutes, Madrasas, Consulting Firms, Technology Firms, Education Foundations, Education Research Institutions	Schools, Colleges, University, Technical & Vocational Institutes, Madrasas, Consulting Firms, Technology Firms, Education Foundations, Education Research Institutions, edu tech platforms, TELCOs, ISPs	TELCOs, ISPs, WiMax Service Provider,	Schools, Colleges, University, Technical & Vocational Institutes, Madrasas,	Ministry of Commerce, Govt. & Public Education Institutions.
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	SME Foundation
Partners	Ministry of Primary and Mass Education (MoPME), Madrasah & Technical Board, Ministry of Communications, Post and Telecommunications Division	Ministry of Education (MoE), Ministry of Primary & Mass Education (MoPME)	AMTOB (Association of Mobile Telecom Operators of Bangladesh), Broadband Internet Service Providers, WiMax Internet Service Providers, Bangladesh Telephone Regulatory Commission (BTRC)	MoPME, UNICEF, UNESCO, BRAC	MoE, MoPME, Ministry of Communications,
Partners	Private University Association, Private School Association, English Medium School Association of Bangladesh, Startups: 10 Minute School, Bohubrihi, Yoda, Repto, UNICEF, UNESCO, ADB, JAICA	Aga Khan Development Network (AKDN), Private University Association, Private School Association, English Medium School Association of Bangladesh, Startups: 10 Minute School, Bohubrihi, Yoda, Repto, UNICEF, UNESCO, ADB, World Bank, Bill & Melinda Gates Foundation	Startups: 10 Minute School, Bohubrihi, Yoda, Repto, For grants and loans: IFC, ADB, WB	Private School Association	Development partners/ IFAD/ PKSF, MoA, MoLF
Financing and modality	Government Funding: Cost for the research and development of the policy and initial roll out testing.	PPP for content and technical development; cost of the edu tech platforms development, content development, and maintenance	PPP; Investment for Technological & Infrastructure Development; Funds to set up new internet networks up to the root level	Government and Donor Partner Funded; to provide allowances, PPE, mask and disinfectants for the visiting teachers and students.	Private Sector Investment; Private sector players to have confidence in the policy and ease of taking returns to their native country

Action Agenda 1

Challenge/Opportunity: Lack of long term Education/EdTech strategy and policy development to incorporate curriculum development, teachers training, digital learning, and involvement of multisectoral initiatives, which is paramount to ensure a blended education system.

Estimated Impact (Quantitative): Considering the size of the education sector as it has a student base of 34 million and only budget allocation of 2% (USD 6bn) in comparison to GDP, proper and efficient implementation of policies and strategies are vital for improvement in the education landscape. A long term vision to emphasize the cooperation between different stakeholders is needed to have a greater impact by harnessing synergy.

Estimated Impact (Qualitative): Proper policies and implementation guidelines will ensure the involvement of private and development partners without hindrance, thus enabling the more initiatives to be implemented and uptaken. Considering the size of the education sector it is not possible for the government alone to play the major role. Multisectoral participation in planning and implementation will help improve the system in a holistic manner than independent initiatives.

Action Agenda

Title: Policies to facilitate the growth of blended learning before 2021.

Summary: Enabling teachers with classroom-like conditions there is a need for tools and monitoring systems and not be only limited to audio visual class lectures. By supporting edu tech startups, digital products such as LMS (Learning Management System) can be developed for local needs which will ensure the teachers to assign and check the tasks of the students, a LMS platform will act as a pivotal tool to manage both the academic and managerial responsibilities of running a class online. Google classroom allows a teacher to administer their lessons and manage home tasks of 250 students simultaneously.

Possible Lead Agency: Ministry of Education (MoE) and Ministry of Primary and Mass Education (MoPME) to initiate the long term and short term policy along with support from ICT Division, Post and Telecommunications Division and Ministry of Information

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division	Being in the forefront of innovation and technology, they can assist in the introduction and orientation of the teachers and students to the digital learning platforms and applications.
	Ministry of Education (MoE)	Will be responsible for research and development of the content and curriculum to be used in the digital platforms for both offline and online distance learning.
	Ministry of Primary and Mass Education (MoPME)	Will be responsible for research and development of the content and curriculum to be used in the digital platforms for both offline and online distance learning.
	a2i - Education Transformation	Has been introducing citizen-centric public service innovation to simplify public service delivery and improve the lives of citizens. Their digital education transformation projects can shed valuable information and experience in implementing digital adaptation towards the education system.
Private agencies	Private University Association	Private universities were the pioneer in bringing digital education to the university level. Many of them offered distance learning by 3rd party platforms like Google Classroom and lately a wholly indigenous platform by BRAC University, buX has been launched. Their experience and learnings can be utilised while developing the national ed tech platforms.
	Private School Association	Private schools have been the first to adapt to online learning methods by means of LSM, video streaming, and social media platforms like facebook live.. They can advise the wayforward from classroom learning to digital learning.
	English Medium School Association of Bangladesh	Private schools were the forerunners in bringing Western school curriculum (Mainly British) to the local school systems and different teaching methods that incorporate a blended learning system of both online and offline digital education via means of pre-recorded videos and mobile/tab applications.
	Startups: 10 Minute School, Bohubrihi, Yoda, Repto	These startups integrate hundreds and thousands of students over their streaming and learning platform. They can share their technical skill and experience in rolling out educational platforms on both online and offline modes.
Development organizations	UNICEF	They have been involved in the development of the Primary Education system in Bangladesh by financing education projects worth millions of dollars. They have been a major financier of these projects and can help in the future project fundings and also share their global experience in tech based education
	UNESCO	UNESCO has been running many research and education development programs in Bangladesh for the past decades. They can bring their local research knowledge alongside their international experience in rolling out digital education platforms to their adaptation amongst the teachers and students.
	ADB	ADB is also related to strengthening management, enhancing quality, and improving equity and access to secondary education. They can also share their experience of education development on digital platform initiation and adaptation in other developing nations.

Role of ICT Division:

- CT division will be the lead in disseminating the orientation and adaption of the digital education platforms and its curriculum.
- heir role will be to disseminate and reach the masses by the help of physical training along with online training sessions.
- Will be the content and learning material manager by receiving the content and program schedules from the other ministries and disseminating to the root level via the platforms.
- ICT division along with the Post and Telecommunications division will ensure that there is sufficient infrastructure and technology support to implement a distant learning program.
- Arrange 3rd party mid term evaluation to ensure the project and its SOP (Standard Operating Procedures) are in check to ensure efficiency along with quality assurance.

Process of implementation:

- ICT Division will be the lead trainer responsible for disseminating the orientation and adoption training.
- MoE and MoPME will develop the digital education curriculum and teaching procedures..
- Orientation and training during the initial stages will be jointly done by ICT Division, MoE and MoPME .
- After the initial stage of project implementation the training and orientation will be on part of MoE and MoPME.
- In the long run ICT Division will help in maintenance and development of the technical aspect only and the curriculum to teaching procedures will be done by the Ministry of Education.

Timeline: The initial steps required for drafting the policies should come into action by the end of 2020 so that from the beginning of the next academic year, blended lesson delivery becomes seamless.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Developing modules and training hundred thousand teachers along 34 MN students from Primary level to University level is a giganturion task considering the sheer volume and scale of the task.	Making the process autonomous and as decentralized as possible by ensuring that after the initial batches the institutions are self sufficient in orienting their new faculties and students .	Medium
Partnership	A interoperable project involving two ministries and one divisions has some inherent bureaucratic roadblocks in collaborating and working together	Strategic partnership management should be managed by the lead agency i.e. ICT Division, the infrastructure and technical support on ground will be provided by the Communications Division with a support role from the two education ministries.	High
Ethical	Ensuring intellectual property of the education content and software.	ICT Division and Postal and Communications Division can play the role of ensuring proper encryption to protect the IP rights.	Low
Timeline	Keeping the timeline in check will be very tough as the task involves multilateral collaboration with the possibility of International stakeholders.	The project should be operated on an agile methodology and task dissemination. Reconvening every month or quarter to keep the concerning stakeholders on check.	Medium
Financial	The project to train the teachers and students for adapting to the newly developed platforms and digital content will not be very expensive as most of the training can be given online..	Specific budget allocation will ensure smooth implementations. Giving the training online will optimize the cost to a great extent.	Low

Scope of PPP :

The orientation and adaptation training can be outsourced to other 3rd party consulting/training firms who are already adept in the field and can can fasten the process by quick implementation. The private organizations already operating digital learning platforms and apps have the expertise to show methods which will be most effective both in terms of cost and time.

Resources from Private Sector [financial]:

Private sector companies having financial solvency can be given special incentives such as tax breaks to invest in research and development of tech based digital products for education and learning. After developing standardized edu tech platforms then they can focus on indigenously assembling and developing budget friendly tablets.

Action Agenda 2

Challenge/Opportunity: The traditional brick and mortar education system is failing to meet the demands of the ever changing education landscape both in terms of theoretical learning and skill development- need of hybrid education or blended learning

Estimated Impact (Quantitative):There are 34 MN students across Bangladesh starting from primary to university level. Globally accredited institutions and well trained faculties are available to only a few. Ensuring distance learning programs will enable high quality education to the masses at large. The availability of internet to 2/3rd of the country and one of the highest hand-held device penetration globally, this method of hybrid education will be an impactful initiative.

Estimated Impact (Qualitative): The better the mass students of the country are educated in theory and practice (skill development) the better they will have the opportunity to compete in this global age of competition to get employed and contribute to the economy. Local TELCO giant ROBI Axiata has partnered with 10 Minute School to provide free learning and skill development content for students

Action Agenda

Title: Multisectorial participation and infrastructure development for popularizing virtual school before the end of 2020.

Summary: The GoB has the privilege of initiating this dynamic shift by incorporating the private sector, development sector and NGOs to work for the common goal of disseminating quality education for the students on a national level. The government agencies (Ministry of Education, ICT Division, Ministry of Information) can act as the leads in coordinating the multisectoral collaboration to enhance the learning infrastructure and tools associated with it. Infrastructure development being very capital intensive, the government's initiative or subsidy can help in taking this forward.

Possible Lead Agency: ICT Division and the Post and Telecommunications division along with the help of MoE, MoPME can implement the digital infrastructure and curriculum for distance learning by both online and offline means.sheba, shopup and software development companies will be the possible lead agency.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	ICT Division	Being in the forefront of innovation and technology, they can assist in technical tool development and orientation
	Post and Telecommunications Division	They are responsible for dealing with the nation's broadband, satellite transmission and communication infrastructure. They can enable internet service to remote areas.
	Ministry of Primary and Mass Education (MoPME)	They have been serving the highest number of students in terms of volume and can implement large projects to reach masses
	a2i - Education Transformation	Has been introducing citizen-centric public service innovation to simplify public service delivery and improve the lives of citizens. Their digital education transformation projects can shed valuable information and experience.
Private agencies	Aga Khan Development Network (AKDN)	One of the forerunners in bringing digital education to Bangladesh by their school 'Aga Khan School'. They have moved into fully digital learning by the help of LMS (Learning Management System)
	Private University Association	Private universities were the pioneer in bringing digital education to the university level. Many of them offered distance learning by 3rd party platforms like Google Classroom and lately a wholly indigenous platform by BRAC University, buX has been launched.
	Private School Association	Private schools have been the first to adapt to online learning methods by means of LSM, video streaming, and social media platforms like facebook live.. They can advise the wayforward from classroom learning to digital learning
	English Medium School Association of Bangladesh	Private schools were the forerunners in bringing Western school curriculum (Mainly British) to the local school systems and different teaching methods that incorporate a blended learning system of both online and offline digital education via means of pre -recorded videos and mobile/tab applications.
	Startups: 10 Minute School, Bohubrihi, Yoda, Repto	These startups integrate hundreds and thousands of students over their streaming and learning platform. They can share their technical skill and experience in rolling out educational platforms on both online and offline modes.
Development organizations	UNESCO	UNESCO has been running many research and education development programs in Bangladesh for the past decades. They can bring their local research knowledge alongside their international experience in rolling out digital education platforms.
	ADB	ADB is also related to strengthening management, enhancing quality, and improving equity and access to secondary education. They can also share their experience of education development on digital platforms in other developing nations.
	WB	WB has been helping Bangladesh by financing education projects worth millions of dollars. They have been a major financier of these projects and can help in the future project fundings as tech based initiatives are capital intensive in the initial roll out phase.
	Bill and Melinda Gates Foundation	Recently Bill and Melinda Gates have funded many projects and awarded grants to education based organizations such as BRAC.

Role of ICT Division:

- ICT division can be the technology implementer of the project.
- Their role will be to disseminate and reach the masses by the help of information technology infrastructure and tools.
- Will be the content and learning material manager by receiving the content and program schedules from the other ministries and disseminating to the root level.
- CT division along with the Post and Telecommunications division will ensure that there is sufficient infrastructure and technology support to implement a distant learning program.
- Implement the projects in phases by covering the major divisional cities and to upazila level as the project progresses
- Arrange 3rd party mid term evaluation to ensure the project and its SOP (Standard Operating Procedures) are in check to ensure efficiency along with quality assurance.
- Designate clusters and phases for each of the areas to start implementation of the project simultaneously across various locations.

Process of implementation:

- CT Division along with the Post and Communications Division will start developing the infrastructure to assist distance learning both by online and offline means.
- MoE and MoPME will develop the curriculum and teaching procedures..
- Orientation and training during the initial stages will be jointly done by ICT Division, MoE and MoPME .
- After the initial stage of project implementation the training and orientation will be on part of MoE and MoPME.
- In the long run ICT Division will help in maintenance and development of the technical aspect only and the curriculum to teaching procedures will be done by the Ministry of Education.

Timeline: Partnerships to be formed and resources to be mobilized immediately so that by 2021 every educational institution develops the capacity to conduct virtual classes.

Possible risks and mitigation strategies:

Risk Type	Risk Factor		
Technical	Creating a distance learning program to cater the 34 MN students of Bangladesh is a mammoth task.	Partnering to get expertise and technical know how from global tech giants involved in distance learning along with local distance learning providers.	High
Partnership	A interoperable project involving two ministries and two divisions has some inherent bureaucratic roadblocks	Strategic partnership management should be managed by the lead agency i.e. ICT Division. The infrastructure and technical support on ground will be provided by the Communications Division with a support role from the two education ministries.	High
Ethical	Ensuring intellectual property of the education content and software.	ICT Division and Postal and Communications Division can play the role of ensuring proper encryption to protect the IP rights.	Low
Timeline	Keeping the timeline in check will be very tough as the task involves multilateral collaboration with the possibility of International stakeholders.	The project should be operated on an agile methodology and task dissemination. Reconvening every month or quarter to keep the concerning stakeholders on check.	Medium
Financial	A project to digitize the education system into a blended learning method of having both classroom and digital learning will cost in the few billions.	More budget allocation from the annual budget to fund such projects will ensure the bulk of the capital. Secondary sources could be financial assistance from development partners (i.e. UNESCO WB, IFC) will be a source of relief to the budget limitations.	Medium

Scope of PPP :

As the private sector is heavily invaded in the education sector it is paramount to keep them involved in the digitization process or else the effort will be one sided and polar. The private sector can partner with the government by sharing their knowledge, and experience to expedite this process as they have already started to successfully implement distance learning in some capacities. The private sector can be onboarded as external consultants for the project to share their learning and experience of what works and what does not.

Resources from Private sector [technical]:

The private sector being heavily involved in the education sector for many decades can provide both technical knowledge and expertise by sharing their experience. Many of the private sector players have international and regional alliances with other education bodies and institutions which will allow them to get an international and regional perview in the process of education digitization.

Resources from Private Sector [financial]:

Global tech giants such as google (Google classroom) not only have the technical knowledge but also the financial resources to implement large scale projects requiring data management and information access to millions at a single time. Their technical knowledge, financial ability and data management system will make this process much easier than using indiginous technology in the initial stages. Many large private institutions are in a financial position to bear research and development programs. They can be incentivised by the government by giving them tax breaks and access to government technical assistance to the education platforms at a subsidised fee or for free.education digitization.

Action Agenda 3

Challenge/Opportunity: Distant learning and edutech is the wayforward- only if supporting tools and technologies are widely available to the masses

Estimated Impact (Quantitative): The economies of scale are exponential in a tech based education system where one content or service can be replicated for millions of students. The initial cost of infrastructure might be high but in the long run enabling the students to be adaptable to tech will not only benefit the education system but also the whole economy at large. On average a tech based product can generate a value of 10,000 X to the range of millions.

Estimated Impact (Qualitative): The economies of scale are exponential in a tech based education system where one content or service can be replicated for millions of students. The initial cost of infrastructure might be high but in the long run enabling the students to be adaptable to tech will not only benefit the education system but also the whole economy at large. On average a tech based product can generate a value of 10,000 X to the range of millions.

Action Agenda

Title: Develop infrastructure and give incentives to support tech based learning in partnership with private and public education institutions till the end of 2021.

Summary text: The GoB can develop the internet based learning infrastructure in phases whereby in the initial stages the focus will be on cluster based internet/public wifi services whereby students can come to a designated place to learn at their time of convenience with their own devices or devices available at learning centers. Initiate programs like zero.edu (same as zero.facebook) websites where the government will subsidize and provide free internet access to learning platforms and content providers

Possible Lead Agency: The Post and Telecommunications division along with the help of ICT division can implement the digital infrastructure and internet communication for distance learning by both online and offline means. software development companies will be the possible lead agency.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	Post and Telecommunications Division	They are responsible for dealing with the nation's broadband, satellite transmission and communication infrastructure. They can enable internet service to the zila level level and hard to reach areas not accessible by private ISPs. This division also maintains the satellite communications of the Bangabandhu Satellite, in the long run they can implement satellite based internet connectivity.
	ICT Division	ICT Division can assist in keeping the servers, data centers and platform under continuous maintenance, development and ensure security of the national assets both virtually and physically.
	a2i - Education Transformation	A2i has had the most experience of interoperability amongst ministries and can aid in assisting the digital transformation and IT connectivity in the education sector.
Private agencies	AMTOB (Association of Mobile Telecom Operators of Bangladesh)	Till date the mobile operators provide the maximum coverage for wireless domestic internet. They can be brought under one umbrella by the government to offer net services for zero.edu websites. This will enable the affordability and quickest reach to reach students even in periphery regions.
	Broadband Internet Service Providers	Private internet service providers are responsible for providing internet connectivity to schools, homes and offices at large. Now ISPs are operating at district levels too. They can serve as the backbone by providing internet through DSL and fibre optic.
	WiMax Internet Service Providers	Though a dying technology but due to its availability in many parts of the country their available infrastructure can be used to increase the internet penetration.
	English Medium School Association of Bangladesh	Private schools were the forerunners in bringing Western school curriculum (Mainly British) to the local school systems and different teaching methods that incorporate a blended learning system of both online and offline digital education via means of pre-recorded videos and mobile/tab applications.
Development organizations	IFC	Considering the multi billion dollar project this will turn out to be, IFC can assist in providing loans on soft terms.
	ADB	ADB has been heavily involved in the education sector development by providing funds and grants for implementing large scale projects. They can help in providing loans or grants to help roll out the project and test its effectiveness.
	WB	WB has been helping Bangladesh by financing projects worth millions of dollars. They have been a major financier of this project and can help in the future project fundings as tech infrastructure is very capital intensive.

Role of ICT Division:

- ICT division will be the technical coordinator in managing the infrastructure development.
- Their role will be to maintain and develop education platforms, servers, data centers with the help of information technology infrastructure and tools.
- ICT division will be responsible to look after the software development and maintenance for both the online and offline applications for the computer or handheld devices.
- ICT division along with the Post and Telecommunications division will ensure that there is sufficient infrastructure and technology support to implement a distant learning program.
- Oversee the project implementation in phases by covering the major divisional cities and to upazila level as the project progresses

- Arrange 3rd party mid term evaluation to ensure the quality and efficiency of the infrastructure.
- Backstop the maintenance and development of the infrastructure done by the Post and Communications Division.
- Initiate collaborative projects with the Telco and government for initiating zero.edu websites

Process of implementation:

- The Post and Communications Division will start developing the infrastructure to assist distance learning both by online and offline means.
- ICT Division will be there to ensure the technical and software support of the learning platforms and data centers.
- The Post and Communications division will set up and maintain the infrastructure.
- Initially ICT Division will coordinate initiatives live zero.edu websites to give free access of education platforms to students
- ICT Division will be in constant touch to keep the infrastructure up to date and compatible with the need of digital learning platforms and servers

Timeline: Partnerships to be formed and resources to be mobilized immediately so that by 2021 online learning emerges as one of the major modules for learning.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Ensuring internet connectivity in 64 districts and every student is a very challenging and time consuming task.	Partnering with Telcos and the GoB to roll out zero.edu websites for boosting the access of free education to anyone and everyone having access to a device and mobile network in their area.	High
Partnership	The Post and Communications ministry being the sole stakeholder in installing broadband lines across the nation is easier due and has no interministry time lag.	The whole burden of connecting Bangladesh under broadband should not be only the duty of the government. Allowing Telco and private ISPs to participate in spreading internet connectivity will make the process faster.	Low
Ethical	Ensuring user data safety and prevent misuse of internet	ICT Division and Postal and Communications Division can play the role of ensuring proper encryption to protect the IP rights and instilling check measures to prevent misuse of the internet.	Low
Timeline	Bringing the whole nation under internet connectivity is a timestaking task. There is a need of both the GoB and private sector players to fasten the process.	Allowing the government agency and private organizations(Telco, ISP) to implement this simultaneously will save a lot of time.	Medium
Financial	Infrastructure setup cost is a matter of billions due to all the technology and equipment needed is imported.	Allowing special allocation of budget for internet infrastructure development from the Annual Development Budget, and also managing additional capital from the private sector and development partners to fund this project.	Medium

Scope of PPP :

A large portion of internet users still access the internet via mobile data purchased from Telecom Operators. More than 60% of internet users avail the internet by data packages showing the huge prospect of reaching the masses via mobile networks. The government can partner with the Telcos in offering zero.edu platforms and websites which will be subsidised or be given as charity from the Telcos for spearheading digital learning.

Resources from Private sector [technical]:

A large portion of internet users still access the internet via mobile data purchased from Telecom Operators. More than 60% of internet users avail the internet by data packages showing the huge prospect of reaching the masses via mobile networks. The government can partner with the Telcos in offering zero.edu platforms and websites which will be subsidised or be given as charity from the Telcos for spearheading digital learning.

Resources from Private Sector [financial]:

The private sector has a huge pool of investable funds which can be diverted here to set up the infrastructure and earn returns from the monthly subscriptions. Setting up a national company which will be responsible for domestic internet infrastructure set up and maintenance likewise we have DESCO for electricity. As days pass and more and more services become internet dependable there will be a huge demand for providing internet service.

Action Agenda 4

Challenge/Opportunity: Due to limited access to internet and devices to access online classes, students in rural areas are facing the threat of quitting if the lockdown situation persists for another three months.

Estimated Impact (Quantitative): At present 34 million students starting from the primary level to university level are uncertain about their next course of action. Although online education is being used as an alternative to continue academic activities but a large portion of students are not privileged to avail it. 16 million students are at the verge of dropping out as for them education was a luxury but given the current circumstances additional 7.7 million households have reached below the poverty level adding to the existing 8.1 million poverty stricken households. We see that 51.7% primary level students, 42.4% secondary students and 19% university students are at risk of never returning to their institutions. Only 30% of students have access to broadband internet at home and about 10% students have no devices at all, 1 GB of data pack on average costs 40Tk which is sufficient for 3 hrs of standard quality video viewing moreover only 65% of the country is under 3G network coverage which is needed for a bare minimum video streaming.

Estimated Impact (Qualitative): The socio-economic ramifications of dropping out will be devastating in the long run. Apparently it may seem of less harm of having a lower literacy rate amongst the younger generation but dropping out from a formal school education system will lead to increased child labour, underaged marriages, physical & sexual abuse of children and youngsters getting involved in anti-social activities like stealing and drug peddling.

Action Agenda

Group education method to prevent children falling out of education in rural Bangladesh.

Summary: Assigning one teacher to each area where they reside to teach the kids in that particular area and also hiring high school kids to teach primary school kids in the neighbourhood can be practiced to reduce fallout.

Possible Lead Agency: Ministry of Education will be responsible for the initial orientation and introduction to the group education concept with strong support from the Ministry of Primary and Mass Education.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	Ministry of Education (MoE)	Will be responsible for research and development of the mechanism for group education.
	Ministry of Primary and Mass Education (MoPME)	Will be responsible for research and development of the content and outreach plan along with training programs for school teachers.
	a2i - Education Transformation	Has been introducing citizen-centric public service innovation to simplify public service delivery and improve the lives of citizens. They can suggest pilot projects through which the desired effect can be achieved shortly.
Development organizations	UNICEF	They have been involved in the development of the Primary Education system in Bangladesh by financing education projects worth millions of dollars. They have been a major financier of these projects and can help in the future project fundings and also share their global experience in reaching students located in unreachable areas.
	UNESCO	UNESCO has been running many research and education development programs in Bangladesh for the past decades. They can bring their local research knowledge alongside their international experience in rolling out education platforms to their adaptation amongst the teachers and students.
	BRAC	BRAC has been working for the betterment of the education sector for a long time now. Through its rural network, BRAC is relentlessly working towards improving equity and access to secondary education.

Process of implementation:

- MoE will be the lead trainer responsible for disseminating the orientation and adoption training.
- MoE and MoPME will develop the curriculum and teaching procedures.
- Orientation and training during the initial stages will be jointly done by MoE and MoPME and development partners.
- After the initial stage of project implementation the training and orientation will be on part of MoE and MoPME.

Timeline: Partnerships to be formed and resources to be mobilized immediately so that from the end of 2020 third quarter group learning comes into practice.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Developing modules and training teachers and students located in rural areas is a gigantic task considering the sheer volume and scale of the task.	Making the process decentralized by ensuring that after the initial batches the institutions are self sufficient in orienting their new faculties and students.	Medium
Partnership	An interoperable project involving two ministries and one divisions has some inherent bureaucratic roadblocks in collaborating and working together	Strategic partnership management should be managed by the lead agency, the infrastructure and technical support on ground will be provided by the Communications Division with a support role from the two education ministries.	High
Quality	Ensuring quality content and delivery will remain subject to scrutiny.	MoE can play the role of quality controller by leveraging partnerships with development agencies.	High
Timeline	Keeping the timeline in check will be very tough as the task involves multilateral collaboration with the possibility of stakeholders.	The project should be operated on an agile methodology and task dissemination. Reconvening every month or quarter to keep the concerning stakeholders on check.	Medium
Financial	The project to train the teachers and students for adapting to the newly developed teaching method will require additional funds for providing allowances, disinfectants, PPE and face masks.	Specific budget allocation will ensure smooth implementations. Ensuring the health safety of both the teacher and students will make the program more effective.	Low

Scope of PPP :

The orientation and adaptation training can be outsourced to other 3rd party consulting/training firms who are already adept in the field and can fasten the process by quick implementation. The private organizations already operate education platforms in rural areas and have the expertise to show methods which will be most effective both in terms of cost and time.

Resources from Private sector [technical]:

Development partners who are already implementing group learning methods in rural Bangladesh can be consulted to devise the strategic plan. Case studies from them can also be explored to identify loose ends in the rural education value chain.

Action Agenda 5

Challenge/Opportunity: Lack of private sector investments and FDI is hindering the education sectors growth

Estimated Impact (Quantitative): Experienced and large global conglomerates can create a paradigm shift in the education sector. Having the technology, know-how and experience of different global markets will help the education sector take leaps rather than experimenting and learning from mistakes. Airtel's free.edu platform in Kenya has helped reach digital learning to 250,000 students in 300 schools. Globally the education market at present is valued at 6 TN USD and mostly being managed by private sector organizations.

Estimated Impact (Qualitative): Considering the ever changing technological landscape it is important to use experienced and expert advice to cater the needs of 34 MN students in Bangladesh. Global tech and education giants like Microsoft, Google, Coursera and edX can support infrastructural and content development.

Action Agenda

Create an investor friendly environment for private entrants in the Education sector so that by 2030 the country can ensure improved access to education for all.

Summary: The government's initiative to encourage private sector players in the education sector will open doors to both domestic and international investors to enter this market. With the injection of cash into the system we will see improvement in the technical infrastructure, content and tech based tools in the betterment of the overall ecosystem.

Possible Lead Agency: The Post and Telecommunications division along with the help of ICT division can implement the digital infrastructure and internet communication for distance learning by both online and offline means.

Possible connected agencies:

Broad Group	Specific Entities	Role and Implementation
Government agencies	Ministry of Finance	Develop the policies and regulations for FDI and private sector investment in the education sector at all levels and capacities
	Ministry of Commerce	Define the registration characteristics for private and foreign companies in the education sector under the RJSC (Registrar of the Joint Stock Company and Firms). Set out the tariff and tax policies to be enacted upon for profit and non-profit organizations.
	ICT Division	Set out policies and regulations for the private sector investor in protecting the data privacy and confidential user information which will be available by private sector entities venturing into the education sector.
	a2i - Education Transformation	Has been introducing citizen-centric public service innovation to simplify public service delivery and improve the lives of citizens. Their digital education transformation projects can shed valuable information and experience about involving private sector organizations both domestic and international
Private agencies	Private University Association	Private universities have many affiliations and MoU signed with private companies and foreign entities for continuous improvement in education and research. They can share their positive experiences with such foreign and local private entities that have been effective and efficient.
	Private School Association	Many Private schools have curriculum and teaching material support from foreign nations. They can provide key insights on how private entities can play a significant role in developing the education market.
	English Medium School Association of Bangladesh	Majority of the private schools operate on the curriculum from North American or British Education Boards. All of the foreign education boards are either for profit or non-profit organizations. English medium schools can share their preview of setting amicable conditions for foreign education bodies and companies to come forwards and invest in the local market.
	Startups: 10 Minute School, Bohubrihi, Yoda, Repto	These startups integrate hundreds and thousands of students over their streaming and learning platform. They can share their technical skill and experience in rolling out educational platforms on both online and offline modes. As they are currently operating and have the local market context along with experience, they can share how to decrease the barriers to entry and make it more investor friendly.

Development organizations	IFC	Having an investment portfolio of 1.5 BN USD in Bangladesh. IFC's capital and experience can help shape the foundations for private sector investment in the education sector.
	ADB	ADB having a history of financing education programs can provide funds for large scale private investments projects by local and foreign entities.
	WB	WB has been helping Bangladesh by financing education projects worth millions of dollars. They can finance large projects by the private sector in the education industry to encourage further investments by private investors.

Role of ICT Division:

- ICT division will play a passive role in the project by enacting laws and policies for data privacy.
- Define the nature and depth of information that can be acquired by private entities when implementing education products in digital learning.
- Ensure the data privacy and anonymity by frequently checking to ensure all the policies and guidelines are being followed.

Process of implementation:

- Ministry of Finance to set out the policies for private sector investors in the education market.
- Ministry of Commerce to set out the registration and taxation policies for private sector investors.
- Bangladesh Bank and Bangladesh Investment Development Authority (BIDA) to set out policy and regulations for easy investments into the sector and channels to take their returns to their native country.
- MoE and MoPME to oversee the quality and benchmarking of educational products and platforms being offered by the private sector investors .
- ICT Division to ensure proper measures and best practices are being followed while rolling out tech based platforms and products.

Timeline: A policy sandbox needs to be in place so that relevant agencies can explore modules for attracting more investment in the education sector by 2030. Domestic capital can also be mobilized to finance sectoral growth.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	A policy sandbox needs to be in place so that relevant agencies can explore modules for attracting more investment in the education sector by 2030. Domestic capital can also be mobilized to finance sectoral growth.	A policy sandbox needs to be in place so that relevant agencies can explore modules for attracting more investment in the education sector by 2030. Domestic capital can also be mobilized to finance sectoral growth.	N/A
Partnership	To prevent monopoly in the education market there should be provisions of entering the market by having a domestic company as the local partner.	Keeping strategic partnership options open with local companies will ensure a balance between the foreign companies and local, thus preventing polarization in the market or monopoly.	Medium
Ethical	Ensuring intellectual property of the platforms and products.	Having strong anti counterfeiting policies with proper implementation for safeguarding the intellectual property of the private investors.	High
Timeline	Having investor friendly policies at first will ensure smooth operations of the projects and prevent any time lag hurdles.	No major concerns	Low
Financial	Attracting foreign investors to pour their money into the domestic education market is a challenge. Although ample amount of foreign funds are available but the challenge is to divert into the country	Keeping local education conglomerates and tech companies as partners along with the foreign companies will enable the investors to get a head start in implementing their projects.	Medium

Scope of PPP :

The scope of public private partnership is possible only if the government takes a lead in making attractive investment opportunities. The government can be a co-financier along with the private sector to ensure the private sector players get confidence in initiating a project. The governments as a co-financier and partner will enable the private sector investors to reach the root level education consumers and serve at a national level.

Resources from Private sector [technical]:

The private sector investors who are heavily involved in the education sector for many decades can provide both technical knowledge and expertise along with their funds. Many of the private sector players having international and regional alliances with other education bodies and institutions will allow them to get an international and regional perview in the process of education digitization. The expertise is more valuable than the funds itself.

Resources from Private Sector [financial]:

The private sector investors who are heavily involved in the education sector for many decades can provide both technical knowledge and expertise along with their funds. Many of the private sector players having international and regional alliances with other education bodies and institutions will allow them to get an international and regional perview in the process of education digitization. The expertise is more valuable than the funds itself.

Post COVID-19 ICT Roadmap for Bangladesh

Employment and Skills

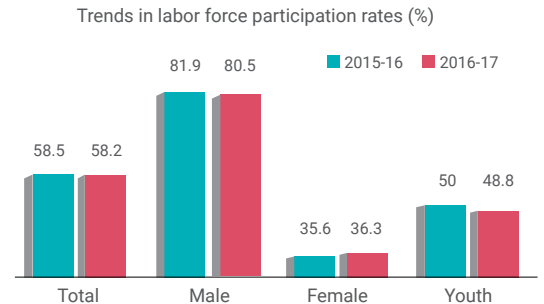
Post COVID-19 ICT Roadmap for Bangladesh: The Employment and Skills sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Employment and Skills is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

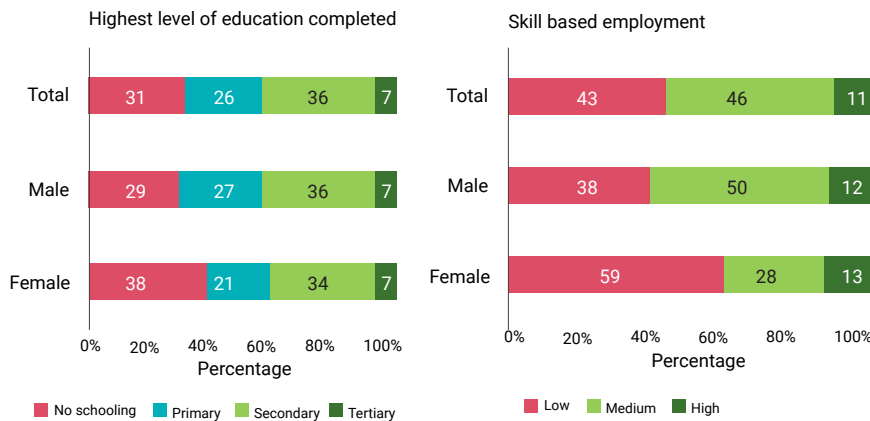
Why the Employment and Skills sector

The slower pace of new job creation has prevented accrual of the benefits of Bangladesh's demographic dividend, despite maintaining an impressive 7% GDP growth over the last half decade and remarkable progress in human development indicators. Employment elasticity of growth is showing a falling trend in recent years, indicating declining capacity of growth to generate employment.²² Although the economy has generated about 1.15 million jobs per year over the past decade, growth in the working-age population is argued to have outpaced job creation rate. Even with the official unemployment rate at 4.2% which accounts for 2.6 million of the labour force, a disquieting trend in Bangladesh is that the youth unemployment rate is about 10% while for the youths with a bachelor or higher education the unemployment rate further rises to 34%. Out of the total youth population, aged 15 to 29, of 43.6 million which is 40% of the total labour force, 80% (i.e., a whopping 34 million) youths have been categorised officially as 'Not in Education, Employment or Training (NEET)'.²³



Source: LFS, 2017

Despite improvements in education, the quality of the labour force is woefully weak. According to LFS 2016-17, some 32% of the workforce did not have any education, 26% had only primary level education, and less than 6% had tertiary education. Evidence also shows that the quality of education and training is very weak (Ahmed and Sattar 2020; ADB-ILO 2016; World Bank 2013a). Studies have found evidence of significant skill mismatch in the overall and industry specific job markets and raised concerns over hiring overseas employees due to the scarcity of skilled labour force (Bangladesh Institute of Development Studies, 2017; Rahman & Al-Hasan, 2019).



Source: BBS

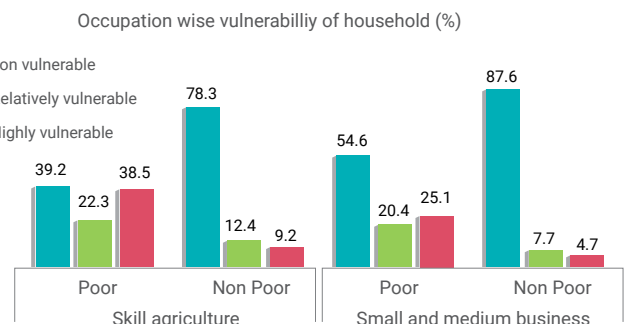


Impact of COVID-19

COVID-19 has further intensified the daunting tasks of job creation with economic activities of the country staggering at a low pace for several months. The result has been a loss in income and employment for millions of people, especially those engaged in small scale manufacturing employment and service sectors, not to mention 85% of the labour force who are engaged in informal employment, living on daily or weekly earnings. Informality in the labour market has further made the task of identification of the affected difficult; accessing the incentive packages offered by the GoB has become even more complex especially for the cottage, micro, small, and medium enterprises (CMSMEs). A faster adoption of Fourth Industrial Revolution (4IR) by the developed countries as a by-product of social distancing, can pose threat to labour market opportunities of the low skilled economies like Bangladesh. ICT can play a leading role in coordinating among different agents of the labour market and to bridge the gap between the demand and supply sides.

Constraints

Low female labour force participation, youth unemployment and youth NEET, and erosion of real wage are the major challenges facing the Bangladesh labour market right now. The poor skill base of its labour with as high as 31% of its labour force found to have no education and only 7% having tertiary education, is a primary obstacle that the country must address. Further aggravating the situation is the mismatch of skills between the supply and demand sides of the market resulting in the phenomenon of educated unemployed in the labour market. Slow pace of growth of private investment in recent years with the ratio of private investment to GDP being almost constant at around 23% can also be argued as one of the major obstacles of employment generation in the economy. The ongoing process of structural transformation combined with robust productivity growth, slowdown in unskilled labour absorption in RMG, and more capital deepening in manufacturing sector have also contributed to the rise in unemployment.



Source: Authors' calculation based on HICS 2016

22) During 2005-06 to 2009-10 employment elasticity was 0.55 which has fallen to 0.25 during 2009-10 to 2017-18 with employment elasticity in manufacturing sector fallen from 0.87 to 0.65 (Authors' own calculation).

23) Bangladesh Labour Force Survey, 2017

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the employment and skills sector and ICT in the employment and skills sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Universal Employability Registry (for both the employed and unemployed)	National strategy to revamp all training and skill development curricula for upskilling of human resources in a more [employers'] need-based fashion, while targeting 4IR and automation	Introducing an online platform for small-scale loans for the CMSMEs	Employment generation schemes through provision of small-scale online loans for specific sections of the economy [rural poor, RMG workers, returnee migrant workers, and women]	Emergency Employment creation program
Why	The key labour market challenge for Bangladesh of identification of the potential job seekers with other relevant information through a central database. Also the growing skill mismatch between the demand and supply side of the job market	The growing skill mismatch between the demand and supply side of the market; the emergence of greater automation, digitalisation, and 4IR	The high degree of formality and complexity in the loan disbursement process, the CMSMEs are often unable to take advantage of incentive packages and budgetary allocation	Given the recessionary situation of the world economy, falling oil prices, and bleak prospect of private investment and job creation, it is important to devise policies to generate self-employment opportunities for the most affected sections of the population	Due to COVID-19, a lot of people in informal employment have lost their job/ business and many of them have even fallen below the poverty line. It is extremely crucial to design strategies that can support their livelihood at least in the short term until they can find an alternative employment
What	A digital record keeping hub where any and all individual of employable age, irrespective of sex and social class, can register, roping in the 85% in the informal sector. Additionally, employers from ALL sectors will mandatorily register their employee database, new job postings, etc., helping those registered as unemployed to seek opportunities, giving the entire ecosystem a realistic overview of the demand and supply situation. This can serve as a basis for national level strategic decision-making and policy reforms	Re-design the course curriculum incorporating all training institutions in view of labour market needs of all sectors, COVID-19, and 4IR and to provide an internationally accepted certification/ accreditation system. Introduce ToTs to fill the prevailing shortage and to meet future demand of trainers and instructors in the pedagogy of employer need-based, 4IR, and automation	A comprehensive online portal through which the CMSMEs can seek loan and upload relevant documents. Informal organizations without proper documentation may get a grace period of 3 months when they can be offered and small-scale loans on a conditional basis	An online platform under the respective ministries offering loans in flexible terms with simplified application and approval process requiring minimum documentation and formalities. Sectors can be pre-determined and technical assistance and trainings maybe provided according to the needs of the different sections of population	Identification of most the vulnerable and arrange emergency job programs. Use standard format for data capturing and SoPs until using Universal Employability Registry will lead to assessments of applications and then eventual disbursement through the Registry and National Identification [NID] no.
Lead Agency	ICT division	TVET under Ministry of Education	SME Foundation/ Ministry of Industry	ICT Division	Ministry of Labour
Implementing Agencies/ Actors	National Skill Development Authority, Ministry of Labour	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Govt. Partners	Ministry of Expatriate Welfare along with BMET, Ministry of Industry and Ministry of Commerce, BBS, local level representatives of the government	Ministry of Expatriates' Welfare along with BMET, Ministry of Industry and Ministry of Commerce, BBS, local level representatives of the government	Bangladesh Bank, local level government representatives	Ministry of Commerce, Ministry of Women and Children's Affairs, Bangladesh Bank, BMET, Ministry of Industry, Ministry of Education National Skill Development Corporation, Ministry of Social Welfare, Ministry of Food, Krishi Bank	Ministry of Expatriate Welfare along with BMET, Ministry of Industry and Ministry of Commerce, BBS, local level representatives of the government
Pvt Sector Partners	Local level NGOs, BGMEA, BKMEA, MCCI, DCCI	MCCI, leading TVET organizations/Skills training organization/Accreditation council in destination countries for migrants/NGOs	PKSF, NGOs, sectoral representatives	Bangladesh Trade Union Forum, BRAC, BASIS, DCCI/MCCI, SME Foundation, Joyeeta, Women Chamber of Commerce, financial intermediaries	Bangladesh Employers' Federation/e-CAB
Financing and modality	Ministry of Finance/Development partners	Ministry of Finance/Private sector business associations/Development partners	Ministry of Finance/ Private sector business associations/Development partners	Ministry of Finance/Private sector business associations/Development partners	Ministry of Finance /Private sector business associations/Development partners

Post COVID-19 ICT Roadmap for Bangladesh

Employment and Skills

Thematic Paper

ICT Roadmap for Bangladesh: Employment and Skills

1. Introduction and Rationale of the Study

There is no denying the fact that, Bangladesh has done impressively in attaining more than 7 per cent growth for the last five years or so with remarkable progress in a number of human development indicators, e.g. head count poverty, life expectancy, gender parity at primary education etc. Despite of such progresses, there remains argument that the country has not been able to effectively translate the growth experience into its labour market. For example, employment elasticity of growth is showing a falling trend in recent years, indicating declining capacity of growth to generate employment.¹ Jobs diagnostics by the World Bank (2017), ILO and ADB (2017), also suggest that the ability of the economy to generate employment seems to have declined over time. Annual employment growth declined from 3.32 per cent during 2005-06 to 2010 to 1.33 per cent during 2013 to 2016-17. Besides, although the economy has generated about 1.15 million jobs per year over the past decade, growth in working-age population argued to have outpaced job creation rate. Though not conclusive, a number of factors might have acted behind the declining pace of job growth, including the ongoing process of structural transformation combined with robust productivity growth, slowdown in unskilled labor absorption in RMG and more capital deepening in manufacturing sector.

In addition to the low labor absorptive capacity of the economy, a number of studies have identified the major challenges that the BD labor market is facing; e.g., low female labor force participation, youth unemployment and youth NEET, erosion of real wage etc. However, one of the major obstacles for employment generation, is the poor skill base of its labor and as high as 31% of its labor force is found to have no education and only 7% have tertiary education. The problem also lies in mismatch of skills between the supply and demand sides of the market resulting in the phenomenon of educated unemployed in the labor market. Slow pace of growth of private investment in recent years with the ratio of private investment to GDP being almost constant at around 23% can also be argued as one of the major obstacles of employment generation in the economy.

Against the backdrop of such challenges in the labor market, COVID-19 has further intensified the daunting tasks of job creation. With COVID-19 being detected at the beginning of March 2020 and infected cases still showing a rising trend, economic activities of the country are at a low pace for several months. This has resulted in loss in income and employment for millions of people, especially those engaged in small scale manufacturing employment and service sectors. Given that as high as 85% of labor force are engaged in informal employment, many of whom living on daily or weekly basis of earnings saving the livelihood of these people and generating employment opportunities for them are the key tasks ahead. Low skill base of its workers has also made the scenario more challenging. In addition, increased importance of social distancing of COVID-19 might result in quicker adoption of Fourth Industrial Revolution (4IR) of the developed countries, leaving developing countries like Bangladesh with little or no time to prepare. In the medium to long term, this can pose threat to labor market opportunities of the low skilled in particular. Informality in the labor market has also made the task of identification of the affected difficult- as a result accessing the incentive packages offered by the GoB has become even more complex especially for the cottage, micro, small and medium enterprises (CMSMEs). With a view to identify the industries as well as the workers affected by COVID-19 and to effectively channel the incentives of the government, the role of ICT is greater than ever before. ICT can also play a leading role in coordinating among different agents of the labor market and to bridge the gap between the demand and supply sides. A well-articulated action plan while utilizing the channels of ICT can therefore play the major role in skill formulation and employment generation.

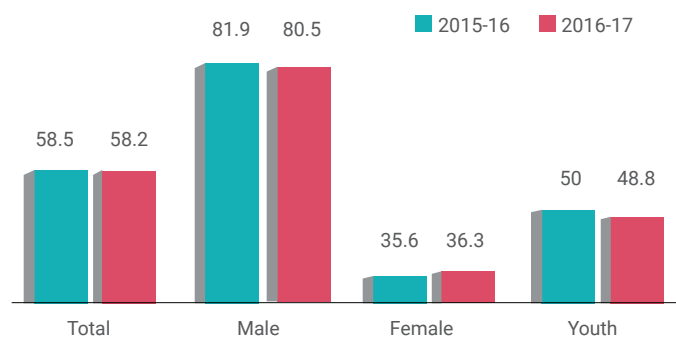
The report is organized as follows: Section 2 portrays pre COVID-19 scenario of the labor market of the country while in Section 3 evidences of post COVID labor market scenario has been outlined. Implications of COVID-19 for different sectors of the economy of Bangladesh have been discussed in Section 4. Finally, in Section 5, several action agenda against the backdrop of the challenges of both pre and post COVID-19 have been proposed and explained.

2. Pre-COVID Labour Market Situation Assessment

Notwithstanding a substantial slowdown in the population growth rate, Bangladesh is enjoying the benefit of a growing labour supply owing to an increase in the share of the working-age population. But the potential benefits of this demographic dividend are not fully accruing to Bangladesh because of a relatively slower pace of new job creation. A snapshot of the main characteristics of the current supply-side outcomes of the labor market is contained in Table 1. The key features of Bangladesh labor force are summarized below.

1. During 2005-06 to 2009-10 employment elasticity was 0.55 which has fallen to 0.25 during 2009-10 to 2017-18 with employment elasticity in manufacturing sector fallen from 0.87 to 0.65 (Authors' own calculation).

Figure 1 - Trends in labor force participation rates (%)



Source: LFS, 2017

The labor force participation rate has increased but at 58.2 percent it is still very low suggesting that there are underutilized human resources. This is mainly because of low female labor force participation. Low female labor force participation is a big challenge. The youth (aged 15 to 29) LFPR is lower than overall LFPR and worryingly a declining trend is observed (Figure 1).

A high percent of those employed are either self-employed (44.0%) or are unpaid family workers (11.8%). The share of wage workers is low at around 40%. Additionally, there is a substantial workforce that works for less than 35-40 hours per week. The large share of unpaid family workers and a substantial percentage of the workforce working less than 35-40 hours suggests that the percent of open unemployment (4.3%) is not a good representation of the quantitative aspects of the employment challenge in Bangladesh (Government of Bangladesh 2020). As in the case of low female labor force participation, the GDP growth can be boosted significantly by enabling the conversion of unpaid family workers to wage employment in higher-income sectors and increasing the work effort of the underemployed to the full 40 hours per week.

Table 1 - Summary of the Demand Side of the Labor Market

Demand Side Variables	2000	2016-17
Domestic employed population (million)	39	60.8
Foreign employment (millions per year)	0.2	0.6
Employment: agriculture (%)	50.8	40.6
Employment: Industry (%)	13.1	20.4
Employment: services (%)	36.1	39
Employment manufacturing (%)	9.5	14.4
Employment: Construction (%)	3.6	6
Employment: Trade (%)	14.1	14.2
Employment Transport (%)	6.4	8.6
Employment professional services (%)	8.8	12.2
Employment personal services (%)	6.8	4.0
Growth rate of total employment (%)		2.8
Growth rate of agricultural employment (%)	1.4	
Growth rate of industrial employment (%)		5.7
Growth rate of services employment (%)		3.3
Growth rate of manufacturing jobs (%)		5.5
Growth rate of construction jobs (%)		6.1
Growth rate of trade jobs (%)		2.9
Growth rate of transport jobs		4.7
Growth of professional services (%)		4.9
Growth rate of personal services (%)		-0.5
Employer (million)	0.1	2.7
Own account worker (million)	18.2	26.8
Unpaid Family helper (million)	4.7	7.2
Employee (million)	16	24.1
Percent own-account worker (%)	41.0	44.0
Percent unpaid family worker (%)	12.1	11.8
Percent wage employment (%)	41.0	39.6
Formal (%)	75	85.1
Informal (%)	25	14.9
Total unemployment (%)	4.3	4.2
Total youth unemployment (%)	11.1	10.6
Educated unemployed youth (%)	5.5	8.5

Source: LFS reports, various issues.

Figure 2 displays the sectoral distribution of employment in Bangladesh by economic sector from 2009 to 2019. In 2019, 38.58 percent of the employees in Bangladesh was active in the agricultural sector, 21.26 percent in industry and 40.16 percent in the service sector.

Devising a workable unemployment insurance scheme is particularly challenging in Bangladesh due to the high proportion of workforce in the informal unregistered sector (i.e., small-scale self-employment or daily wage labour. Figure 3 shows that 87.0 percent of the labor force is employed in the informal economy according to the 2010 Labor Force Survey. In 2000, the informal employment was about 75.2 percent whereas, in 2015-16, it rises to about 86.0 percent. Moreover, among the workforce, about 44.0 percent, 15.4 percent and 22.5 percent are self-employed, day laborer and paid workers, respectively. The informal sector accounted for more than 40.0 percent of the total gross value added of Bangladesh in 2010, with the highest contributions in agriculture, fishery, trade, and industries where capitalization is relatively lower.

Figure 2 - Employment by economic sector in Bangladesh 2019

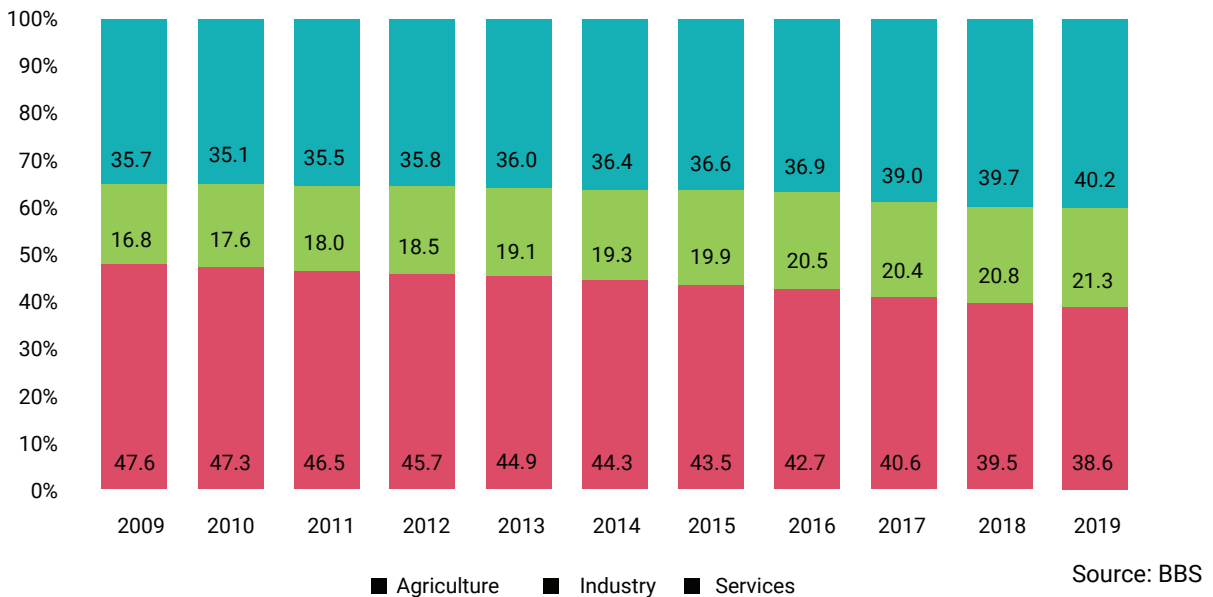
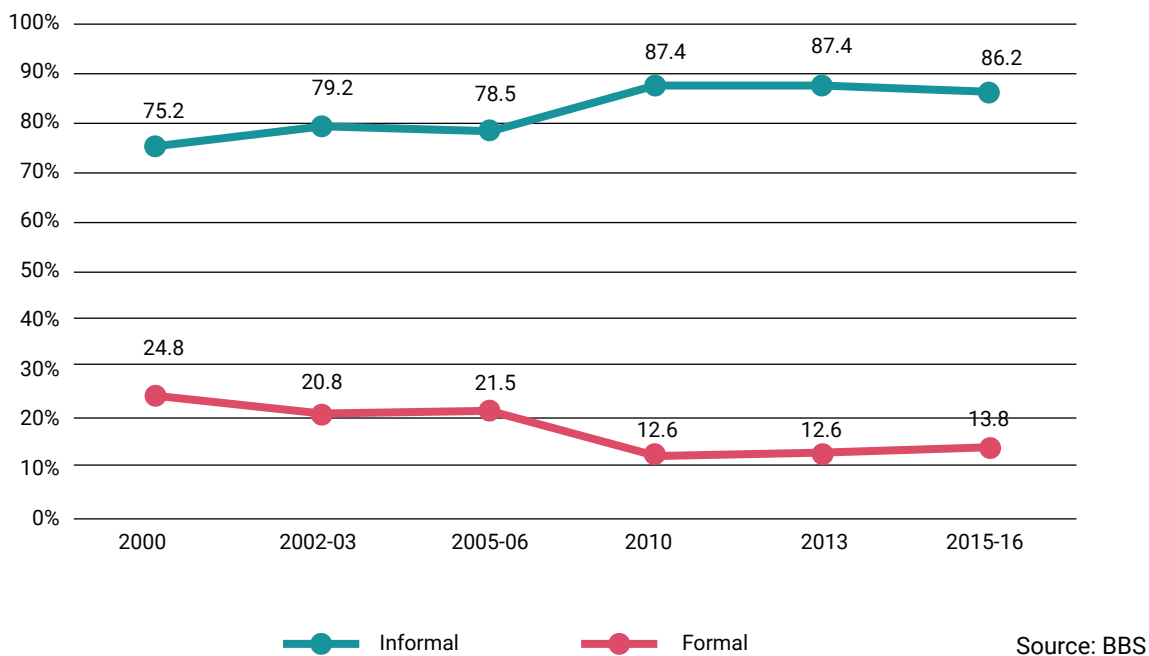


Figure 3: Trends in Informal Employment (%)



Despite the fact our official unemployment rate is about 4.2 percent which count about 2.6 millions of labor force, a disquieting trend in Bangladesh is that the youth unemployment rate is about 10.0 percent while for the youths with a bachelor or higher education the unemployment rate of further rise to reach 34.0 percent. Out of the total youth population, aged 15 to 29, of 43.6 million which is 40% of the total labor force, 80% (i.e., a whopping 34 million) youths categorized as the official 'Not in Education, Employment or training (NEET)'. Moving away from official unemployment definition, if we considered the youth NEET, the potential unemployment rate rise to about 3.0 percent. Moreover, the underemployment rate is about 2.4 percent or about 1.5 million people. (Figure 4, Table 1)

Figure 4: Unemployment, Youth Unemployment and Underemployment (%)

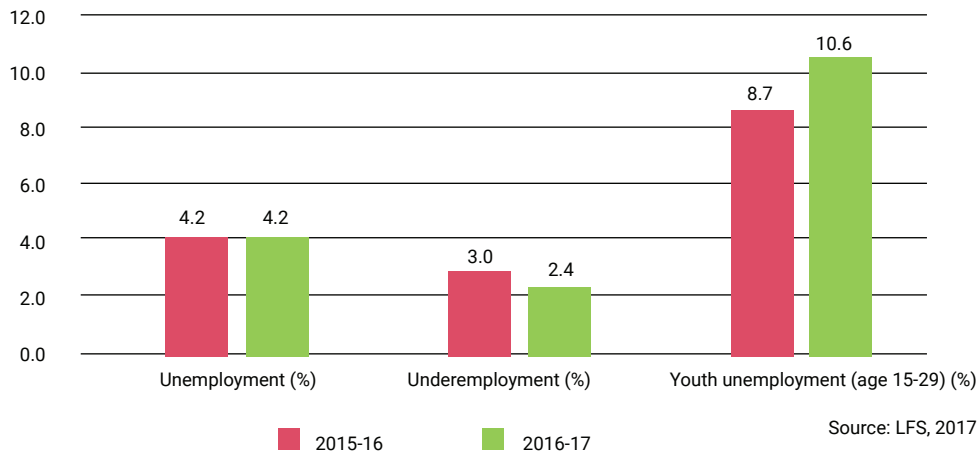


Figure 5: The Emerging Trend of Potential Unemployment (%)

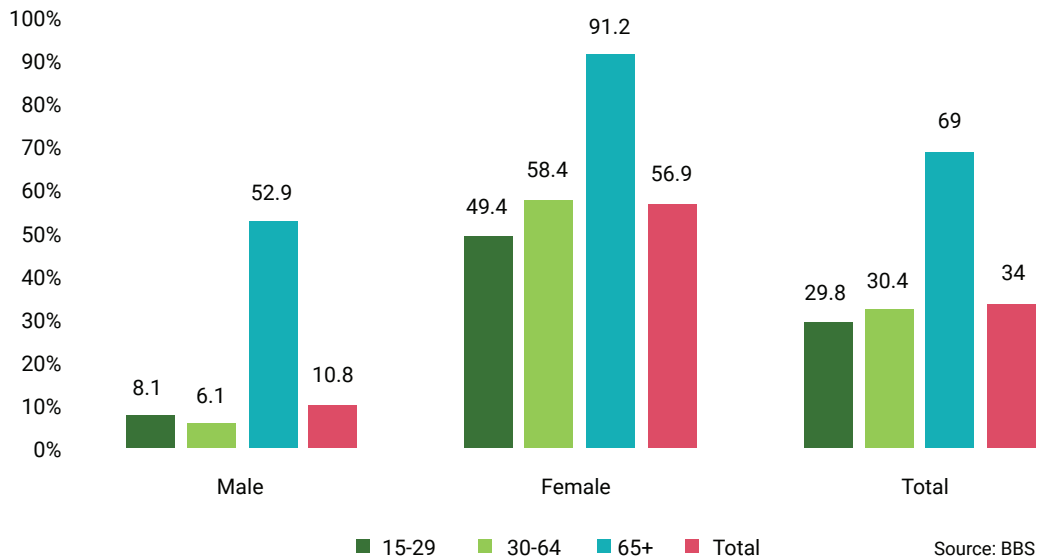


Figure 6: Skills distribution of Labor Force

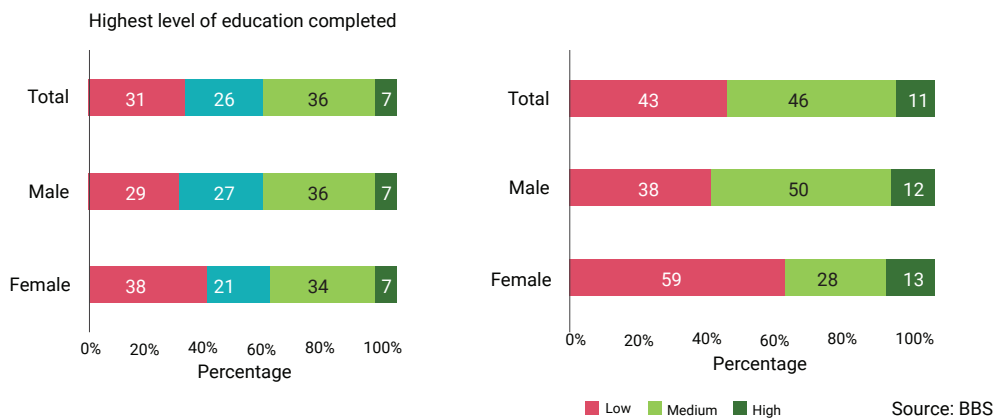


Table 2: Summary View of Supply-Side Outcomes of the Labor Market

Supply-Side Variables	2000	2016-17
Total population (million)	128.4	160.8
Working age (15-64) Population (million)	74.2	109.0
Total labor force (LF) (million)	40.7	63.5
Male LF (million)	32.2	43.5
Female LF (million)	8.6	20.0
Growth rate of population (%)		1.4
Growth rate of working-age population (%)		2.4
Growth rate of total LF (%)		2.8
Growth rate of male LF (%)		1.9
Growth rate of female LF (%)		5.4
LF participation rate (%)	54.9	58.3
Male LF participation rate (%)	84.0	80.5
Female LF participation rate (%)	23.9	36.3
Youth population (15-29 age group) (million)	33.3	43.6
Youth to total working population (%)	44.8	40.0
Youth LF (million)	14.5	20.1
Youth LF participation rate (%)	43.6	46.2
Youth LF as percent of total LF (%)	35.6	31.7
Percent youth not in education, employment, or training (NEET)	25.4 (2013)	28.0
LF with zero education (%)	48.1	31.9
LF with primary education (%)	25.0	25.8
LF with secondary education (%)	19.9	30.8
LF with higher secondary education (%)	3.8	6.0
LF with tertiary education (%)	3.2	5.6

Source: Labor Force Survey 2016-17 and Labor Force Survey 2000

The high share of NEET group is not only a substantial waste of potentially growth-enhancing resource but also becoming a major social concern that could hurt the long-term development prospects if not addressed on time (Ahmed and Sattar 2020). About 57.0 percent of working-age women belong to NEET category as opposed to 11.0 percent male counterpart. The shares are high for female in age groups of 15-29 years and 30 to 64 years, which is significantly higher for male. This corroborates the earlier observations about women being largely left out of the Bangladesh job market (Figure 5).

The growing labor force has been a positive factor for GDP growth acceleration, but Bangladesh has not fully reaped the benefits of the demographic dividend. Despite improvements in education, the quality of the labor force is woefully weak. According to LFS 2016-17, some 32 percent of the workforce did not have any education, 26 percent had only primary level education, and less than 6 percent had tertiary education. On top, evidence shows that the quality of education light and training is very weak (Ahmed and Sattar 2020; ADB-ILO 2016; World Bank 2013a). Average years of schooling in South Korea is 12.2 and average years of schooling in Vietnam is 8.2. Whereas in Bangladesh average years of schooling is 6.1.

Studies have found evidence of significant skill mismatch in the overall and industry specific job markets and raised concerns over hiring overseas employees due to the scarcity of skilled labor force (Bangladesh Institute of Development Studies, 2017; Rahman & Al-Hasan, 2019). Equipping the labor force, particularly the young generation, with the required skill set to address the prevailing skill mismatch in the labor market. Training and education, especially ICT related, is of paramount importance to improve the skill level of workers in all sectors.

3. Post COVID Labour market Situation Assessment

3.1 Global growth projections and employment implications

The COVID-19 pandemic has spread with alarming speed, infecting millions and bringing economic activity to a near-standstill as countries imposed tight restrictions on movement to halt the spread of the virus. As the health and human toll grows, the economic damage is already evident and represents the largest economic shock the world has experienced in decades. A particularly concerning aspect of the outlook is the humanitarian and economic toll the global recession will take on economies with extensive informal sectors that make up an estimated one-third of the GDP and about 70.0 percent of total employment in emerging market and developing economies. Policymakers must consider innovative measures to deliver income support to these workers and credit support to these businesses (ILO, 2020).

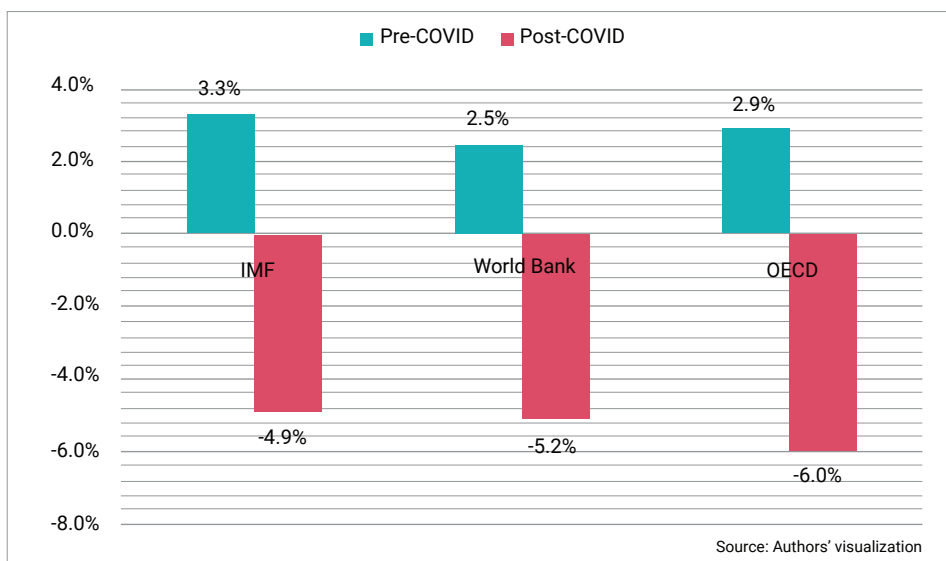
The COVID-19 pandemic has spread with alarming speed, infecting millions and bringing economic activity to a near-standstill as countries imposed tight restrictions on movement to halt the spread of the virus. As the health and human toll grows, the economic damage is already evident and represents the largest economic shock the world has experienced in decades. A particularly concerning aspect of the outlook is the humanitarian and economic toll the global recession will take on economies with extensive informal sectors that make up an estimated one-third of the GDP and about 70.0 percent of total employment in emerging market and developing economies. Policymakers must consider innovative measures to deliver income support to these workers and credit support to these businesses (ILO, 2020).

As the widespread disruption triggered by the Covid-19, the international organizations revised their global growth projection by substantial percentage points (Figure 7). (The World Bank, 2020) describes both the immediate impact of the pandemic and the long-term damage. The baseline forecast envisions a 5.2 percent contraction in global GDP in 2020 and over the longer horizon, the deep recessions are expected to leave scars through lower investment, an erosion of human capital, and fragmentation of global trade and supply linkages.² The IMF in their 'World Economic Outlook', reported a contraction of world GDP by about 4.9 percent and OECD reported that global GDP growth would be about -6.0 percent. At a regional level, East Asia and the Pacific will grow by a scant 0.5 percent; South Asia will contract by 2.7 percent, Sub-Saharan Africa by 2.8 percent, Middle East and North Africa by 4.2 percent, Europe and Central Asia by 4.7 percent, and Latin America by 7.2 percent (World Bank Global Economic Prospects June 2020).

ILO (2020; Second edition) reveals that employment contraction has already begun on a large (often unprecedented) scale in many countries. Changes in working hours, which reflect both layoffs and other temporary reductions in working time, give a better picture about the dire reality of the current labour market situation. As of 1 April 2020, the ILO's new global estimates indicate that working hours will decline by 6.7 percent in the second quarter of 2020, which is equivalent to 195 million full-time workers.

The majority of job losses and declining working hours will occur in hardest-hit sectors. The ILO estimates that 1.25 billion workers, representing almost 38.0 percent of the global workforce, are employed in sectors that are now facing a severe decline in output and a high risk of workforce displacement. Key sectors include retail trade, accommodation and food services, and manufacturing.

Figure 7 - Pre and post Covid19 Global GDP Growth (%)



advanced economies and later in developing countries, that adverse global spillovers ease during the second half of 2020, and that widespread financial crises are avoided

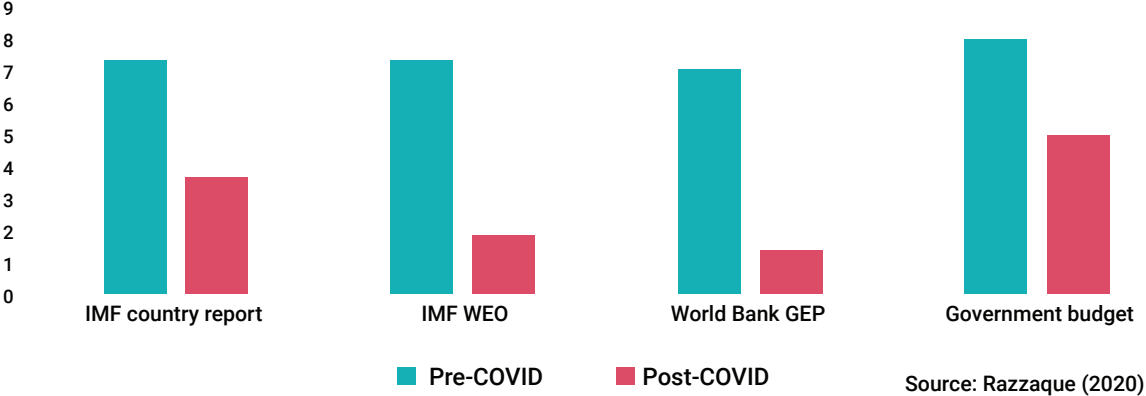
3.2 COVID-19 and Labour Market in Bangladesh

Bangladesh made an impressive socio-economic progress over the past decades. However, Covid-19 has now caused widespread disruptions, triggering uncertain socio-economic prospects for Bangladesh economy. The resultant impact is a weak demand and supply-side shocks within the domestic economy. The impacts emanating from the weak demand and supply-side shocks to amplify the adverse implications further. The International Monetary Fund (IMF) in its flagship report, the World Economic Outlook (WEO), forecasts Bangladesh's GDP growth to plunge to 2.0 percent in 2020 – lowest in 33 years (IMF, 2020a)

2. Even this bleak outlook is subject to great uncertainty and significant downside risks. The forecast assumes that the pandemic recedes in such a way that domestic mitigation measures can be lifted by mid

The World Bank, on the other hand, projects the same growth as 1.6 percent which is 5.6 percentage points smaller than the pre-COVID estimate of 7.2 per cent (World Bank, 2020a). This can be interpreted as \$18 billion worth of loss due to COVID-19. Using simulations from a general equilibrium modelling exercise, the Asian Development Bank (ADB) derives that Bangladesh economy could lose between 4.3 percent to 6.6 percent gross domestic product (GDP) (ADB, 2020) or equivalent to \$13 billion and \$21 billion in absolute value.

Figure 8 - Bangladesh's GDP growth in FY2020 (%)

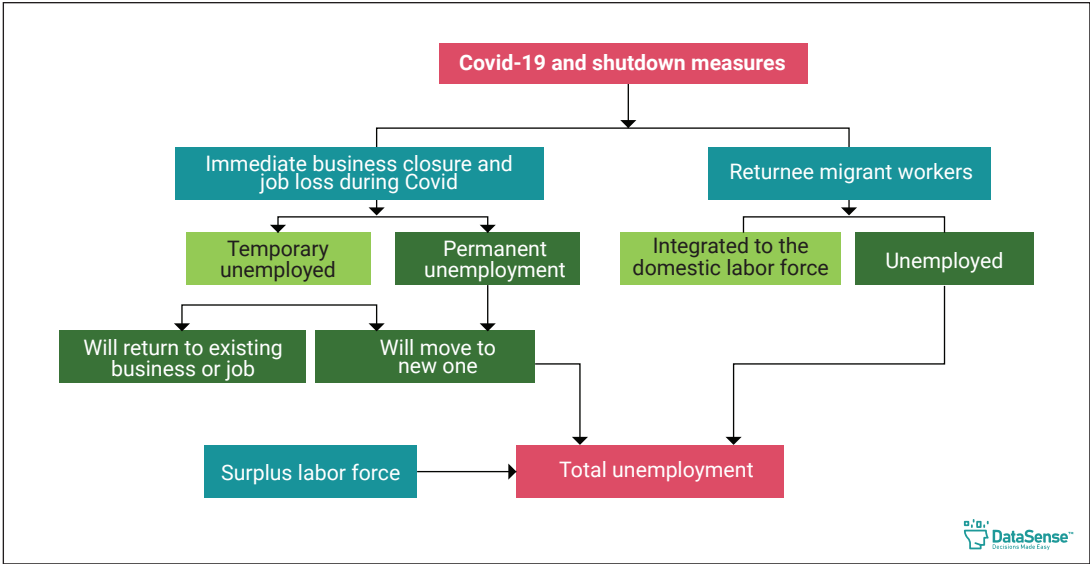


The Economist Intelligence Unit forecasted the GDP growth rate of Bangladesh for FY2020 to be 1.6 percent (EIU, 2020). CPD estimates suggest that the GDP growth in FY2020 was likely to come down to about 2.5 percent under the most optimistic scenario.

Transmission mechanism of COVID-19 Shock on Bangladesh Labour Force

Like most global economies, the COVID-19 socio-economic shock is transmitted in Bangladesh economy via two main channels and through their close interaction. The one is because of the depressed domestic demand and disrupted supply response in the local economy while the other is due to the slowdown in global economic activities affecting trade, FDI and remittance flow. The immediate labour market outcomes of their combined effects include: a sudden and drastic rise in temporary/short-term unemployment and income loss of day-labourers while medium-term to long-term outcomes include permanent business (particularly CMSMEs) closures and associated job loss, fall in labour demand due to rising costs of capital, fall in real wages, returns of (low-skilled and semi-skilled) migrant workers, supply shortage of skilled workers in the post-COVID reality. On the other hand, like all crises COVID-19 also brings new job opportunities for some sectors due to the increased demand. As a consequence, the current level of unemployment is likely to go up in the coming years – a major macroeconomic challenge for the policymakers. A visual summary of the transmission of the impact of COVID-19 on employment given in Figure.9

Figure 9 - Transmission mechanism of COVID-19 in the labor market of Bangladesh



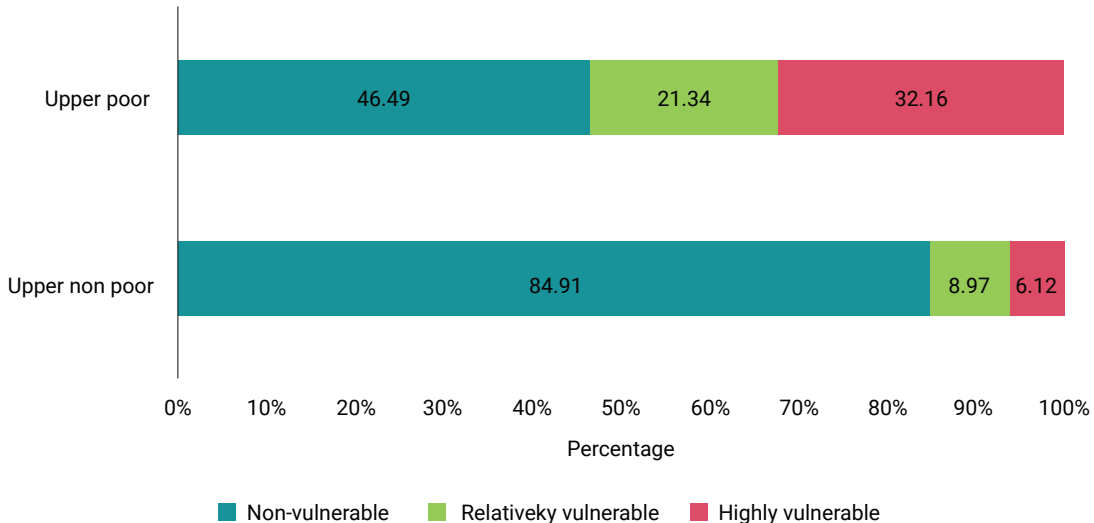
Source: Authors

The Covid-19 mitigation measures involving economic shutdown caused immense income and job losses. A PPRC-BIGD survey, undertaken in April 2020, found that people of all population segments incurred a significant income loss between February and April 2020, while it was the extreme and moderate poor people that were hardest hit – suffering a three-fourths loss in income on average. Informal sector workers e.g. restaurant workers, rickshaw pullers, day labourers, artisans, domestic helpers, agricultural labourers, petty business owners, shopkeepers, saloon/parlour workers, etc. were severely affected (Hossain Zillur Rahman et al., 2020). Various estimates suggest that the temporary job loss for the two-months-shutdown period could be in the range 12-17 million (Razzaque, 2020). A CPD research suggests that, due to Covid-19, the vulnerable employed individuals are about 13 million, which is about 20.1 percent of the latest available labor force data (2016-17). (Citizen’s Platform for SDGs Bangladesh, 2020). Additionally, (Ahmed et al., 2020) estimated that due to Covid-19 and economic shutdown, about 20.0 million hard and manual labour will immediately lose their jobs especially in the informal sector, and 10 others sectors. This study, using a set of assumptions and inputs from KII, also reported that by August 2020, about 2.8 million of workers will lost their jobs permanently and by the end of 2021 about 2.5 million workers may become unemployed.

Due to the income loss during the shutdown measures to tackle COVID-19 crisis, a significant share of households become “new poor” and vulnerable to poverty. Figure 10 displays that within upper poor people in Bangladesh, about 46 percent are non-vulnerable, however, about 32 percent and 21 percent are highly and relatively vulnerable in Bangladesh, respectively. We have similar interpretation for the upper non poor but about 85 percent of them are non-vulnerable.

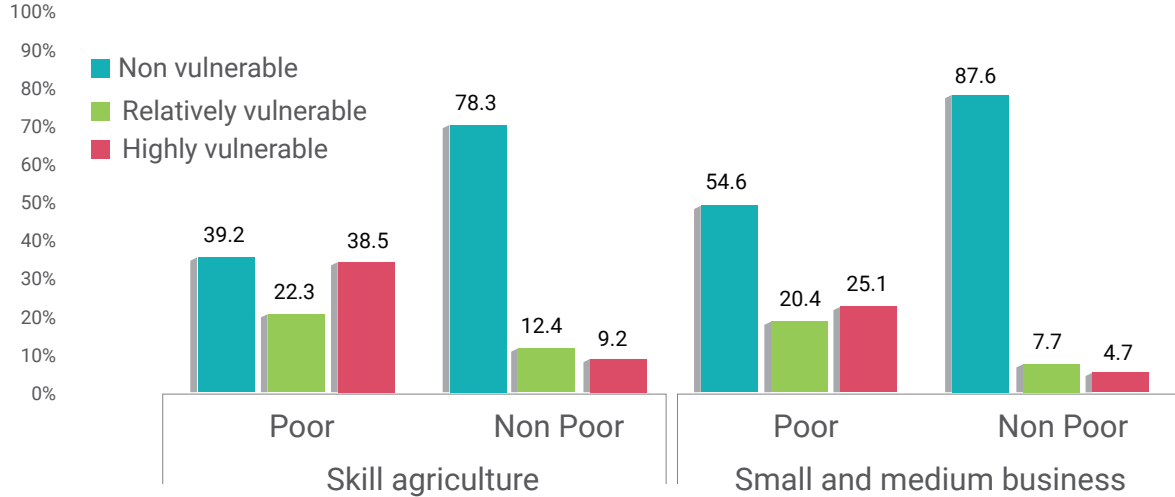
Figure 9 demonstrates that among the poor in skilled agriculture sector, about 39.0 percent are vulnerable and about 22.0 percent¹¹ are relatively vulnerable, and rests are non-vulnerable. The respective rate among the non-poor is 78.0 percent, 12.0 percent and 9.0 percent. A similar interpretation holds for small and medium business sector and we left it for readers’ interest.

Figure 10: Households vulnerability status within upper poor and upper non-poor



Source: Authors’ calculation based on HIES 2016

Figure 11: Occupation wise vulnerability of households



Source: Authors’ calculation based on HICS 2016

Post-COVID Sectoral Employment Situation

Clearly, all non-essential sector employment received a massive blow resulting in a huge surge in immediate unemployment during the economic shutdown measure. A portion of this immediate unemployed workers will return to employed workforce while many of them are likely to remain unemployed as the lockdown measure will be gradually withdrawn and even in post-COVID era. It is understandable that not all sectors will be equally hit and sectors such as a RMG, CMSMEs, leather and footwear, hospitality and tourism, construction, transport are among the hardly hit sectors. On the other hand, however, there are some sectors which are expected to observe a rise in employment. Some potential sectors with new opportunities include health sectors (i.e., pharmaceuticals, sourcing and selling of medical equipment, online consultancy, medical and related peripheral services etc.), ICT and E-commerce, agro food-processing, logistics, courier and transportation, digital and creative media (content creation, technical etc.), call centres and remote service delivery. Next, employment impact of COVID-19 of some important sectors are synthesized from the secondary sources.

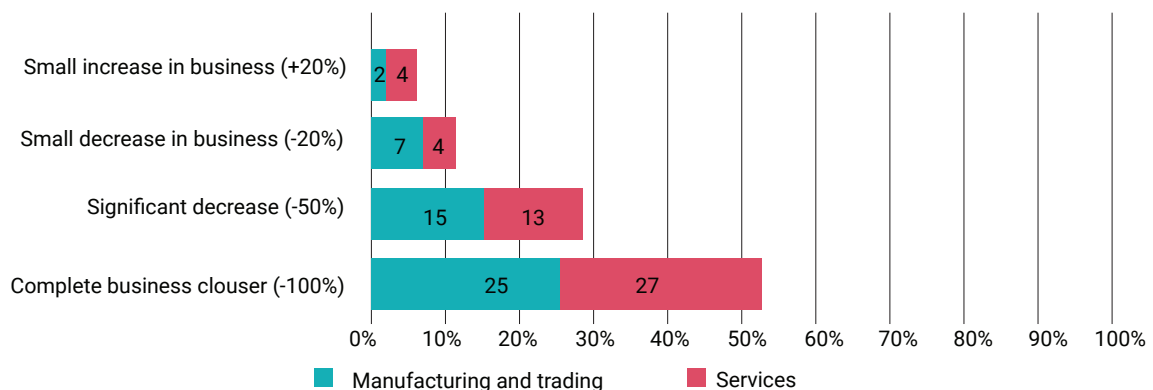
RMG: BGMEA suggested post-COVID order cancellation amounting \$3.0 billion. Ahmed et al., (2020) found that the immediate job loss will be about 0.5 million out of 4.1 million with a predicted close down of 150 small factories that would result in 20,000 permanent job loss. More than one million RMG workers already have been fired or furloughed (temporarily suspended from work) as a result of order cancellations and the failure of buyers to pay for these cancellations (Anner, 2020). Suppliers in the survey reported that 98.1 percent of buyers refused to contribute to the cost of paying the partial wages to furloughed workers that the law requires. 72.4 percent of furloughed workers were sent home without pay. 97.3 percent of buyers refused to contribute to severance pay expenses of dismissed workers, also a legal entitlement in Bangladesh. 80.4 percent of dismissed workers were sent home without their severance pay. Since RMG sector mostly employ women workers, the shut down of factories and job loss will have critical gender implications for the labor market.

CMSMES: The COVID-19 has severe employment implications on the CMSMEs sectors that constitutes 86 percent employment outside agriculture. Primary survey conducted in early April on 230 SMEs, it is found that 94% SMEs observed a decrease in business with 52% saw a complete business clousers, see Figure 11 (LightCastle Partners and Sheba.xyz, 2020). Out of a total of 0.78 million SME and informal sector entrepreneurs (70% of¹² which are rural and 35-40% are cottage based), 0.5 million establishments are affected with an immediate job loss of 10 million people and SMEs in the informal sector are likely to be reduced by about 30-40 percent (Ahmed et al., 2020).

Some of the post-COVID key challenges that the CMSME sector will face are liquidity constraints, increased cost due to the change in the nature of business, poor market linkage, shortage of skilled labour and adaptation of new technology, and lack of export market.

Tourism and Hospitality: In Bangladesh, tourism sector directly provide a livelihood for 1.1 million people. On the verge of a massive downturn globally, the tourism industry in Bangladesh will face a loss of about \$470 million this year (UNWTO, 2020). TOAB has reported losses in between \$0.7 and \$1.78 billion with an estimated job loss of more than 5000 people (TOAB, 2020). Overall tourism and hospitality sector is estimated to incur an income loss of \$1.15 billion and job loss of 300,000 people from February to June, 2020 due to the pandemic. (PATA, 2020).

Figure 12: COVID-19 Impact on SMEs



Source: (LightCastle Partners, 2020)

Transport and Construction: Due to countrywide lockdown, the transport sector has been facing tremendous trouble. Approximately 7.0 million workers are currently unemployed in transport and equipment sector and about 0.5 million registered drivers with ridesharing companies have become unemployed during the lockdown (Ahmed et al., 2020). Moreover, we may observe about 1.0 million immediate job loss in the construction sector and in the longer term about 1.14 million workers may lost their jobs permanently in construction sector.

Ahmed et al. (2020) provides an estimate of immediate job loss in 11 sectors based on KII (see Table 3).

Table 3: Immediate job loss scenario due to COVID-19 in Bangladesh

Sector	Jobs Lost
SME and Informal Sector	10 million
Transportation Sector	7 million
Construction Sector	1 million
Furniture Sector	0.6 million
RMG and Textiles Sector	0.5 million
Leather Goods and Footwear	0.41 million
Tourism and Hospitality	0.32 million
Light Engineering Sector	0.3 million
Migrant Workers Sector	0.3 million
Housing and Real State	0.015 million
Ceramic Workers Sector	0.004 million
Total Jobs Lost	20.449 million

5. Action Agenda

In this section, in view of the current labour market challenges, and considering the COVID-19 inflicted employment shock and emerging demand for new set of skills, reskilling, and up-scaling skills in the post-COVID era, an agenda of thirteen important implementable actions/ interventions/ programmes are proposed. These interventions are categorized into three broad groups, namely, (i) towards creating national employment database, (ii) skills and training related interventions, and (iii) sectoral interventions. Considering the timeframe of implementation, the interventions are classified as immediate, medium term (up to 2 years) and long term (up to five years).

Towards Creating National Employment Database

Action Agenda 1: Universal Unemployment Registry: (Lead Agency: ICT Division):

[Immediate (pilot), Medium term-Long term]

This is to initiate a universal unemployment register in line with the NSDA under which each person through NID will be able to register. Identification of the potential job seekers with other relevant information through a central database is one of the existing key labour market challenges for Bangladesh which will surely be more pressing in the post-COVID era. The absence of such a register is particularly difficult for the overwhelming number informal sector workers (85% are in informal unemployment)- which often leaves them without any formal ground to access any incentive packages, budgetary benefits disbursed by the government. In addition, in the absence of any such registry, it is also complicated to understand the depth of any crisis, e.g. COVID-19. This is expected to be the main tool to identify the unemployed and to bring them within a systematic record of the government. Therefore, it is expected to be an inclusive policy tool benefiting all the potential job seekers irrespective of age, sex, and social class. Further, this system can be utilized to disburse any monetary incentive packages and/or to link the job seekers with the potential employers.

The unemployment registry has to be a digital record keeping hub where any individual with certain criterion can register himself upon unemployment. The ICT division can therefore play the lead role in implementing and under the NSDA, it can design the website through which the record keeping can be done. This has to be conducted with the coordination of Ministry of Labour, Ministry of Expatriate Welfare along with BMET- these agencies will help in identifying the unemployed and can also help to link them with the demand side agents. In addition, BBS along with local level NGOs can also be helpful to identify potential beneficiaries. In addition, local level representatives of the government can play a key role to help the unemployed to get registered.

Action Agenda 2: Introducing an Industry Specific Portal with employee database:
(Lead Agency: Several): [Medium term to Long term]

In order to deal with the growing skill mismatch between the demand and supply side of the market, it is essential to create a portal where all the relevant agents of the demand side should mandatorily be registered with relevant information such as employee database, new job postings etc. With the help of ICT division, Ministry of Labour and Ministry of Industry and Ministry of Commerce, a mandatory online platform can be designed where all the industries both at manufacturing level and service level will need to get registered with their employee database. This database needs to be regularly updated. This portal can be used as a platform to find jobs for the job seekers registered under unemployment registry by mandatory posting of job advertisements. This information from this portal can be proven to be extremely helpful for managing crisis situation like COVID19. It is extremely important to involve the private sector stakeholders here, e.g. BGMEA, BKMEA, MCCI, DCCI.

Skills and training related Interventions

Action Agenda 3: Redesigning the Skill Training Programs:
(Lead Agency: TVET under Ministry of Education): [Immediate]

This program has two components 1. To introduce new need-assessed skills training courses/program, and 2. To re-design the curriculum of skill training programs to address the current and future sectoral demand.

Given the fast pace of changed technology, it is increasingly becoming challenging to confront the ever-growing challenges of newer technologies. Besides, with the emergence of greater automation, digitalization and 4IR in particular, the importance of advanced training program is more than ever before. It is therefore high time to re-design the course curriculum incorporating all training institutions in view of COVID-19 and 4IR and to provide an internationally accepted certification/accreditation system.

Action Agenda 4: Recruitment and training of trainers and instructors:
(Lead Agency: TVET under Ministry of Education): [Immediate to Medium term]

Capable and sufficient human resources is a pre-requisite to deliver the re-designed skills training programmes (Agenda 3) successfully and with impact.

Significant numbers of new recruitments will be required to fill the prevailing shortage and to meet future demand of trainers and instructors. Policies and proper incentives are required to attract the bright and capable people to work as trainers. In addition, the trainers of the institutions are required to adopt the new technologies themselves first. Therefore, similar certification should be made mandatory for the trainers to offer training.

This can be done through a “train the trainers” program.

Action Agenda 5: Special Training Scheme Targeting 4IR and automation: (Lead Agency: ICT Division)

There is no denying the fact that the importance of ‘touchless economy’ is now much greater than before, resulting in the developed world focusing more on artificial intelligence-based technologies. Against this backdrop, developing countries like Bangladesh must speed up the processes to integrate 4IR related technologies into the skill training programs. In this connection, a small-scale training and respective employment generation scheme can be formulated under the ICT division to facilitate the transition towards touchless economic activities. This scheme has to be conducted separately from Action

Agenda 3. This can be done in the following manner:

1. The key component would be to identify the key areas and key technologies to deal with the challenges. This can be done by a separate cell within the ICT division with the help of relevant departments of educational institutes. This must be done with effective collaboration and consultation of private sector representatives like that of MCCI.
2. The private sector can also help in identifying the potential jobs within their respective domains and this can be incorporated within Action Plan 3 as well.
3. The key component would be to design an effective market-oriented training scheme in line with the recommendations as in step 1. This has to be designed within the existing TVET, but the ICT division must play a key role here to maintain its exclusivity. One key constraint here would be to find competent trainers and that can be resolved while arranging a collaborative effort with the leading academic organizations.

Sectoral Interventions

Action Agenda 6: Introducing an Online Platform of Small-Scale Loans for the CMSMES:
(Lead Agency: SME Foundation/ Ministry of Industry): [Immediate]

With the cooperation of the BB and other relevant agencies, an online database and website for seeking small scale loans can be introduced. Given the high degree of informality and complexity in the loan disbursement process, the CMSMEs are often unable to take advantage of incentive packages and budgetary allocation. With the help of Bangladesh Bank along with the SME foundation and PKSf, the ICT division can take an initiative to design a comprehensive online portal through which the CMSMEs can seek loan and upload relevant documents. As for the informal organizations without proper documentation, a grace period of 3 months can be offered and small-scale loans can be sanctioned on a conditional basis. The steps can be as follows:

1. In the first step the ICT division will take the lead to help the SME foundation to prepare an online portal. Ministry of Industry with the help of SME foundation, NGOs, local level government representatives, sectoral representatives can prepare an initial list which can be updated on a regular interval.
2. In the next step, the SME foundation can take the lead to disburse loans. Here the most important criteria of this loan are that the terms and condition has to be flexible and favorable to the micro and small enterprises in particular.

Action Agenda 7: Provision of Small Scale Loan For RMG Workers:
(Lead Agency: Ministry of Labour): [Immediate]

Given the recessionary situation of the world economy, it is not unlikely that the RMG workers will face job loss even when the pandemic will be over in Bangladesh. A separate scheme can be designed only for the RMG workers, under which a laid off worker can access short term credit with flexible terms and condition and at a very low interest rate. Due to resource constraint, this credit can only be offered at a small scale. This can be done in the following manner:

1. The first step would be to formulate an online platform under Ministry of Labour through which any RMG workers who has been laid off can get them registered. This can be done with the help of ICT division, Ministry of Commerce, Bangladesh Trade Union Forum etc.
2. Secondly, the Bangladesh Bank can take the lead to channel the loan with the help of a number of commercial banks. Here, the BB would be the lead agency for credit disbursement while the Ministry of Labour would help in organizing and identifying the laid off workers.
3. Parallel to step 1, the online portal of laid off RMG workers can be offered and linked to the portal of Industry (as mentioned in Action 3).

Action Agenda 8: Provision of Small Scale Loan For Returnee Migrants:
(Lead Agency: Ministry of Expatriates' Welfare and Overseas Employment): [Immediate to Medium term]

Due to drop in petroleum price and global recession due to COVID-19, a large number of migrants working primarily in gulf countries are found to be losing their jobs and thereby returning back. According to RMMRU, as of 24th June, 2020 already 16, 400 migrants have returned back to Bangladesh. A key challenge, at least in medium term until the global economy revives to normal, is to accommodate these returnee migrants into local economy. One strategy could be to help them getting involved in self-employment activities and that requires firstly to identify the returnees and secondly to bring them within the network of credit accessibility. This requires a number of steps/schemes:

1. We first need to identify them and that can be done through a well-designed portal within the BMET or Ministry of Expatriates' Welfare and Overseas Employment.
2. The next step would be to provide an online portal probably within BMET or Ministry of Expatriates' Welfare and Overseas Employment through which the return migrants would be able to apply for small scale loans. This portal would be linked to the relevant department of the Bangladesh Bank.

Action Agenda 9: Special Credit Scheme for Urban Youths:
(Lead Agency: Ministry of Youth):[Immediate to mid-term]

Given the high unemployment rate of the youths in particular (10.6% youth unemployed where the national unemployment rate is 4.2%) on one hand and unavailability of social safety net schemes and employment generation programs for the urban dwellers on the other, it is essential to consider a separate scheme targeting the youths at urban settlement. In addition, youth employment, particularly in urban area, is envisaged to receive a severe blow during and post-COVID era. Given the bleak prospect of private investment and job creation, in the medium to long run, it is important to devise policies to generate self-employment opportunities for the youth. One key component of it would be to provide loans along with technical assistance for start-ups. A pre-requisite for effective job creation for the unemployed youths would be to offer loans in flexible terms with simplified application and approval process requiring minimum documentation and formalities. Within the national budget 2019-20, the GoB has allocated a 100 crore taka fund for start-ups and this set up can be revived with proper designing and financial back up to support the urban youths. This requires the following actions:

1. An online based portal under the Ministry of Youths can serve as the starting point. This can be supported by the ICT division, Ministry of Industry, Ministry of Education to get the interested youths registered in the portal.
2. In addition to the funding, this scheme can assist the youths to develop innovative ideas for start-ups and can help in supplying relevant materials and inputs for it. This has to be led by the NSDC with the help of ICT division and Ministry of Education through which the youths would be provided necessary non-monetary support. An effective collaboration with BRAC's skill training program, BASIS and private sector led by DCCI/MCCI can be particularly useful in designing market oriented start-ups.
3. Again headed by the BB and supported by the commercial banks, an online based loan disbursement mechanism can be formulated.

Action Agenda 10: Special Rural Employment Generation Scheme:
(Lead Agency: Ministry of Local Government and Rural Development) [Immediate to long term]

Within the proposed budget of 2020-21, a 100 crore taka fund has been allocated for self-employment activities of the rural poor. However, given the pandemic, many urban dwellers have moved to the rural areas that may require creating more employment opportunities than the pre-COVID scenario. It is therefore important to re-formulate the existing proposal with additional finances and to expand the coverage to incorporate the new poor and vulnerable households too.

This scheme can particularly be targeted towards small scale poultry, livestock rearing activities as well as agro-based industrialization schemes. This can be done solely for rural agro-centric activities excluding the MSMEs (there is one separate action plan for the MSMEs only). Developing a well-designed, properly functioning and efficient supply chain to distribute the produce from the rural farmers/ agro-businesses to the urban areas, particularly in outlets and super shops, can be extremely useful. A number of steps can be thought in the following line:

1. The first step would be to identify the unemployed in rural areas and this can be led by the Ministry of Local Government and Rural Development with effective collaboration of Ministry of Social Welfare, Ministry of Commerce and Ministry of Food. In order to make the identification transparent and effective, the ICT division can consider preparing a digital portal. As proposed in Action Agenda 1, this identification can be done in parallel with the universal unemployment registry.
2. In the next step, the Ministry of Local Government and Rural Development can collaborate with urban based outlets, super shops and private sector entities to strengthen the supply chain and to assess the demand side requirements.
3. With the inputs from step 2, Ministry of Local Government and Rural Development/ Ministry of Social Welfare may design a number of specific well targeted loan schemes and offer those to the unemployed rural dwellers. BB with the help of commercial banks and Krishi Bank can help in disbursing.
4. The most important step perhaps would be to link the loan recipients with the urban consumers and that has to be done with the effective involvement of private sector agents while the Ministry of Rural Development and Local Government playing the leading role.

Action Agenda 11: Special Employment Generation Scheme for Women: (Lead Agency: Ministry of Women and Children Affairs):

It is often argued that the COVID-19 pandemic has affected the livelihood of women with greater depth than their male counterparts. It is therefore important to consider about small scale employment generation schemes targeted particularly towards women. One strategy would be to offer separate credit facilities with flexible terms and conditions to help them get engaged in self-employment activities (this has to be separate from credit schemes mentioned in other action plans). One important feature of this scheme would be to research on potential employment opportunities and to offer loans only those schemes and providing associated training and guidance (if needed). Emphasis should be given initially to encourage online based activities and home based schemes to get more women involved in this scheme. The steps can be as follows:

1. MOWCA with the help of Ministry of Industry can identify a number of potential sectors, requiring small loans for women entrepreneurs e.g. beauty parlour, small scale restaurant cooking, ICT based schemes, fashion designing, small scale retail and trade activities etc. In this regard, one important sector could be care related activities e.g. day care or home-based care givers.
2. MOWCA can involve TVET to arrange necessary training and certification (if required) before providing the loan.
3. In the next step, intermediaries like the SME Foundation, Joyeeta, Women Chamber of Commerce can help in disbursing the credit while the BB and other financial intermediaries playing active roles.
4. In the final step, MOWCA can involve private sector entities for marketing of the products and services.

Action Agenda 12: Short Term Unemployment Benefit: (Lead Agency: Ministry of Labour): [Short to Long Term]

In connection with Agenda 1, it is important that the government takes initiative to support the unemployed at least for few months so that they can support their livings at least in the short term until they can find an alternative employment. Due to COVID-19, a lot of people in informal employment has lost their job/business and many of them have even fallen below the poverty line. Thus, it is extremely crucial to design strategies for their living in the short term. This initiative can be continued in a long-term basis too. This benefit can be of 3 months at the beginning. The steps can be as follows:

1. In the 1st step application has to be sought from the unemployed by MoL.
2. The 2nd step of identification can be done through action plan 1 and at this stage the MoL can validate the applications.
3. Finally, either MoL or Ministry of Social Welfare can take the lead in disbursement through unemployment registry and NID.

Action Agenda 13: Small Scale Education Loan:
(Lead Agency: Ministry of Education): [Immediate to long-term]

While the pandemic has affected education attainment of millions of students, the impact is not uniform and depending on the income level of the household, we may observe diverse impact. Especially the students from poorer households might struggle to cope with the income shock and the impact can be even stronger for those at tertiary level as some of these students were responsible for even the livelihood of their households. As a result, the pandemic might have a long-term consequence on their likelihood to continue education. Besides, as we know that, in developed countries tertiary education is often related with student loan, it is probably time for countries like Bangladesh to initiate such loans. This can be operationalized in the following manner:

1. MoE should take the lead here and UGC, with the help of educational institute can operationalize it. At the first stage UGC can seek application through the educational institutes.
2. In the next stage the fund has to be organized and a number of modalities can be applied: the education institutes can partially cover the fund while the UGC can arrange the remaining.
3. The loan amount can be disbursed on a 3 monthly basis and with a flexible terms and condition. The student can be provided a provision of repayment until he/she graduates.

Top five Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the Employment and Skills and ICT in the sector, the following five interventions have been identified for perusal, with the objective to re-emerge stronger.

Title	Universal Employability Registry (for both the employed and unemployed)	National strategy to revamp all training and skill development curricula for upskilling of human resources in a more [employers'] need- based fashion, while targeting 4IR and automation	Introducing an online platform for small-scale loans for the CMSMEs	Employment generation schemes through provision of small-scale online loans for specific sections of the economy [rural poor, RMG workers, returnee migrant workers, and women]	Emergency Employment creation program
Why	The key labour market challenge for Bangladesh of identification of the potential job seekers with other relevant information through a central database. Also the growing skill mismatch between the demand and supply side of the job market	The growing skill mismatch between the demand and supply side of the market; the emergence of greater automation, digitalisation, and 4IR	The high degree of formality and complexity in the loan disbursement process, the CMSMEs are often unable to take advantage of incentive packages and budgetary allocation	Given the recessionary situation of the world economy, falling oil prices, and bleak prospect of private investment and job creation, it is important to devise policies to generate self-employment opportunities for the most affected sections of the population	Due to COVID-19, a lot of people in informal employment have lost their job/business and many of them have even fallen below the poverty line. It is extremely crucial to design strategies that can support their livelihood at least in the short term until they can find an alternative employment

What	A digital record keeping hub where any and all individual of employable age, irrespective of sex and social class, can register, roping in the 85% in the informal sector. Additionally, employers from ALL sectors will mandatorily register their employee database, new job postings, etc., helping those registered as unemployed to seek opportunities, giving the entire ecosystem a realistic overview of the demand and supply situation. This can serve as a basis for national level strategic decision-making and policy reforms	Re-design the course curriculum incorporating all training institutions in view of labour market needs of all sectors, COVID-19, and 4IR and to provide an internationally accepted certification/ accreditation system. Introduce ToTs to fill the prevailing shortage and to meet future demand of trainers and instructors in the pedagogy of employer need-based, 4IR, and automation	A comprehensive online portal through which the CMSMEs can seek loan and upload relevant documents. Informal organizations without proper documentation may get a grace period of 3 months when they can be offered and small-scale loans on a conditional basis	An online platform under the respective ministries offering loans in flexible terms with simplified application and approval process requiring minimum documentation and formalities. Sectors can be pre-determined and technical assistance and trainings maybe provided according to the needs of the different sections of population	Identification of most vulnerable and arrange emergency job program. Use standard format for data capturing and SoPs until using Universal Employability Registry will lead to assessments of applications and then eventual disbursement through the Registry and National Identification [NID] no.
Lead Agency	ICT division	TVET under Ministry of Education	SME Foundation/ Ministry of Industry	ICT Division	Ministry of Labour
Implementing Agencies/ Actors	National Skill Development Authority, Ministry of Labour	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs	Ministry of Labour, Ministry of Expatriates' Welfare and Overseas Employment, Ministry of Youth, Ministry of Local Government and Rural Development, Ministry of Women and Children Affairs
Coordinator	ICT division	ICT division	ICT division	ICT division	ICT division
Govt. Partners	Ministry of Expatriate Welfare along with BMET, Ministry of Industry and Ministry of Commerce, BBS, local level representatives of the government	Ministry of Expatriates' Welfare along with BMET, Ministry of Industry and Ministry of Commerce, BBS, local level representatives of the government	Bangladesh Bank, local level government representatives	Ministry of Commerce, Ministry of Women and Children's Affairs, Bangladesh Bank, BMET, Ministry of Industry, Ministry of Education National Skill Development Corporation, Ministry of Social Welfare, Ministry of Food, Krishi Bank	Ministry of Expatriate Welfare along with BMET, Ministry of Industry and Ministry of Commerce, BBS, local level representatives of the government
Pvt Sector Partners	Local level NGOs, BGMEA, BKMEA, MCCI, DCCI	MCCI, leading TVET organizations/Skills training organization/Accreditation council in destination countries for migrants/NGOs	PKSF, NGOs, sectoral representatives	Bangladesh Trade Union Forum, BRAC, BASIS, DCCI/MCCI, SME Foundation, Joyeeta, Women Chamber of Commerce,	Bangladesh Employers' Federation/e-CAB
Financing and modality	Ministry of Finance/Development partners	Ministry of Finance/Private sector business associations/Development partners	Ministry of Finance/Private sector business associations/Development partners	Ministry of Finance/Private sector business associations/Development partners	Ministry of Finance/Private sector business associations/Development partners

Potential Challenges and Way Forward:

The action agenda as proposed can be considered to keys to generate employment in long run in particular. However, there are certain inherent challenges of implementing these agenda. The first is definitely that of financing. With collaboration with the private sector, the government can initiate some of the agenda. Some of the agenda can be financed with the help of funding of the donor organizations too. Secondly, identification of workers engaged in informal activities is indeed a daunting task. This has to be conducted while coordinating with NGOs working in field level, sectoral representatives, as well as government entities at upazilas. In addition, BBS as well as Ministry of Social Welfare can also be involved in this identification process. Thirdly, given most of the agenda are based on digital connectivity, the existing digital divide between the rich and the poor can pose a threat in terms of ensuring equity in the process. In particular, the key challenge of launching the online portals as in many of the agenda is low rates of digital penetration along with high rate of illiteracy of the potential job seekers. As the result, those of remote areas without any access to digital device or internet may left out of this initiative and only the relatively more educated and affluent may access the facility. In order to resolve this digital divide, UGC (for action agenda 12), ICT division and relevant ministries can work together. Mobile companies and internet providers can also play an important role.

To make the action agendas as outlined to be effectively operationalized, in certain cases it is important to conduct background research involving small scale surveys and KIIs. For example, creation of unemployment registry as in action plan 1 requires nationwide in-depth survey to understand the depth, duration and severity of unemployment. Similarly, action plan 11 of employment generation schemes for women requires in depth understanding of the potential sectors of women employment. Both action plan 4 of 4IR and action plan 2 of skill development program involves detailed research for curriculum design.

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Post COVID-19 ICT Roadmap for Bangladesh

Labour Migration and Remittance

Post COVID-19 ICT Roadmap for Bangladesh: The Labour Migration and Remittance sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Labour Migration and Remittance is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why the Labour Migration and Remittance sector

International labour migration is one of the major contributors to growth of Bangladesh's economy. Since 1976 close to 13 million Bangladeshi citizens have migrated for overseas employment to 165 countries; 916,463 were female migrant workers [1991-2020]. In 2019 US\$ 18.32 billion was remitted to Bangladesh [BMET, 2020], contributing to 40% of Bangladesh's total foreign exchange earnings and making the country the third highest recipient of remittance in South Asia [World Bank, 2020]. International remittances averaged more than 5.7% of GDP during 7FYP [GED, 2020, pp. 14, 42, 92]. The labour migration sector has also contributed to the rapid growth of per capita GDP and per capita gross national income (GNI), one of the major indicators that led Bangladesh to becoming a lower middle-income country (LMIC) in 2015, according to the World Bank classification [GED, 2020, pg. 28]. Overseas employment created 3.5 million jobs against the target of 2 million for the 7FYP, thus covered 30% deficit of domestic employment creation.

The influx of remittance has directly supported poverty reduction by increasing the income and consumption of the rural poor, as a result boosting the rural economy through the expansion of housing, construction, trade, and other services. This has in turn provided a diversified employment base for rural workers.

Impact of COVID-19

Against the backdrop of the coronavirus pandemic, host nations, predominantly Gulf Cooperation Council (GCC), which accounted for 73% of remittances sent in 2019 [BMET, 2020], are sending back migrant workers. This has not only resulted in decreased remittances, but also added to the rising unemployment numbers for Bangladesh. World Bank has projected that Bangladesh's total remittances will fall to US\$ 14 billion in 2020,¹ which is roughly a 24% decrease from the previous year.

A total of 127,209 migrants, including 11,703 women, have returned from 28 countries since April 2020.² The International Organization for Migration (IOM) estimates show that up to 4.8 million migrant workers may return to Bangladesh within 2021 due to the global COVID-19 pandemic, if the economies of the gulf region do not recover by the first quarter of 2021 (Bangladesh Rapid Needs Assessment, IOM, July 2020).

Approximately 70% of migrants who returned from abroad between February and June 2020, are unemployed, according to the IOM survey. Returnee migrants experience reintegration challenges including difficulties in securing employment, financial problems (lack of income and accumulating debt), and health-related issues. A total of 55% of the respondents who had returned from abroad reported to have mounting unpaid debts. In another survey commissioned by the ILO, 85% returnee migrants asserted the need for loan, either to stay back or to go abroad; 33% and 34% expressed interest in getting technical and vocational training, and entrepreneurial skills training respectively; only 11% were aware of information and support related to migration and 79% needed flight and travel related help.

Needs and Challenges

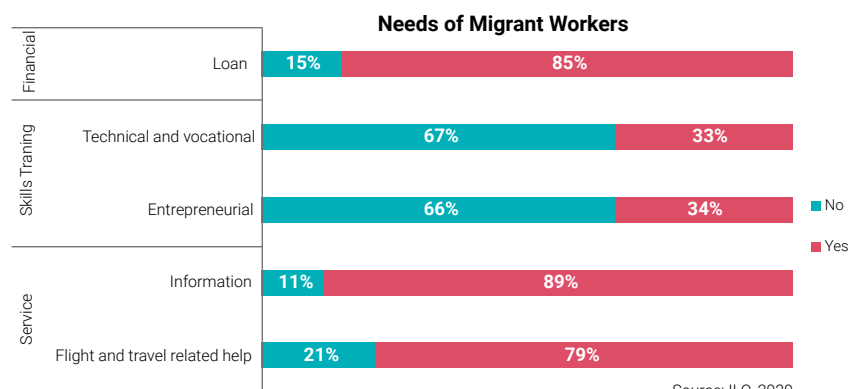
There are four categories affected due to COVID-19 [see Figure 1]. Of the Bangladeshi workers going for overseas employment every year, the International Labour Organization (ILO) mentions high fees charged by recruiting agencies; low wages and lack of information on opportunities and risks related to migration; discrimination, exploitation, and abuse during overseas engagement; and insufficient services protecting the rights of workers as the major problems faced by them.

It is observed that the interest in remigration is significantly higher than reintegration. Both men and women have become victims of violence in CoD either by the employers or by law enforcement agencies. The ILO survey identifies that most migrants did not receive training prior to migration and have minimum interest in training. The survey also depicts that there is incidence of significant debt burden among migrant workers and their families.

Category of Affected Groups	General Status	Specific Status
Migrants Staying in the CoD	Stuck and cannot return	Lost job and want to return
		With job/business but want to return for other reasons
	Working with additional challenges	Low probability of job loss/shutdown of business and will stay despite facing additional challenges
Migrants Returned from January 2000	Temporary return for reasons other than job loss	Lost job and returned
		Lost job as could not return to CoD on time
	Stuck due to flight restrictions and facing threat of job loss	
Families of Migrants	Stopped receiving remittance	Lost family member who was a migrant
Stranded Aspirant Migrants	Stuck with completed pre-departure procedure	Lost job due to delay in joining for flight restriction
		Stuck with incomplete pre-departure procedure

Figure 1 Four Groups of Affected Needing Response

Source: ILO, 2020



Source: ILO, 2020

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Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the Labour Migration and Remittance and ICT in the sector, the following five interventions have been identified for perusing to remerge stronger.

Title	Service delivery platform for migrants and their families in Bangladesh [returnee, aspirant, re-migrant] with digital integration	Financial Protection for Migrant Workers both at Home and Abroad with portability	Safety and rights of migrant workers in country of destination (CoD)	Social protection program for vulnerable migrant workers and their families	Reintegration program: rehabilitation, skills development, RPL, and entrepreneurship development
Why	Independent efforts for creating migrant database is fundamentally flawed and can serve only one-time purpose. The migration is a very dynamic process and a grant moves continuously from one place to another and their status also changes over time. If the data of a migrant is not connected to service and if the data is not interoperable and portable across platform of various agencies at home and abroad, the service delivery will always be fragmented and database will always be obsolete and of no use	High debt burden due to borrowing from informal sources. Lack of financial literacy leading to imprudent borrowing. Low or no savings leading to financial vulnerability. Lack of access to financial services in countries of destination. Tradition lending instruments do not allow migrants to get access to credit.	The collaboration between Government agencies, recruiting agencies and other private sector players are sporadic and occasion based. There is a need for systematic collaboration for reaching out to migrants for ensuring maximum benefits of the GOB programs.	Migrant workers are subject to stigmatization in CoDs, which causes deprivation from access to basic services, discriminatory treatment and verbal and physical abuse both at employers' places and public places	For those who came to Bangladesh on leave and are now stranded for flight restrictions, high cost of air-ticket, and COVID-19 testing related complications, there is a possibility that some of them will not be able to return to the CoDs eventually, unless emergency measures are taken for them. Some of them may require to be considered for remigration or reintegration program
What	Comprehensive mapping of services provided to a migrant worker in the whole lifecycle of overseas employment: pre-departure services, services in CoD, services after return. Mapping of all database of migrant's workers and assessment of their usability/ functionality. Development of SOP for data generation at all service delivery points and storage and retrieval. Making it mandatory for all service delivery agencies for migrant workers across the board. Development of Data Interoperability Framework and bringing all agencies under framework. Data protection protocol. Development of service delivery architecture and data architecture for each group of services. Development of service delivery system with digital integration by module and priority. Launching of mobile app for various user groups. Launching of services with digital integration by priority. Development of Centralized Interoperable Data Repository. Capacity Building of the service providers	a. Opening a DFS account before departure b. Savings: Signing up for auto-deduction of a portion of salary every month which pre-defined conditional cash incentives c. Insurance: Signing up for auto-deduction of a portion of salary every month which pre-defined conditional cash incentives d. Receiving/transferring salary/income to designated DFS account e. Facility of transferring remittance from DFS account to designated account in Bangladesh f. Credit: Alternate credit scoring of each migrant workers and making credit available with a limit based on scoring.	Partnership Development; Development of a Joint Accountability Framework for Intermediaries; Facilitating Termination Settlements; Contract Enforcement with Employers including limitation of working hours; Prevention of Violence Against Migrants, especially Women Migrants; Emergency coordination SOP between GO-NGO-Recruiting Agencies ; Development and Deployment of Arbitration System in CoD; Annual Multisector Conference [GO-NGO-Recruiting Agencies/Development Partners] Conference for Deepening Collaboration for Protection of Migrants, especially Women Migrants in CoD	For migrants: Anti-stigmatization campaign; Mental Wellbeing Services for Migrant Workers; Protection of Migrants from violence; Food coupon (rations) from distressed migrants; Launching of insurance service for migrants including 100% salary coverage in case of unsettlement termination payment; For returnee migrants: Unemployment Allowances; Emergency Employment scheme for returnee migrants For vulnerable families of migrants, inter alia: Food stamp or ration card; Cash transfer; Stipend for school-going children; Employment opportunity for members living in Bangladesh	Rehabilitation Service. Self-Protection Training. Mental Wellbeing Service Enlistment of returnee migrants interested in wage employment in Bangladesh. Skills Mapping and Skills Category Upgradation. Training curriculum upgradation. Training facility Upgradation. Training Capacity Upgradation Enlistment of returnee migrants interested in entrepreneurship in Bangladesh. Business management training. Business development Service. Access to finance service. Debt conversion service Capacity Enhancement of TVET Institutions. Establishment of Career Guidance Cell. Apprenticeship Collaboration. Enterprise Promotion collaboration for Migrants. Market Linkage Capacity for DEMO
Lead Agency	MoEWOE	Bangladesh Bank	MoEWOE	WEWB	MoEWOE
Implementing Agencies/Actors	BMET/WEWB/DEMO	PKB/ Commercial Banks/Fintech	MOFA/ Bangladesh Missions in CoDs	MoFA/ MOF/ MoHFW	BMET/ MOFA
Coordinator	ICT Division/ a2i	MoEWOE	ICT Division	ICT Division/	ICT Division/ a2i
Govt. Partners	WEWB/ DEMO/ UNO/ UP	MoEWOE/ Ministry of Finance/ Bangladesh insurance Development Authority	WEWB/ BMET/ BAIRA/	For migrants: MoFA/MOF/Ministry of Disaster and Relief/ MoSW/ MOWCA/ BB/ IDRAB For returnee migrants: MOF/BDUNMN/ BB/PKB For migrant worker families: MoHFW/ MoDR/ USC/ DEMO/ UNO/ UDC/ District Civil Surgeon	WEWB/ DEMO/ NSDA/ BTEB/ TVET Institutions/ MOHA/ MoHFW/
Pvt Sector & Development Partners	BAIRA/ BoP Service delivery companies/ BBS/ Data collection agency/ ILO/ IOM	All scheduled banks/MFIs/Fintech companies and home and abroad.	NGOs in CoD/ NGOs in Bangladesh/ Recruiting Agencies/ Employers	For migrants: INGOs/ILO/IOM/LNGOs/ BAIRA/Employers/ Mental healthcare providers in CoDs and in Bangladesh/ Fintech at CoD and Bangladesh/ World Bank/ Insurance Companies in CoD and Bangladesh For migrant returnees: World Bank/ Commercial Banks/MFIs/ BAIRA For migrant worker families: BAIRA/ WFP/ Recruiting Agencies/ Legal Aid NGOs in CoD and Bangladesh/ Employers/ BoP service provider companies/ NGOs	BAIRA/ ILO/ IOM/ Business Association
Financing and modality	MoEWOE/ ILO/ IOM/ World Bank	WEWB/ Ministry of Finance/IFC	MoEWOE/ Development partners	For migrants:MOF/Development Partners/BAIRA/ Employers, For migrant returnees: MOF/ BDUNMN/ SDC/ DFID/ EU/ World Bank/ WEBW/ REHAB/ DFID/ For migrant worker families:MOF/ MOP/ MOEWOE/ Development Partners/ BAIRA/ Recruiting Agencies	MoEWOE/ SDC/ EU/ ILO/ IOM/ World Bank

Post COVID-19 ICT Roadmap for Bangladesh

Labour Migration Sector

Thematic Paper

A. Background

International labour migration is one of the major contributors to growth of Bangladesh's economy. Since 1976, close to 13 Million Bangladeshi citizens migrated for overseas employment in 165 countries, of which 916,463 are female migrant workers [1991-2020]. The remittance volume in FY2019 is close to USD 20 Billion, 40% of the total foreign exchange earnings of Bangladesh [BMET, 2020]. Bangladesh overseas employment sector covers deficit of domestic employment creation. The 7FYP target was to create some 2.2 million domestic jobs per year, however actual job creation is estimated at 1.2 million per year. On the other hand, job creation abroad was much above target (0.7 million per year actual overseas jobs as compared with a target of 0.4 million). This was a huge boost to the Bangladesh economy, both in terms of the number of jobs created and inflow of remittances. Evidence also shows there was a qualitative improvement in the skill profile of migrant workers. [GED, 2020, pg. 33]. The multiplier effects of remittance inflows are a major contributor to rural transformation and diversified employment and income base for the rural poor. The national savings is substantially augmented by generous inflow of workers' remittances averaging more than 5.7% of GDP during 7FYP [GED, 2020, pp. 14, 42, 92]. The labour migration sector also contributed in rapid growth of per capita GDP per capita gross national income (GNI), which is one of the major indicators for Bangladesh becoming lower middle-income country (LMIC), according to the World Bank classification. [GED, 2020, pg. 28].

B. Major Impact of COVID-19 on Labour Migration

The immediate estimates of IOM forecasted that up to 4.8 million migrant workers may return to Bangladesh due to the global COVID-19 pandemic within FY2021. Between January and April 2020, around 250,000 Bangladeshis returned to Bangladesh, of which around 40-50% are migrants. The ILO study of Ministry of Expatriate Welfare and Overseas employment (MoEWOE) shows that close to half (45%) of the migrants travelled back to Bangladesh came on leave or vacation, whereas 55% returned home losing job, income, business shutdown and unbearable uncertainty as well as some of them were forced to return. In absolute term, the number of migrants returned after losing job may range between 65,000 to 100,000 and number of women migrants are relatively insignificant so far, may range between 9000 to 15,000. The apprehended surge of return will depend on how quickly the global economy and economy in the gulf region will turn around. If the economies of the gulf region do not turn around in the first quarter of FY 2021, there is a possibility that the apprehended surge might happen in the third and fourth quarter of the FY2021.

The migrant workers suffered from hunger (17.40% of the total migrants that returned back and 60% of those who returned losing job or income or for uncertainty) and lack of proper shelter (39% of total returnee, meaning those who returned with job they also had to leave their houses due to lack of money). There is a need to development of an Emergency management system on a permanent basis in CoDs.

Migrants generally remain reluctant to contact mission, do not know how to reach for help from the mission. Only 15.7% of the migrants travelled back to Bangladesh contacted Bangladesh Mission for help. Comparing with the share of returnees, who lost their jobs or sent forcefully (82%), around 90%, who left

On leave did not contact the Mission [Figure 2.6]. For those who did not contact the local embassies, 38.7% informed that they did not have relevant information for contacting the local embassy for help. The capacity of the mission and more resources need to be allocated to the Missions. Also, connection of the migrants with the Mission need to be improved for delivery of quality service to the migrant workers.

Access to healthcare and psychosocial counselling was inadequate. Only 8% of the respondents got the chance to test for COVID-19 in Bangladesh. More than half (54.7%) of the respondents said that they are suffering from psychological problems and out of them 61.3% expressed their needs for advice due to psychological problems. Investment in improving healthcare service in CoD and at home required, including for mental health related services.

There was incidence of stigmatization against the migrants and their families. 94.3% respondents and their family had not been subject to any stigmatization. There is geographical disparity in stigmatization. The anti-stigmatization program needs to be designed in those geographies where there is higher incidence of stigmatization.

There was incidence of needs for legal aid; 3.3% of the respondents asked for legal aid. The report of incidence is low as many victims do not consider there is any scope for litigation. The emergency service should include legal aid.

Aspirations for remigration is significantly higher than reintegration. Of those who returned home, 80% wants to go back abroad and only 13% wants to stay home, 6% undecided. On the other hand, 68% of the female migrants want to stay in Bangladesh. Both reintegration and remigration programs will be important to design. It is to be noted that the design of remigration will be different than for the fresh aspirants.

Although the incidence of return of women migrant workers are much less than men, their reason of return is predominantly job loss and unfavorable working conditions. Although share of women migrants in total migrants, who travelled back to Bangladesh, is significantly less in numbers (95.5% are male and 4.5% are female), 57.10% of the women migrants returned home after losing job, income or were forced to return, compared to only 20.70% of men migrants. The general perception was, the type of job the women migrants are involved (mostly domestic work), there is no reason for job loss, rather demand is supposed to be increased. None of the women migrants, who returned, are from Jordan or Mauritius, where they are engaged in garments industry. The only explanation is working conditions in those countries, from where they return. It is vindicated that improving of working conditions for women remain the most important policy agenda.

Illegal migrants have been affected most by the COVID-19 related implications. The percentage of illegal migrants are more prominent among the respondents who want to stay in Bangladesh (42%) whereas the proportion is much lower (19%) among the legal migrants. There is a need for promoting legal migration to avoid low income, uncertainty, deportation, or imprisonment.

Both men and women are victim of violence in CoDs either by the employers or by the law enforcement agencies. While the absolute number of men migrant workers faced violence is high (35 out of 588), the ratio for women migrant workers faced violence is higher (32.14%). Importance of protection of migrant workers from violence is reinforced.

Many families of migrants stopped receiving remittance during COVID-19. The study revealed, 66.4% of the returnee migrants returned empty handed, for female migrants the percentage is much higher (93%). It is also revealed that 85% respondents stated that remittance is the main source of their household income. The average (median) amount the migrants have sent to Bangladesh from Jul 2019 to Dec 2019 is BDT 25,000 per month. Contrary to the popular belief there is a significant share of migrants who belong to the poorest group in the wealth index distribution. There is a need for social protection program for vulnerable migrants and their families.

There is significant incidence of debt burden among the migrant workers and their families. More than half of the households of returned migrants have no savings. Only 5% returned migrants reported to have some personal savings while three-quarters of them have existing personal loans. About 90% of women migrants belong to the household with no savings, whereas this percentage is relatively lower (55%) for their male counterparts. More than half of the households reported to have a loan amount exceeding BDT 100,000 and 65% of the household loan is not from Bank or NGO. Those who do not have any savings, 52% of them have debts amounting to BDT 150,000 or more. There is limited willingness among the migrants for formal loan. There is a need for debt relief/conversion program for the migrants by converting unofficial loan to official. There is also need for connecting financial services with the income at the CoDs. Overall, there is a need for paradigm shift of financial services for migrants.

Migrant workers and their families are not considered for social protection program. Only 3.7% of men and 7.10% of women migrants' families have received social protection benefits. Out of 616 respondents, who returned during COVID-19, only one woman migrant and 6 men migrants received the special cash transfer on return. Only 5 of the men migrants' family received Prime Minister's special Eid gift of BDT 2,500. Only 2.11% of the returnees received relief or aid connected to COVID-19, however around half of all male and female respondents reported getting relief aid in general. There is a need for special social protection program for migrant workers at home and in CoDs and for the families of the migrant workers.

Status of skill training in in dismal situation. Most of the migrants did not receive training prior to migration and have minimum interest for training. Only 23% of the respondents received training, 23.30% of men and 32.10% women received training before departure. Those who received training, only 43.10% of men and 55.60% women received certification after training. It is also important to note, 54% men and 44.40% women, who received training, think that they have been benefitted with training and have been involved in the job related to the training. Almost one-third of men and women acknowledged that they have earned new skills or enhanced existing skills, although they did not receive any certification. There is a need for emphasis on need for prior learning (RPL) certification when the migrants come back to Bangladesh and before going abroad again. Engagement of the returnee migrants in training of new aspirant migrants should be considered for providing real-life experience-based apprenticeship.

There is extraordinarily little interest in getting training for certification. Only 33% of the migrants would be interested in retraining or higher training to obtain a certificate in Bangladesh. The gender segregated data shows, 65.50% men and 85.70% of women are not interested in getting training for certification. Massive demand generation for skills development is required. Also, mandatory certification before departure should be introduced.

There is interest among the migrants for entrepreneurship development. The interest in entrepreneurship is higher among men (69.90%) compared to women (53.60%). While interest in entrepreneurship is moderate, the interest in entrepreneurial skills training is relatively low. It is observed that 34% among male against 25% of female being interested in such training is lower than the difference for vocational skills training. Entrepreneurial training needs are two times more likely among migrants who did not have any prior experience of doing business than those who have prior experience. Among the group who lost job have higher percentage in need of such training (47%). The need for entrepreneurial training is about 70% higher among the migrants who intend to stay in Bangladesh than those who intend to go abroad. Launching of entrepreneurship development program is essential for returnee migrants, who are interested in reintegration and entrepreneurship.

For entrepreneurship development returnee migrants want to rely on informal sources more than formal sources. For mobilizing investment, men want to rely predominantly on borrowing from relatives and acquaintances (45.70%), whereas women want to rely on bank financing (40%). The second important source for financing for men is loan from NGO (39.40%), which follows by loan from banks (28.20%). For women, the other sources are loan from NGO (13.30%) and borrowing from relatives and acquaintances (13.30%). Men want to rely more on savings (22.10%) compared to women 96.70% [Figure 2.7], as women migrants mostly (89.90%) do not have any savings. It is observed that using traditional methods, majority of the genuine entrepreneurs will be out of the lending program announced by the PKB. Revamping the financial service for migrant workers required.

Majority of the returnee migrants want to go abroad again. Of total returnee migrants, 73.51% want to re-migrate. Of those, who want to re-migrate, 31.73% want wage employment and 68.27% want to be engaged in entrepreneurship. Only 26.49% returnee migrants want to be reintegrated. Of those, who want to be reintegrated, 20.73% want to get wage employment and 79.27% want to be engaged in entrepreneurship. Post-COVID-19 strategy should focus on both re-integration and re-migration.

For the migrants who want to remigrate and for those who want find job abroad, there is lack or absence of quality services for migrants. Majority (79%) of migrants need help to go abroad. The need for help to go abroad is higher for men (81%) compared to women (29%). Around 43 percent of the males need assistance pertaining to recruiting agencies, visas, and work permits. For women, the percentage is around 14 percent. Only 5% of the respondents do know where to get help or obtain information to go abroad. No female respondent reported to know where to get information and help. 20% respondents reported the need for legal aid. The need for legal aid for men and women are 20% and 18%, respectively. A comprehensive service delivery architecture and platform needs to be developed, which will facilitate improvement of services for migrants throughout the cycle of migration.

Box 1. Busting the Myth

a. The myth is, those travelled back to Bangladesh during COVID-19, all of them are victim of COVID-19 and lost their jobs. However, the survey revealed that significant portion of the male migrants (74.80) and certain portion of women migrants (10.70%), overall, 63% of them, came to Bangladesh temporarily, either for COVID-19 risk related matters or on vacation/leave. This finding does not support the hypothesis of massive loss of job due to COVID-19, till date. In absolute term, the number of returnees may range between 65,000 to 125,000 and number of women migrants are relatively insignificant so far, may range between 9000 to 15,000.

b. Although share of women migrants in total migrants, who travelled back to Bangladesh, is significantly less in numbers, 57.10% of the women migrants returned home after losing job, income or were forced to return, compared to only 20.70% of men migrants. The general perception was, the type of job the women migrants are involved (mostly domestic work), there is no reason for job loss, rather demand is supposed to be increased. None of the women migrants, who returned, are from Jordan or Mauritius, where they are engaged in garments industry. The only explanation is working conditions in those countries, from where they return.

c. Those who came on leave and cannot return to CoDs, may lose their job for not being able to return in time. Many of them are unable to renew visa or deadline for joining had expired.

ILO (2020) Post-pandemic Strategic Roadmap for Labour Migration Sector

C. Strategy and Action Agenda

As per revised 8FYP of the GOB, FY2021 is considered as year of recovery and FY2022 is expected to have a V-shape turn around for the overseas employment sector. As per revised 8FYP, the growth of remittance for FY2020 is estimated 2.32% and for FY2021, 0%. Growth rate from FY2022 is 8%.

The strategy for overseas employment in post-pandemic era is two-pronged:

- Building a strong response mechanism for taking care of wellbeing of migrant worker at home and countries of destination.
- Focusing on agenda for the sector as laid out in 8th Five year plan.

In designing the action agenda, one should keep in mind that relatively better-off households benefit from labour migration. The core document of 8FYP identifies that the percentage of households in the bottom 40% benefiting from remittances has fallen from 4.1% in 2010 to 2.3% in 2016. The design of labour migration strategy needs to be modified so that poorer households benefit from it.

Agenda 1. Development of a Crisis Management System for Migrants

Bangladeshi migrant workers suffered during the Gulf war, Libyan crisis before. The COVID-19 is the latest one added to that sufferings. Learning lessons from these three crises, it is time to develop a comprehensive crisis management system for reducing the plights of the migrant workers, who play a significant role in national development.

This action agenda proposes a sustainable approach by applying whole of the government and whole of the society approach.

Project/Program/Action	Short Description	Lead Agency and Partners	Financing
Development of a Crisis Management System for Migrants	Situation and Needs Assessment Manual Manual for Information Service during Crisis System of emergency relief management in CoDs Repatriation Management System Emergency management System for termination settlement/job assurance/protection form forced return/protection form violence/legal aid Modification of rules of business and job description of designated emergency management team members at home and abroad	MOEWOE MOFA/Mission/WEWB/BMET/NGOs in CoD/NGOs in Bangladesh/BAIRA/Recruiting Agencies/Employers	MOF/MOP/MOEWOE/Development Partners/BAIRA/Recruiting Agencies

Agenda 2. Reintegration and Remigration Program

For designing a robust strategy for the wellbeing of the migrants affected by COVID-19 outbreak, it is important to know their status of job or business as well as their plan for future. Table 1 presents the plan of each of the groups of migrants traveled back to Bangladesh by status of their job/business.

Table 1. Interest of Migrants who Travelled Back to Bangladesh in Reintegration or Remigration

	Re-migration [73.51%]	Reintegration [26.49%]
Wage Employment	31.73%	20.73%
Entrepreneurship Development	68.27%	79.27%

The action agenda for developing a comprehensive reintegration and remigration program will be the corner stone for the labour migration sector during 8th Five Year Plan.

Project/Program /Action	Lead Agency	Partners	Financing
Reintegration Program: Rehabilitation and Preparatory Program	Rehabilitation Service. Self-Protection Training. Mental Wellbeing Service	MoEWOE/BMET/BAIRA/WEWB/a2i/DEMO/NSDA/BTEB/TVET Institutions/ILO/IOM	MoEWOE/ILO/IOM/World Bank
Reintegration Program: Supply Side Capacity Development Program	Capacity Enhancement of TVET Institutions. Establishment of Career Guidance Cell. Apprenticeship Collaboration. Enterprise Promotion collaboration for Migrants. Market Linage Capacity for DEMO	MoEWOE//BMET/BAIRA/WEWB/NSDA/BTEB/TVET Institutions/ILO/IOM / Business Association	MoEWOE/SDC/EU/ILO/IOM/World Bank
Remigration Program for Returnee Migrants	Assessment of Aspirant remigrants following an SOP Counselling service for career building Skills Development program Recognition of Prior Learning Certification Program Launching of accreditation system for RPL Launching of accreditation system for RPL Overseas Skills Development Scholarship Program	MoEWOE//BMET/BAIRA/WEWB/NSDA/BTEB/TVET Institutions/ILO/IOM / Business Association	MoEWOE/SDC/EU/ILO/IOM/World Bank

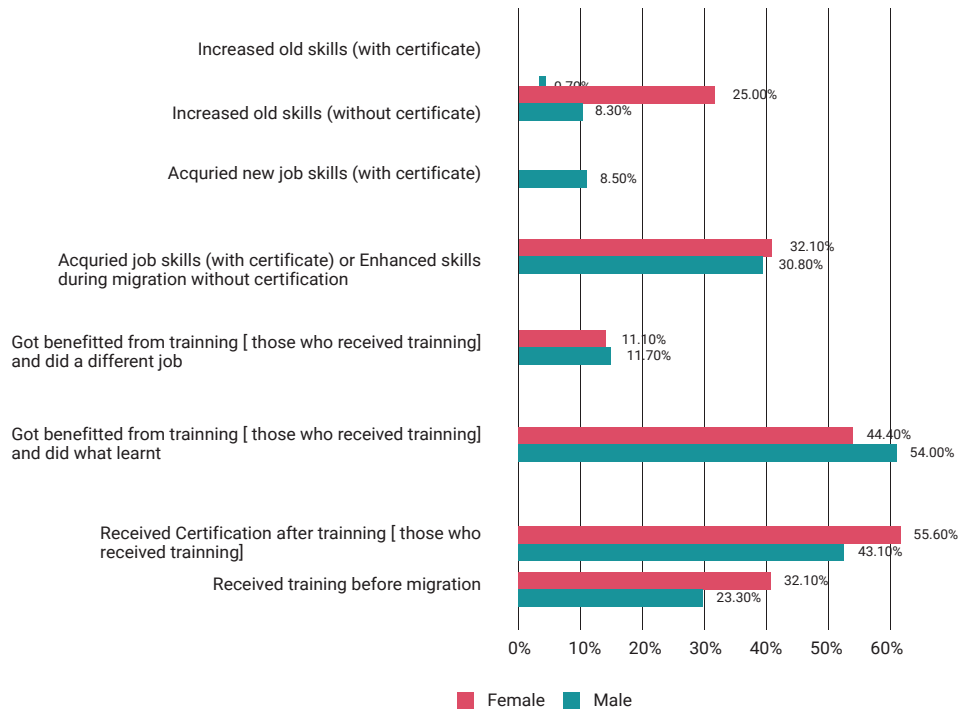
Agenda 3. Technical, Vocational and Entrepreneurial Skills Training and Accreditation

As a part of the reintegration and remigration program, skills development is an important agenda for ensuring steady job placement and income generation for the migrant workers at home and abroad. The ILO study found that while 88.3% of migrants, who returned to home went abroad legally, in terms of status of receiving training, most of them did not receive training before departure to CoDs. The survey depicts that only 23% of the respondents received training, 23.30% of men and 32.10% women received training before departure. Moreover, those who received training, only 43.10% of men and 55.60% women received certification after training.

In terms of perception of effectiveness of training, 54% men and 44.40% women, who received training, think that they have been benefitted with training and have been involved in the job related to the training. On the other hand, 11.70% men and 11.10% women, who received training, think they have been benefitted, but had to do a different job in the CoDs.

One induced benefit of working abroad is acquiring new skills and enhancing existing skills. The survey finds that almost one-third of men and women acknowledged that they have earned new skills or enhanced existing skills, although they did not receive any certification. This vindicates the need for prior learning (RPL) certification when the migrants come back to Bangladesh and before going abroad again. Moreover, this certification would help to be engaged in training of new aspirant migrants. The survey also finds that 8.50% of men acquired new skills with certification. There is no such incidence for women. A part of them have been able to increase old skills without certification. In general, acquiring new skills and receiving certification is not common among women migrants [Figure 1].

Figure 1. Skills and Effectiveness of Training of Migrants



There is extraordinarily little interest in getting training for certification, only 33% of the migrants would be interested in retraining or higher training to obtain a certificate in Bangladesh. The gender segregated data shows, 65.50% men and 85.70% of women are not interested in getting training for certification [Figure 2]. This is very alarming. It is well known that the average compensation of Bangladeshi workers is lower compared to migrants of competing countries. The major reasons for such apathy towards training is: quality of curriculum and instruction, duration of training, timing of training (before departure or at the beginning of pre-departure process), distance of training venue, loss of income during training, impatience prior to departure, lack of understanding that training for certification may led to higher income. The issues related to lack of interest in training is to address during the implementation of immediate and sustainable response through demand creation program and addressing supply side issues. The training curriculum must be modern and connected to the demand of the employers in CoDs. The training materials, training labs and quality of instructions will be a priority of the government.

35% among the literate are interested in being trained against the corresponding figure of 24% for the illiterate. In terms of specific type of training, 34% of the respondents identified electrical house-wiring or general electronics training would provide them with a better job abroad.

It is also important to consider that 40% of those previously trained showed interest in receiving further training, showing that a greater percentage of the trained wanted to further their skills, presumably to further their skills and earn a better livelihood. Compared to those who returned on leave (32%) or due to uncertainty (31%), a higher percentage (40%) of those who returned due to job loss or lost their job after returning, are interested in retraining or higher training, as this might make themselves more employable and make it easier to get hired.

Female migrants prefer home assistance or hospitality training (39%) the most whereas male migrants are more interested in training in electrical connections or general electronic (36%).

It is also important to note that the need for training is 54% higher among the migrants who returned from the Middle East than those who returned from rest of the Asia.

Figure 2. Interest in Training for Certification

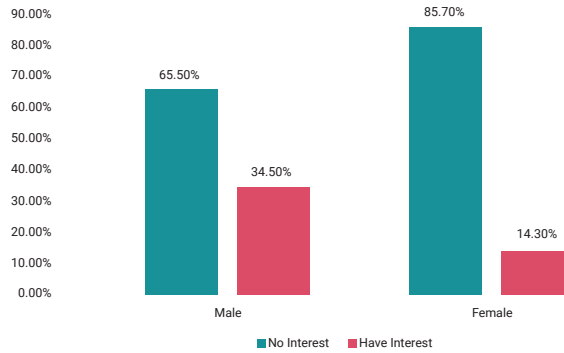
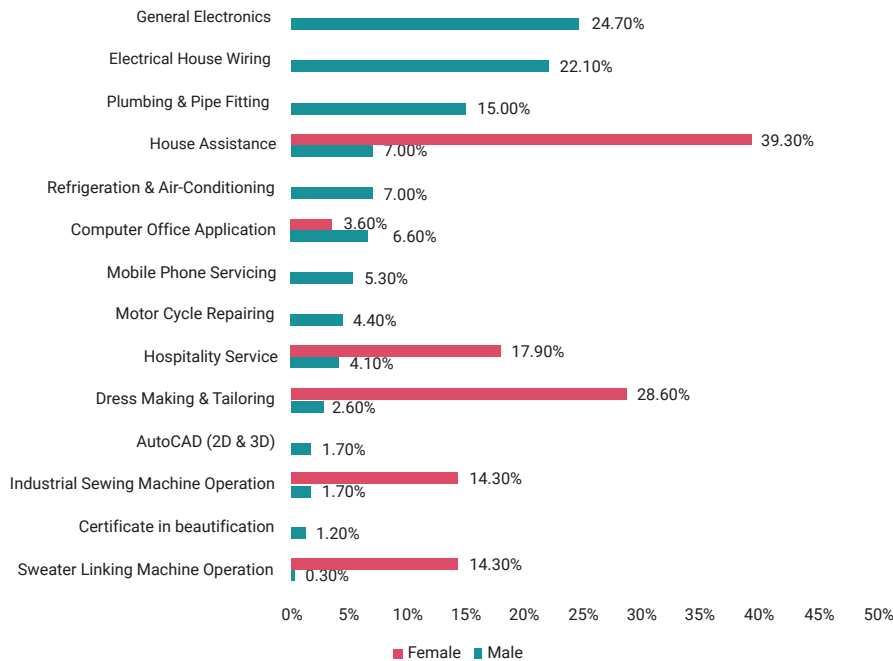


Figure 3. Perception about Type of Training which may Give Better Job Opportunities Abroad



The perception about type of training which may give better job opportunities abroad varies among men and women. Those women, who are interested in training, think that the training on the following six trades may give better job opportunities abroad [Figure 3]:

- a. House assistance (39.30%)
- b. Dress making and tailoring (28.60%)
- c. Hospitality service (17.90%)
- d. Industrial sewing machine operation (14.30%)
- e. Computer office application (3.60%).

The most important types of training for men, which may increase job opportunities abroad, are as follows [Figure 3]:

- a. General electronics (24.70%)
- b. Electric house wiring (22.10%)
- c. Plumbing and pipe fitting (15.00%)
- d. House assistance (7.00%)
- e. Refrigeration and air-conditioning (7.00%)
- f. Computer office application (6.60%)
- g. Mobile phone servicing (5.30%)
- h. Motorcycle repairing (4.40%)
- i. Hospitality service (4.10%)
- j. Dress making and tailoring (2.60%)
- k. AutoCAD (1.70%)
- l. Industrial sewing machine operation (1.70%)
- m. Certificate in Beautification (1.20%).

The interest in type of training would be one of the sources of information for designing skills program for re-migration and reintegration.

Project/Program /Action	Lead Agency	Partners	Financing
Reintegration Program: Skills Improvement and Wage Employment Program	Enlistment of returnee migrants interested in wage employment in Bangladesh. Skills Mapping and Skills Category Upgradation. Training curriculum upgradation. Training facility Upgradation. Training Capacity Upgradation. Recognition of Prior Learning.	MoEWOE/MOFA/MOHA/MoHFW/BMET/BAIRA/WEWB/NSDA/BTEB/TVET Institutions/ILO/IOM	MoEWOE/SDC/EU/ILO/IOM/World Bank

Agenda 4. Self-Employment or Entrepreneurship

The ILO study reveals that while there is not much interest in getting training for certification, the interest for having one's own business or entrepreneurship is higher [Figure 4]. The interest in entrepreneurship is higher among men (69.90%) compared to women (53.60%). The post-COVID-19 re-migration and reintegration program should focus on entrepreneurship development.

While interest in entrepreneurship is moderate, the interest in entrepreneurial skills training is relatively low. Among all respondents, 34% showed interest in getting entrepreneurial skills training. 34% among male against 25% of female being interested in such training is lower than the difference for vocational skills training. Among the group who lost job have higher percentage in need of such training (47%).

The need for entrepreneurial training is about 70% higher among the migrants who intend to stay in Bangladesh than those who intend to go abroad. Entrepreneurial training needs are two times more likely among migrants who did not have any prior experience of doing business than those who have prior experience.

For mobilizing investment, men want to rely predominantly on borrowing from relatives and acquaintances (45.70%), whereas women want to rely on bank financing (40%). The second important source for financing for men is loan from NGO (39.40%), which follows by loan from banks (28.20%). For women, the other sources are loan from NGO (13.30%) and borrowing from relatives and acquaintances (13.30%). Men want to rely more on savings (22.10%) compared to women 96.70% [Figure 5], as women migrants mostly (89.90%) do not have any savings [Figure A1.15 in Annex A].

Figure 4. Interest in Self-employment/Entrepreneurship

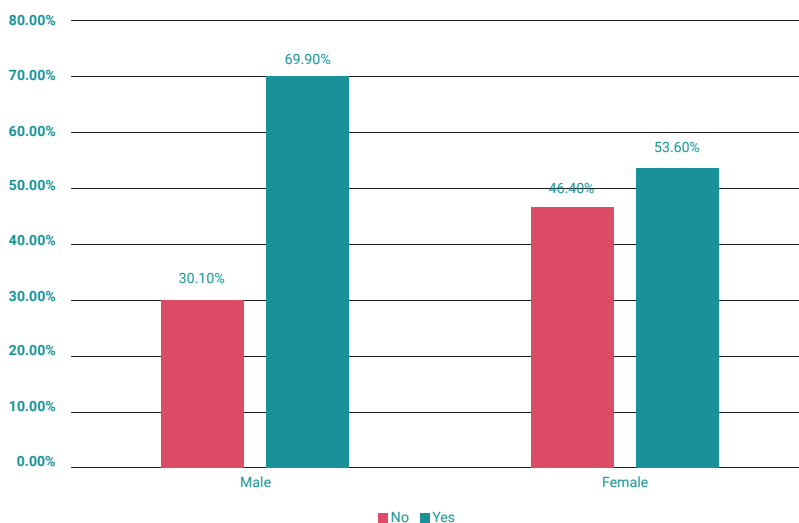
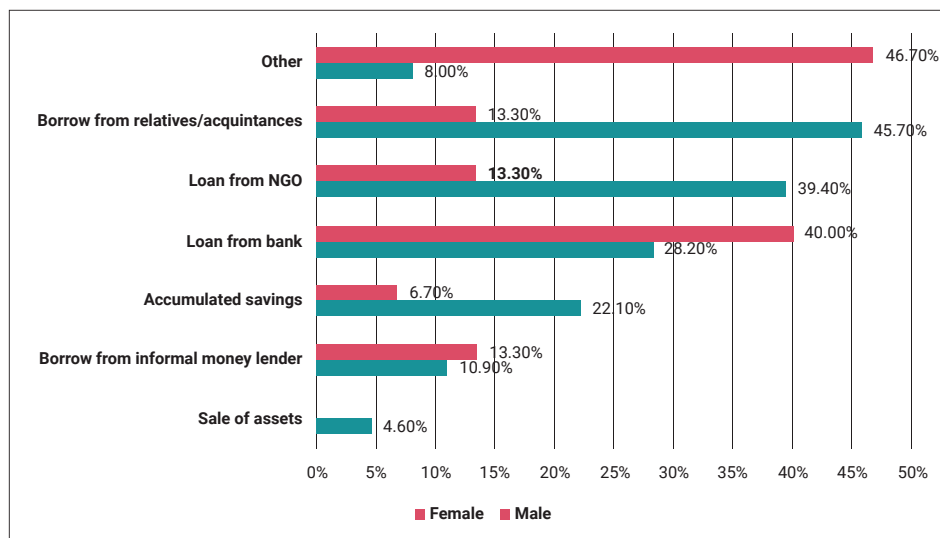


Figure 5. Interest in Self-employment/Entrepreneurship



Some of the migrants, both men (10.90%) and women (13.30%), want to rely on the informal money lenders. A few men (4.60%) want to sell assets.

The findings imply to focus on easy-to-access lending products. While capacity and network expansion of PKB at home and abroad are important, it is not less important to revamp PKB for more commercial orientation and aggressive marketing. It is also important to engage fintech companies, which are making breakthrough in financial inclusion in rural areas. The determinant analysis of the demand of vocational and technical training provides statistically significant evidence that the following categories of respondents are more likely to attend training and certification programmes (holding other thing fixed): male migrants, literate migrants, migrants who had received training before going abroad, migrants who returned empty handed from last CoD, the migrants who returned from middle-eastern CoDs and migrants who has intention of doing business in the future.

Finally, the logistic regression model for the demand of entrepreneurial training demonstrates statistically significant evidence that the following migrant categories are more likely to attend entrepreneurial programmes (holding other thing fixed): migrants who intended to stay in Bangladesh and has no prior experience of doing business.

Project/Program /Action	Lead Agency	Partners	Financing
Reintegration Program: Skills Improvement and Entrepreneurship Development Program	Enlistment of returnee migrants interested in entrepreneurship in Bangladesh. Business management training. Business development Service. Access to finance service. Debt conversion service	MoEWOE/MOFA/MOHA/MoHFW/BMET/BIRA/WEWB/NSDA/BTEB/TVET Institutions/ILO/IOM	MoEWOE/SDC/EU /ILO/IOM/World Bank

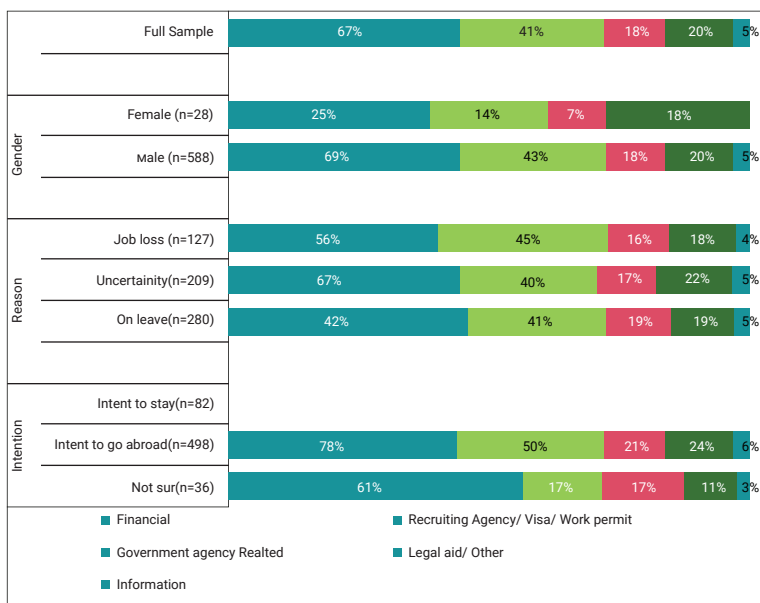
Agenda 5. Integrated Service Delivery Platform

The ILO study identifies that majority (79%) of migrants need help to go abroad. The need for help to go abroad is higher for men (81%) compared to women (29%). This is indicative of a need for improvement of services for migrants throughout the cycle of migration. More specifically, around 43 percent of the males need assistance pertaining to recruiting agencies, visas, and work permits. For women, the percentage is around 14 percent. These numbers also suggest a lack or absence of quality services.

The analysis shows that 41% reported needs for assistance related to visa, recruiting agency related and work permit, alluding that travel expenses and other financial constraints like visa processing fees pose significant barriers. Harassment, fraudulence, excess cost of migration, all are related to poor quality or absence of services. The strategy will focus on designing service platform at all point of service delivery, at home and abroad.

Another important need for migrant workers is financial help (67% of the migrants asked for it). The financial need for men and women is 68.88% and 25%, respectively.

Figure 6. Type of Help Required by Returnee Migrants



Project/Program /Action	Lead Agency	Partners	Financing
Service Delivery Platform for Migrants and their Families in Bangladesh [both Returnee and Aspirant] with Digital Integration	Comprehensive mapping of services provided to a migrant worker in the whole lifecycle of overseas employment: pre-departure services, services in CoD, services after return. Mapping of all database of migrant's workers and assessment of their usability/functionality. Development of SOP for data generation at all service delivery points and storage and retrieval. And making it mandatory for all service delivery agencies for migrant workers across the board. Development of Data Interoperability Framework and bringing all agencies under framework. Data protection protocol. Development of service delivery architecture and data architecture for each group of services. Development of service delivery system with digital integration by module and priority. Launching of mobile app for various user groups. Launching of services with digital integration by priority Development of Centralized interoperable Data repository. Capacity Building of the service providers	MoEWOE/BMET/B AIRA/WEWB/a2i/D EMO/UNO/UP/BoP Service delivery companies/BBS/D ata collection agency/ILO/IOM	MoEWOE/ILO/IOM /World Bank

Agenda 6. Digital Financial Services for Migrants

The survey reveals that 66.4% of the returnee migrants returned empty handed, but for female migrants the percentage is much higher (93%). More than half of the households of returned migrants have no savings. The preference for staying back decreases as household savings increases. Only 5% returned migrants reported to have some personal savings while three-quarters of them have existing personal loans. About 90% of women migrants belong to the household with no savings, whereas this percentage is quite low (55%) for their male counterparts.

More than half of the households reported to have a loan amount exceeding BDT 100,000 and 65% of the household loan is not from Bank or NGO. Those that do not have any savings, 52% of them have debts amounting to 1.5 lakhs or above. This shows significant debt burden of the migrants and their families.

One important action agenda may be helping these migrants converting the informal loan into a formal loan. This action will reduce their debt burden and make their life relatively less anxiety full. The other conclusion can be drawn that higher the loan burden, higher the willingness to go abroad; this is true for those who already experienced working abroad. The other conclusion is, those who are willing to go abroad, more than fifty percent of them have loan equal to or above BDT 100,000. This means that they need to continue to work for repayment of the loans.

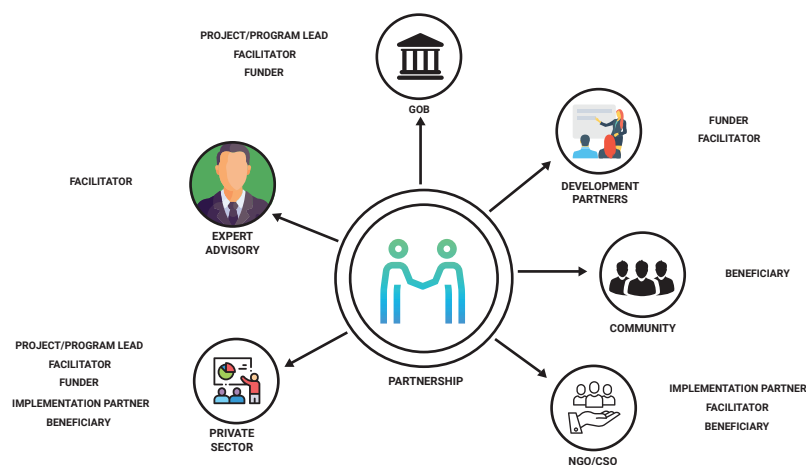
Project/Program/Action	Short Description	Lead Agency and Partners	Financing
Portable Digital Financial Service for Migrants	Portable Savings, borrowing, insurance schemes for migrants in CoDs. Conversion of informal loan into formal loan	PKB WEWB/MOF/BB/Commercial Banks	MOP/MOF/MoEWOE/WEWB
Special savings scheme for the migrant families	A special savings scheme, connected to the remittance/income with exchange rate arbitrage, so that savings may be used in case of crisis and loan repayment	MoEWOE/BMET/BAIRA/WEWB /a2i/DEMO/UNO/UP/BoP Service delivery companies/BBS/Data collection agency/ILO/IOM	MoEWOE/ILO/IOM/World Bank
	Inviting private banks, fintech companies and MFIs including PKB.		

D. Whole of the Society Approach

The impact of COVID-19 on migrants and their families and communities is multi-faceted and multi-sectoral and needs a comprehensive and coordinated response. The proposed interventions will require a whole-of-society and a whole-of-government approaches in the immediate term [FY2021] and medium-term [FY2021-25, 8FYP].

In the whole of the society approach, the government, development partners, private sector (connected to the migration process, BoP institutions, ICT industry, skills and learning institutions), NGOs and CSOs, thinktanks and communities need to build solid partnership with accountability. An expert advisory group will also be required facilitating partnership and program development.

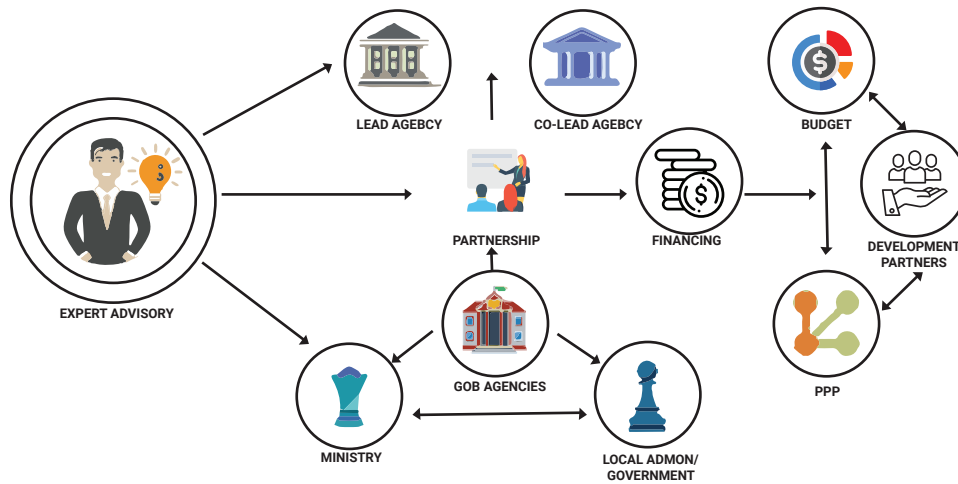
Figure 7. Whole of the Society Approach



As overseas employment and labour migration is a complex multi-disciplinary sector, it is important that all relevant ministries and agencies pro-actively coordinate and pursue the agenda for action defined in this section. The following Ministries will be an integral part of the whole of the government approach:

- a. Ministry of Expatriates' Welfare and Overseas Employment (MoEWOE)
- b. Ministry of Foreign Affairs (MOFA)
- c. Ministry of Home Affairs (MoHA)
- d. Ministry of Law, Justice and Parliamentary Affairs (MoLJPA)
- e. Ministry of Social Welfare (MoSW)
- f. Ministry of Women and Children Affairs (MoWCA)
- g. Ministry of Youth and Sports (MoYS)
- h. Ministry of Health and Family Welfare (MoHFW)
- i. Local government institutions
- j. Union Councils
- k. Municipal authorities
- l. Departments and local units of all government relevant agencies.

Figure 8. Whole of the Government Approach



Within the government, for certain action agenda, one institution may play the role of lead agency and other as co-lead, where necessary. For example, MoEWOE, MOHA and MOFA have been working together for addressing immediate needs of the migrants stranded in the CoDs. For most of the action agenda, partnership will be required with other ministries and agencies. Most importantly, connection with the local administration and local government institutions have been proven crucial to respond to the crisis. For example, to develop comprehensive listing of migrants for implementing various action agenda, partnership of all relevant government agencies as well as with private sector and NGOs will be essential.

Post COVID-19 ICT Roadmap for Bangladesh

Social Protection

Post COVID-19 ICT Roadmap for Bangladesh: The Social Protection sector

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Social Protection is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

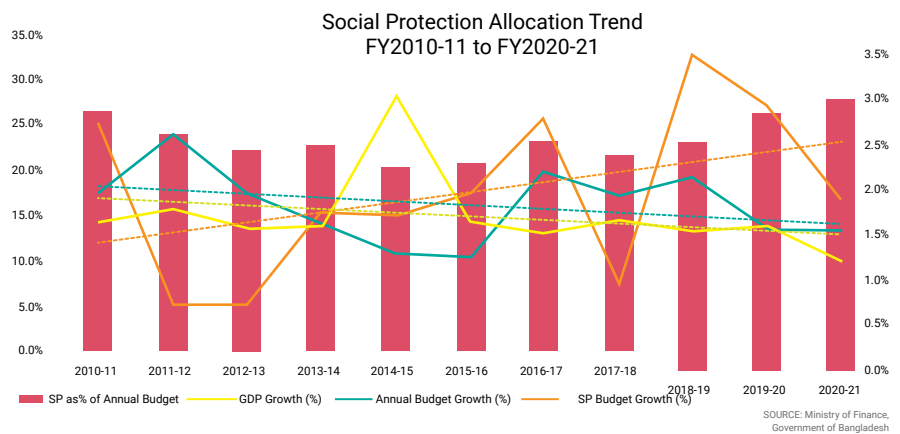
Why the Social Protection sector

When all the citizens of a state feel that the government is committed to protect them in distress and provide them with opportunities to thrive in life – inclusive economic growth is ensured. A range of social protection programs, cash or in-kind transfers, public works, and incentive schemes serve as essential instruments to support the poor in navigating through the hardships of life and in aligning them with the growth path of the country. To achieve inclusive growth, the Government of Bangladesh allocates resources to implement a broad spectrum of social protection programs. On the one hand, the allocated resources are still not sufficient, on the other, a range of implementation challenges undermines the commitment of poverty alleviation through social protection programmes. Information and Communication Technology (ICT) is an effective and absolute necessity to address different operational challenges in providing social protection to the vast population. The COVID-19 pandemic demands more integration and use of ICT in social protection programs to make the most effective use of our limited resources.

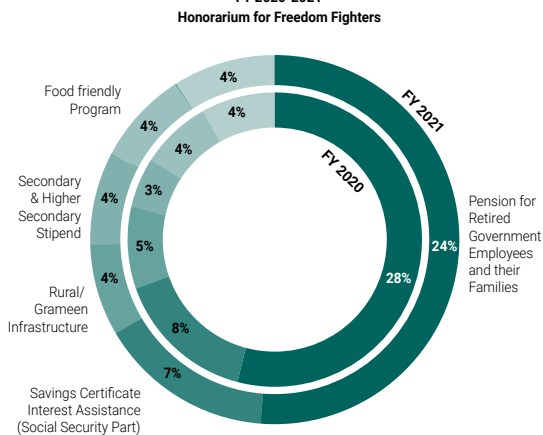
The growth and coverage of Internet, mobile phone, and mobile financial services have created an opportunity for utilisation of ICT to initiate a paradigm shift in revamping the social protection program. The COVID-19 crisis also opened our eyes to how important it is that all citizens have access to digital devices with reliable Internet connection and access to digital financial services. The basics are there thanks to relentless efforts during the last decade. Access to education and learning, access to healthcare, access to market and income opportunities, and most importantly access to financial services are now at our doorstep, waiting for us to open the door with a big push.

Impact of COVID-19

The World Bank has projected that the extreme poverty rate in Bangladesh will increase from 12.8% last year to 21.8% in 2020.¹¹ PPRC and BRAC Institute of Governance and Development (BIGD) jointly conducted a quick sample survey including 50% poor and 40% vulnerable non-poor covering both rural and urban areas (71% respondents in urban areas and 55% in rural areas). The conclusion from this study was that there had been a massive income loss among the population. The income of ultra-poor, moderately poor, and vulnerable non-poor have fallen by 70% following the countrywide shutdown during the global coronavirus pandemic. It will also be affecting the consumption capacity, which has come down by 40% for the poor and 35% for the vulnerable poor. This makes an efficient and effective social security system imperative for the vulnerable population.



Allocation of top six social protection programmes FY 2020-2021



Source: Ministry of Finance Government of Bangladesh

Constraints

The National Social Security Strategy (NSSS) adopted in 2015 reflects a broad structure that promises reduction of vulnerability at different stages of life and thus alleviate poverty. However, the social security system in Bangladesh still remains complex, comprising a large number of programmes managed by 35 ministries or divisions. There were 125 programmes listed under the social security system in FY 2020. With a need to spend 4% of GDP to sufficiently overcome the vulnerability of the poor, allocation for social protection programs has been 2-3% of GDP in Bangladesh over the last 10 years, though with a continuous rise in both allocation and the number of beneficiaries.¹² Only six of the 125 programmes in the FY2021 budget account for 46% of the total social protection allocations. The programme with the top allocation under SSNP (24%) is for the Pension for Retired Government Employees and their families. Thus, a large part of the safety-net programs is serving ex-government employees who do not necessarily belong to the poor segment of the society. As the vulnerability in health services in Bangladesh has been exposed intensely after the outbreak of COVID-19 pandemic, it is important to look into the allocation for health-related social protection programs. Only 15% and 12% of the total social protection budget was allocated for health-related social protection programs in FY2018 and FY2019 respectively.¹³ According to the Mid-term review of NSSS, most interventions put in place were on an ad hoc basis, being considered without any coherent and well-structured strategic framework for social protection.

11) World Bank. 2020. South Asia Economic Focus, Spring 2020 : The Cursed Blessing of Public Banks. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/33478> License: CC BY 3.0 IGO

12) Data Source: <http://socialprotection.gov.bd/social-safety-nets-in-bangladesh-budget/> (blue coloured data points are recalculated to adjust with update data from Ministry of Finance)

13) Calculated from the data available in the website of Finance Ministry https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/672e3d4d_09bb_4205_9afd_843de55481d1/Safety%20net_English_18-19.xl.pdf

Lack of complementary support systems meant the benefits of a program could not be sustained as the beneficiaries were exposed to chronic poverty and other types of crises. Social protection programmes in Bangladesh also face a number of potential exclusion errors at different coverage rates, according to an analysis of the 2010 household survey (Sharif, 2009). A substantial proportion of the population remain exposed to poverty or economic vulnerabilities with a large segment of poor or vulnerable households being excluded from various social safety nets. The absence of a comprehensive database of program participants, discretionary selection of beneficiaries, high leakage involving cash handouts, and implementation progress tracked mainly against disbursement rather than through actual intervention impact rendered monitoring and evaluation ineffective.

Imagine that all households have access to reliable electricity connection, smartphone with reliable Internet connection, and access to digital financial services. Access to these four essential items would enable us to provide sustained education for our children, access to essential health services for COVID-19 affected citizens, access to credit, and access to market. The women and girls who are lagging behind can also avail the digital opportunities. Bangladesh now has the resources and the readiness to ensure these four essential items within the next two years. This will allow for the development of a universal identity system for all citizens, adults and children alike, which will allow identification of right beneficiaries for all social protection benefits and deliver them to the citizens without delay and with minimum targeting error.

Top Five Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of Social Protection and ICT in the sector, the following five interventions have been identified for perusal, with the objective to re-emerge stronger.

Title	Universal Identity System for all citizens	Universal Access to Digital Devices, affordable Internet, and mandatory digital learning	Universal Access to Digital Financial Services	Multi-stakeholder monitoring system of social protection programmes	Launching of a separate Ministry/ Authority for Social Protection under Prime Minister's Office
Why (To address:)	There is no clear and uniform targeting criteria that is responsive and adaptive. The absence of a reliable single-entry database of selected recipients limits the capacity of the government in providing quick and direct assistance to the citizens in need. The poorer a person, the higher is the possibility of being missed-targeted in the social security net. Though exclusion errors reduce with increased coverage, it does not account for the sizeable errors during implementation	It will allow all citizens to take advantage of the digital technology for education, livelihood, healthcare, and accessing social protection benefits. Although initial investment for this initiative is high, it will reduce cost of identification and delivery	Digital Financial Services (DFS) is yet to make sure that there is no leakage in the disbursement process of social protection. The Government to Person (G2P) payment system under the NSSS shows promise in transferring allowances directly to the beneficiaries. However, only a few programs have come under this mechanism till date	Leakages take place during targeting, delivery of benefits, sharing information, and even self-appropriation of benefits. Monitoring and Evaluation (M&E) Framework of the NSSS depends largely on a fully digitalised system when ICT literacy of the local government is not up to par	Lack of coordination between different ministries leads to duplication of programs, beneficiaries, increased monitoring costs, and results in slow progress in poverty reduction targets of the NSSS
What	A single-entry database for all citizens with information on various characteristics and vulnerability measurement. This will allow to track and monitor the assistance received by each household	Launching of program for all citizens to purchase a digital device with affordable high quality internet and digital learning program with mobilization of resources form all sectors and stakeholders: public-private-NGOs-volunteers. The cost of delivery of the facility will be differential based on the status of wealth and vulnerability.	Inclusion of all citizens into DFS by utilizing multiple channels (post-office, schedule bank, mobile financing, agent banks etc.) with a national payment gateway; linking more programs with Social Protection Budget Management Unit (SPBMU) MIS; and improving the capacity of concerned ministries to integrate with the system. Disburse assistance in from of e-token ensuring the actual recipient gets the specific product (food basket) or service (health care) being covered through social security net	Thematic cluster-based monitoring mechanism to be developed by respective ministries to avoid duplications in monitoring. ¹⁴ Strengthening the capacity of the Implementation Monitoring and Evaluations Division (IMED) programs. ¹⁵	Establishment of the ministry and reduction of number of agencies dealing with social protection programs, keeping the coordination role with the new ministry and use of common vehicle for identification and delivery of benefits. Regular, virtual, coordination meetings of different relevant ministries of thematic clusters; a web-based NSSS implementation dashboard for all the line ministries; a knowledge repository for lessons learnt; quick implementation and adaptation of integrated and compatible MIS
Lead Agency	Ministry of Social Protection	ICT Division	Bangladesh Bank	IMED	National Parliament
Implementing Agencies/ Actors	All relevant ministries and agencies implementing social protection programs	Ministry of Post and Telecom/Ministry of education/MNOs/	All Banks/Fintech Companies/MFIs	Multi-stakeholder consortium	Cabinet Division/MOPA
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Govt. Partners	Ministry of Finance	Ministry of Local Government and rural Development/Local administration	Ministry of Finance	All relevant line ministries connected social protection programmes	All relevant line ministries
Pvt Sector Partners	MNCs with CSR programs	MNOs/Smartphone manufacturers/NGOs/BoP companies	All Banks/Fintech Companies/MFIs	CSos-NGOs/BoP companies	————
Financing and modality	Ministry of Finance/ Ministry of Planning/Development Partners	Ministry of Finance/ Ministry of Planning/Development Partners/Financial institutions/MFIs	Ministry of Finance/ Ministry of Planning/Development Partners/Financial institutions/MFIs	Ministry of Finance/ Ministry of Planning/Development Partners	————

14) Five thematic cluster groups of programs have already been identified. Those are i) Social Allowance, ii) Food Security and Disaster Response, iii) Social Insurance, iv) Labour and Livelihood and v) Human Development and Social Empowerment.

15) IMED monitors over 1,500 programmes every year. The assigned division within it for NSSS implementation is currently monitoring 183 programmes of which about 30 are SSPs. If the M&E of all the social protection programmes is also allocated to IMED, the workload could be unmanageable.

Post COVID-19 ICT Roadmap for Bangladesh

Social Protection Chapter

Thematic Paper

Background

A range of social protection programs, cash/in-kind transfers, public works, incentive schemes serves as essential instruments for supporting the poor people to navigate through the hardships of life and be aligned with the growth path of the country. On our way to development, socio-economic inclusion of the vulnerable part of the population should be one major concern. When all the citizens of a state feel that the government is committed to protect them in distress and provide them with the opportunities of life to thrive, then inclusive economic growth is ensured. To achieve inclusive growth, the Government of Bangladesh allocates resources to implement a broad spectrum of social programs. In one hand the allocated resources are not sufficient, on the other hand a range of implementation challenges jeopardies the objectives of poverty alleviation by social protection programmes. Information and Communication Technology (ICT) is an effective and absolutely necessary tool to address different operational challenges in providing social protection to the vast population. The COVID pandemic situation demands more integration and use of ICT in Social Protection Programs to make the most effective use of our limited resources.

The special circumstance created by the COVID pandemic also provided us with the opportunity to realize the sheer importance of having social protection programs in action. Being able to reach out the population in time of distress is a key indicator of successful governance and existing social protection programs with its administrative structure and protocol, equipped with proper ICT tool could be valuable to enable responsive governance.

Bangladesh has a long history of formal social safety-net programs, which, in part, has shaped the nature of the current social security system. The political viewpoints and program designs of social protection in Bangladesh have gradually evolved from a poor-relief approach in the 1970s to a safety-net approach in the late 1990s and finally to a lifecycle framework in 2015 with the adoption of the National Social Security Strategy (NSSS). The NSSS has identified various risks for different cohorts of life and has designed the programs accordingly. Before adopting the National Social Security Strategy (NSSS) in 2015, the leakage rate was very high in the social protection programs of Bangladesh (Planning Commission, 2015). The new social security strategy reflects a broad structure that may reduce vulnerability at different stages of life and thus alleviate poverty. However, social security system in Bangladesh still remains complex, comprising a large number of programs and managed by 35 ministries/divisions. There were 125 programs under the social security system in FY 2019-20.

Key Aspects

Understanding SSNP Programs: Structure and Allocation

As mentioned earlier, different ministries and divisions are responsible for implementing social protection programs. Major ministries dealing with key social protection programs include the following.

Table 1: Ministries implementing the prime social protection programs

Ministry	Programs
Finance	Retirement benefits to the Government employees
Social Welfare	Old Age Allowance
	Allowance for widows
	Disability Allowance
	Allowances for Insolvent Freedom Fighter
Women and Children Affairs	Primary Stipend
Education	Secondary Stipend
Disaster Management and Relief	Employment Generation
	Food for Work
Food	Open Market Sale

The NSSS outlined the areas of service delivery reform in the social security system and instructed the implementing ministries and divisions accordingly. It recognizes that a single ministry or division may implement a scheme, but others have a cross-cutting role. Based on this idea, the Central Management Committee (CMC) on Social Security Programmes has formed five thematic clusters: i) Social Allowance, ii) Food Security and Disaster Assistance, iii) Social Insurance, iv) Labour/Livelihood Interventions, and v) Human Development & Social Empowerment. Each cluster has a coordination ministry or division, and the rest are the members. According to the NSSS, thematic clusters are the forum for intra and inter-cluster coordination in service delivery.

The CMC provides support to five thematic clusters for coordination of cooperation, approve action plans, assist ministries in obtaining budget allocation, etc. Some issues are common for all clusters. CMS is responsible for coordinating those cross-cutting matters. Every thematic cluster is responsible for reforming, consolidating, and integrating social security programs in the spirit and guideline of the NSSS and to coordinate the action plans of ministries within each cluster (Table 2)

Table 2: The thematic clusters, along with coordinating ministries

Social Allowance Cluster	Ministry of Social Welfare
Food Security and Disaster Assistance	Ministry of Food
Social Inclusion	Finance Division
Labour/ Livelihood Intervention	Ministry of Disaster Management and Relief
Human Development and Social Empowerment	Ministry of Primary and Mass Education

It is often argued that for that we need to spend 4% of GDP to sufficiently overcome the vulnerability of the poor. However, in Bangladesh allocation for social protection programs was 2 to 3 percent of GDP if we consider the data for last 10 years, though we observe a continuous rise in allocation for social protection programs and the number of beneficiaries (Table 3).¹

Table 3: Budget Trend of Social Protection

FY	GDP in Billion Taka	Change (%)	Budget in Billion Taka	Change (%)	Social Protection Budget in Billion Taka	Change (%)	Beneficiaries (Million-Man)	Change (%)
2020-2021	31,718.00	9.91	5,680.00	13.24	955.74	16.75		
2019-2020	28,858.72	13.79	5,015.77	13.34	818.65	27.11	811.86	41.94
2018-2019	25,361.77	13.29	4,425.41	19.12	644.04	32.73	571.96	-21.77
2017-2018	22,385.00	14.44	3,714.95	17.13	485.24	7.28	731.14	36.73
2016-2017	19,560.56	13.10	3,171.74	19.89	452.30	25.73	534.73	-17.55
2015-2016	17,295.67	14.27	2,645.65	10.39	359.75	17.43	648.56	-12.77
2014-2015	15,136.00	28.16	2,396.68	10.84	306.36	14.94	743.54	706.21
2013-2014	11,810.00	13.78	2,162.22	14.21	266.54	15.40	92.22	1.59
2012-2013	10,379.87	13.47	1,893.26	17.44	230.98	5.11	90.78	-7.36
2011-2012	9,147.84	15.74	1,612.13	24.00	219.75	5.18	97.99	-9.29
2010-2011	7,903.66	14.37	1,300.11	17.63	208.94	25.07	10.80	26.69

Among the programs, only a few dominate in terms of allocation and beneficiaries. Out of the 124 budget line items listed in the budget document of 2020-21, only 6 programmes constitute 46% of the total social protection allocations Table 4. The actual SSN programme numbers are fewer than 124, as projects and special allocation without projects are also included on the budget. The programme with the top allocation under SSNP (24%) is the programme for the Pension for Retired Government Employees and their families. This programme includes all government employees, including top-grade employees. Thus, a large part of the safety-net programs is serving ex-government employees who do not necessarily belong to the poor segment of the society.

1. Data Source: <http://socialprotection.gov.bd/social-safety-nets-in-bangladesh-budget/> (blue colored datapoints are recalculated to adjust with updated data from Ministry of Finance)

Table 4: Top six social safety-net programs according to the allocation in FY 21

Programme				
Pension for Retired Government Employees and their Families	230100	28%	230000	24%
Savings Certificate Interest Assistance (Social Security Part)	67660	8%	66250	7%
Rural/Grameen Infrastructure Development	41870	5%	41870	4%
Secondary & Higher Secondary Stipend	24000	3%	39640.8	4%
Food friendly Program	31296.7	4%	38442.6	4%
Honorarium for Freedom Fighters	33850.5	4%	33850.5	4%

As the vulnerability in health services in Bangladesh has been exposed intensely after the outbreak of COVID-19 pandemic, it is important to look into the allocation for health-related social protection programs. The health-related social protection programs include Child and Maternal Health program; Urban Public Environmental Health Care Development Program; Urban Primary Health Care Service Delivery; Maternal, Child, Reproductive and Adolescent Health program; Family Planning Field Services Delivery; Clinical Contraception Services Delivery; Community Based Health Care; T.B., Leprosy, Communicable and Non-communicable Disease Control; Assistance for Cancer, Kidney, Liver Cirrhosis and other Patients. It is noted that 15% and 12% of the total social protection budget was allocated for health-related social protection programs in FY18 and FY19, respectively.²

Table 5: Health-Related social protection budget

The total budget of FY18 to health-related programs	
Percentage of SSNP allocation to the health-related program	32238.9 million Taka 15.04%
The total budget of FY19 to health-related programs	
Percentage of SSNP allocation to the health-related program	39018.5 million Taka 12.43%

Pre-COVID Challenges with regards to Social Protection Programs and suggested Strategies

Before we reflect on the mid-term review, there had been some critical observation and findings on our NSSS Background Paper and National Sustainable Development Strategy which should be highlighted.

National Sustainable Development Strategy

National Sustainable Development Strategy 2010-21 (NSDS) identified that social safety net programs face inadequate coverage, mistargeting of beneficiaries, the multiplicity of program leakages, and disparity in regional distribution as implementation challenges. It has proposed the following strategies to minimize the challenges³

- ▶ Maintain adequate food grain stock for distribution at a fair price during the crisis period as well as for operating regular programmes;
- ▶ Expand and enhance financial support to the old, widow, persons with a disability, and sick;
- ▶ Ensure free and efficient medical services for all at government hospitals;
- ▶ Introduce health insurance for all employees of government, semi-government organizations and private enterprises;a
- ▶ Introduce compensation for health hazards during duties both in government and non-government organizations;
- ▶ Make the existing and new programmes better targeted to intended beneficiaries. Undertake measures to stop leakages.
- ▶ Build a closer link between social safety net programmes and disaster and climate change risk proofing of the development investment. Every opportunity will be seized to implement social safety net in such a way that its result will fortify the development investment and reduce vulnerability of people to disasters and climate change.

2. Calculated from the data available in the website of Finance Ministry

https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/672e3d4d_09bb_4205_9afd_843de55481d1/Safety%20net_English_18-19.xl.pdf

3. National Sustainable Development Strategy 2010-21 (NSDS), Published on 2013, p103,104

<http://nda.erd.gov.bd/files/1/Publications/CC%20Policy%20Documents/National-Sustainable-Development-Strategy.pdf>

NSSS Background Paper

Based on an analysis of the 2010 household survey Sharif (2009) has identified various challenges with regards to the targeting of social protection programs. The study has noted that the Social Protection Programmes in Bangladesh face a number of potential exclusion errors at different coverage rates. Since his results do not include errors introduced through implementation, which is understandably not negligible, we could easily consider the numbers as underestimates. However, it is interesting to note that the more we increase the coverage, the less exclusion error we make. When the poorest 10 percent of the population is targeted, the minimum exclusion error is 55%. However, when coverage is 40%, the minimum exclusion error would decline to 27 percent.⁴

Proposed Reforms to over challenges (pre-COVID situation)

The Midterm Review of the NSSS, assesses the progress made on various reform measures as stipulated in the NSSS. According to the Mid-term review, most interventions were put in place on an ad hoc basis as they were considered without any coherent and well-structured strategic framework for social protection. Lack of complementary support systems meant the benefits of a program could not be sustained as the beneficiaries were exposed to chronic poverty and other types of crises. Bangladesh has made considerable progress in increasing per capita income, structural transformation of the economy, and tangible improvements in living standards. However, it is noted that a substantial proportion of the population remained exposed to poverty or economic vulnerabilities. The evidence also suggested a large segment of poor or vulnerable households being excluded from various social safety nets. While duplicating schemes came into operation with inadequate resource support, the average transfer payments remained low. Besides, the absence of a comprehensive database of program participants, discretionary selection of beneficiaries, high leakage involving cash handouts, and implementation progress tracked mainly against disbursement rather than through practical measures reflecting actual intervention impact rendered ineffective monitoring and evaluation of social safety net schemes.

Based upon the past Social Security System experience, NSSS has identified the following priority areas of programmatic and institutional reform that needs to be carried out at the medium-term:

Reform Proposed in Action Plan

Reform was proposed with the action plan and responsible ministries and divisions to execute on “Action Plan: Implementation of National Social Security Strategy (NSSS) of Bangladesh” by Cabinet Division and General Economics Division (GED) of Planning Commission. This document had been prepared under the overall guidance of the NSSS Action Plan Sub-Committee and was published in April 2018. The report intended to provide an action plan for 2016-2021. Some of our proposed action agenda of the current document had already been there, though most of them are yet to become effective.

Programme and Institutional Reform

The National Social Insurance Scheme (NSIS) had been one cross-cutting issue repeatedly mentioned in the proposed reform. We think that establishing a Single Registry on a pilot basis within the Statistics and Informatics Division (SID) should be on a fast-track towards the full implementation process. This initiative would ensure that the urban poor households have similar access as the rural poor households. Institutional reforms proposed from 2016 up to 2021 also include important concerns of targeting and grievance mechanisms. The details of proposed programs and institutional reforms are presented in the annex.

Post-COVID Situation Assessment

Though almost every aspect of our socio-economic life had been greatly affected by the COVID-19 pandemic, social protection turned out to be an essential part of the government response plan to recover.

COVID Impact

The World Bank has projected that the extreme poverty rate in Bangladesh would increase from 12.8 percent last year to 21.8 percent in 2020⁵. PPRC and BRAC Institute of Governance and Development (BIGD) jointly conducted a quick sample survey including 50 percent poor and 40 percent vulnerable non-poor covering both rural and urban areas (71% respondents in urban areas and 55 percent in rural areas). The conclusion from this study is that there had been a massive income loss. The income of ultra-poor, moderately poor and vulnerable non-poor have fallen by 70 percent following the countrywide shutdown for the global coronavirus pandemic. It will also be affecting the consumption as consumption capacity also has come down by 40 percent for the poor and 35 percent for the vulnerable poor. The recommendation was to introduce a monthly food security support package of Tk5,600 crore for the poor and an additional package for the new poor.⁶

Government Responses to support distressed people as a result of COVID-19 pandemic

The proposed budget of social safety net programmes in FY21 is Tk 95,574 crore, which is 28.52% increase from the proposed budget of the last fiscal year and 16.75% increase from the revised budget of the last fiscal year (13,709 crore increase without adjusting for inflation). Part of the other stimulus package announced in response to the COVID-19 outbreak is also included within the social protection allocation. Allocation for the social protection programmes exceeds 3% of the GDP for the first time in FY21. The table below shows a summary of the National Budget, GDP, and Social Safety allocation.⁷

4. Sharif, Ifthah A. (2009) Building a Targeting System for Bangladesh based on Proxy Means Testing, Social Protection Discussion Paper No. 914, World Bank
Referred on Background Research Papers for Preparing the NSSS of Bangladesh, p151
<http://socialprotection.gov.bd/wp-content/uploads/2017/09/NSSS-Background-Papers-for-Website.pdf>

5. World Bank. 2020. South Asia Economic Focus, Spring 2020 : The Cursed Blessing of Public Banks. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/33478> License: CC BY 3.0 IGO.

6. Poverty Trends under Covid-19: Sharing Findings from PPRC-BIGD Rapid Response Survey (2020) by Power and Participation Research Centre (PPRC) and BRAC Institute of Governance and Development (BIGD)
<https://bigd.bracu.ac.bd/news/covid-19-fallout-economic-activities-dropped-by-70-pc-in-urban-areas-survey/>

7. Source: Finance Ministry Website,
https://mof.portal.gov.bd/sites/default/files/files/mof.portal.gov.bd/page/672e3d4d_09bb_4205_9afd_843de55481d1/Safety%20net%202020-21%20English.pdf

Table 6: National Budget, GDP, and Social Safety allocation (amount in a crore Taka)

	FY20 Allocation	FY20 Revised Allocation	FY21 Allocation
Total Safety Net	74367	81865	95574
Total Budget	523,190	501,577	568,000
Percentage to Budget	14.21%	16.32%	16.83%
GDP	2,885,872	2,805,700	3,171,800
Percentage to GDP	2.58%	2.92%	3.01%

However, the budget of these programs includes Tk 23,0000 or, 24.07% of the total allocation for the pension of only 6.3 lakh government employees. As mentioned previously, the social protection budget also includes Tk 3,000 crore for the refinancing scheme of farmers and small businesses, Tk 3,000 crore as interest subsidy for the small industry and services, and Tk 2,000 crore as support to interest exemption of commercial banks due to the impact of Covid-19.

Discussions

From the analysis above and from the detailed findings in the mid-term review of the NSSS, it is noted that addressing the vulnerability of people through a variety of social protection programs is still quite challenging due to problems with designing of programs, problems with targeting and leakages. To make social protection programmes more effective for reducing vulnerability and alleviating poverty, we may consider extensive use of information and communication technology (ICT). The NSSS stipulated the development of various systems by utilizing ICT-based operations. The mid-term review of NSSS reveals that we have to expedite the progress towards achieving the objectives those had been mentioned in the NSSS.

Table 7

Concern	Challenges	ICT Relevance
Strengthening social security for children	the coverage of Secondary Education Stipend Programme has fallen in recent years. Although the introduction of electronic transfer methods reducing leakages and ghost beneficiaries is attributed to this decline, the issue calls for closer scrutiny.	Already using mobile money+ could introduce special mobile money savings scheme only for stipend
Programmes for working age population	In order to develop the National Employment Injury Insurance (EII) Scheme for Bangladesh, the MoLE has completed a feasibility assessment with technical and advocacy support from ILO. Based on the assessment,	Separate database with future integration compatibility
Improving the Social Security system for the urban poor	NSSS-stated study on the need for specialised schemes for urban areas has not been commissioned yet.	Tracking with mobile as urban poor frequently relocate, geo density data can help mapping slam areas, however not all are equally vulnerable in poor habitat, use for mobile usage data to better target,
Establishing a comprehensive pension system for the elderly	the format of the National Employment Injury Insurance (EII) Scheme for Bangladesh being late on finalization, delayed the piloting of this programme	The development of database, analysis of risk assessment of the financial liability, etc could only be done effectively if we plan ahead and use ICT regarding the database ad software system.
Programmes for food security	Since 2016, the food-based Test Relief programme has been transformed into a cash-based scheme. There are concerns of transforming all food-based schemes into cash programmes	Token with e-authentication system and to use multiple distribution channels, Again information of amount disbursed should be known by potential recipients through low tech communication medium to decrease leakage
Consolidation of special programmes and small schemes	As many as 216 unique programmes have been considered as SSPs since 2008-09. However, for any year a maximum number of programmes in operation was 138 (in 2014-15). The number of officially considered SSPs has then steadily fallen to 114 in 2018-19	Not all programs are not renewed in favour of streamlining, some programs run dry on funding. Along with a software system for monitoring the progress, ICT could be used to support the tracking of funding and successful programs should be prioritized and we can learn from the mistakes of the programs that show poor progress. Data-driven approach in this regard could only be possible with the integration of ICT
Performance summary of programmatic reforms	86 performance indicators, 26 (about 30 per cent) are on-track, while as many as 37 indicators (43 per cent) are seriously off-track and another 11 (about 13 per cent) are moderately offtrack	Tracking of all the program could be digitalized and incorporated within a software system that will create visibility and reduce the necessity of dedicated research and reports could be generated more frequently

Most of the reform proposals stated in the Midterm review is either directly regarding ICT (database and Information management system) or have the scope of ICT integration to overcome the existing limitation and challenges. Single registry management information system (MIS) is among the top proposed reform that had been bottle necked many ongoing efforts regarding social protection. For example the allocated budget of 125 Million Taka G2P payment system enabled cash transfer propose radically reduce the leakage by the Prime Minister a CMC led cluster coordination approach could make more progress if quarterly meetings were regular and adaptation of a dedicated solution developed by ICT for inter-ministry communication and virtual meeting can make that possible. One

Table 8 in the Annex contains the full list of the reforms high lightening the possible ICT integration.

Table 8: Proposed reforms in Midterm Review and scope of ICT Integration

Proposed Reform	Activities Envisaged	Progress, Limitation, and ICT Integration
1. CMC led Cluster Coordination Approach of Implementing Ministries	-Introduce cluster approach to ministries' SSP implementation-Review efficiency and effectiveness of the cluster approach and CMC will ensure coordination and supervision of programmes (till 2025)	-Quarterly cluster meetings held so far: Social Allowance (4), Food Security and Disaster Response (7), Social Insurance (4), Labour and Livelihood (5) and Human Development and Social Empowerment (3). Having online meetings through an inter-ministry communication channel could reduce bureaucratic delay
2. Establish a single registry management information system (MIS)	-Create online MIS and make it accessible-Create the database with GIS and socio-economic condition of people -Commission a review of MISs across all social security schemes -Link MIS with cash disbursement -Establish a single registry on a pilot basis within SID -Establish nationwide single registry assessment,	-Online based MIS programme has been created for only 6 programmes; few others are in development phase; none of them was completed within the stipulated deadlines; -Developed MISs cover partial information and accessible upon permission. -BBS completed household census for the National Household Database (NHD). But the database is not operational yet. -GIS and socio-economic database work depend on BBS delivering survey report -No study has been completed to develop ideal MIS. Preliminary survey of the existing MIS has been done.-The Social Protection Budget Management Unit (SPBMU) MIS under Finance Division. Linked with eight major social protection schemes of five line-ministries -No pilot programme within SID GIS database and NHD, should be integrated with software system that automate targeting based given criteria, optimize on basis of operational cost, beneficiary, etc.
3. Strengthen government to person (G2P) payment systems that promote financial inclusivity	-Review the current payment system -Design digital payment architecture -Piloting G2P -Rolling out for all cash transfer programmes	-Review completed -Digital payment architecture designed -Pilot programmes conducted -Few programmes (6 programmes of 5 ministries) are using G2P but partially implemented. Yet to be implemented for all programmes. Interoperability of payment channel is required to make it successful and inclusive. ICT division along with Bangladesh Bank should be integrated part of this payment system development
4. Strength processes for selecting recipients of social security schemes	-Form cross governmental advisory board -Review of selection process and implement recommendations -Combine PMT with use of LGIs and NGOs in identifying beneficiaries	-M&E committee headed by Member GED formed. Formation of the cross-governmental advisory board is underway. -Study carried out on the review of selection criteria, recommendation has not been developed. -Developing PMT depends on the successful completion of BBS's NHD.
5. Establish a complaint and grievance mechanism	-Commission study to design the mechanism and initiate implementation -Develop second generation GRS software -Creating public awareness	-The study was completed in due time -Second-generation GRS software developed and launched. Not much effective -Public meeting held in most upazilas Information on the grievance mechanism should be known to the mass population along with the selection process an criteria and amount of help. Only then grievance could be reported. Low tech, as well as hight tech medium, should be used to let people know and report grievance.
6. Establish a result based Monitoring & Evaluation system	-Establish task force to develop M&E framework -Monitor the implementation progress and evaluate impacts of SSPs -Digitalise monitoring and establish dashboard -Implement task-force recommendations -Conduct midterm and end-term evaluation of programmes	-M&E task force has been formed. Initial M&E framework has been developed. -IMED monitors implementation of 36 programmes. No such process exists for other programmes. Impact evaluation of few programmes are in progress -Few parts have been developed. Dashboard not in place. -The first M&E reports is yet to be finalized -Midterm implementation review is underway. Digitalise monitoring and establishing dashboard will turn the monitoring process fast. One central database equipped with monitoring capacity analysis software will reduce the cost of monitoring.

There had been massive media coverage on the corruption and therefore high leakage in the disbursement of social protection food support and cash transfer. As the Ministry of Disaster Management and Relief has been disbursing rice and cash for low-income people who are outside of the social safety net, there had been allegations of misappropriation. The government has allocated 65,967 tonnes of rice for relief, according to the ministry as of 9th April 2020. It has also allocated Tk25 crore in cash relief and more than Tk3 crore to purchase baby food. With quick response of the government, within the first two weeks of April, law enforcers arrested 29 people accused of stealing 4,167 sacks full of rice, each containing 50kg rice and all of that had been recovered.⁹

To support vulnerable people through various social protection programmes, we suggest the following action agenda that may be included in the ICT road map, especially for making the social protection programs more effective.

Action Agenda

Based on an analysis of the 2010 household survey Sharif (2009) has identified various challenges with regards to the targeting of social protection programs. The study has noted that the Social Protection Programmes in Bangladesh face a number of potential exclusion errors at different coverage rates. Since his results do not include errors introduced through implementation, which is understandably not negligible, we could easily consider the numbers as underestimates. However, it is interesting to note that the more we increase the coverage, the less exclusion error we make. When the poorest 10 percent of the population is targeted, the minimum exclusion error is 55%. However, when coverage is 40%, the minimum exclusion error would decline to 27 percent.

Action Agenda 1: Improve Targeting

Challenge/Opportunity: There is no clear and uniform targeting criteria that is responsive and adaptive. We need a measurement of vulnerability based on which we will improve our targeting. The economically vulnerable people taking part in the informal economy and urban poor should be covered within our social protection programs. On top of that, there is no single entry database of the selected recipients of social protection. The absence of a reliable database limits the capacity of the government to respond by quickly providing direct assistance to the citizens in need.

Estimated Impact (Quantitative): A single-entry database, along with the information of recipients of the assistance of each program, we will be able to track the assistance received by each household. We can extend the recipient database to track progress and use it for monitoring purposes. With the vulnerability measurement attached to the database, we will be able to set priority in targeting. All recipients of social protection will be benefited from a well-developed targeting mechanism.

Estimated Impact (Qualitative): If we have a reliable database, we can take account of the qualitative aspect of social protection like what happens when a male-headed household is getting assistance through the female members. This will help us understand the gender and nutritional impact of economic mobility if we can track overall progress with a robust database and thus help us to design the programs to have more impact.

Action Agenda

- 1 Develop a recipient database with a mechanism to update on a regular interval.
- 2 Improve ICT literacy of local government so that they can efficiently participate in recipient database development and updating
- 3 To attach vulnerability in the recipient database, we may develop an index of the information on internal migration, disaster etc.
- 4 Including urban poor in the recipient database so that they can be covered by social protection. This will help to design specialized schemes for urban areas.
- 5 It is crucial to have gender-disaggregated data
- 6 Establishing a Single Registry Management Information System (MIS) is already on the agenda of NSSS. However, we should be careful of over-integration, which may lead to the misuse of personal data. We have to identify the risks and take safeguarding measures.

Action Agenda 2: Improve Grievance Handling

Challenge/Opportunity: It is noted that the poorer a person, the more is the possibility of mis-targeting. A well-designed grievance mechanism could reduce mis-targeting and improve coverage of a program. When the poorest 10 percent of the population is targeted, the minimum exclusion error is 55 percent while, when coverage is 40 percent, the minimum exclusion error will decline to 27 percent. These do not include errors introduced through implementation – which can be considerable. Following the implementation strategies in the NSSS Action Plan, the Cabinet Division has already operationalized the second-generation online Grievance Redress System (GRS) software. However, poor people with low level of education and limited or no knowledge of ICT use cannot use the GRS. Thus, we need to think of something easy for the poor.

Estimated Impact (Quantitative): Extreme poor with low level of education could place their grievances for mistargeting or leakages of support. This will improve the efficiency of especially the cash transfer programmes. poor.

Estimated Impact (Qualitative): We can expedite the central target of poverty reduction by connecting the beneficiaries with the whole mechanism.

8. Source: <https://tbsnews.net/bangladesh/crime/govt-cracks-down-corruption-relief-programme-68410>

9. Source: <https://www.thedailystar.net/frontpage/news/rice-theft-goes-the-poor-bear-brunt-1892383>

10. The Finance Division has made advanced progress in terms of operationalising a MIS, designed, and developed under an initiative called, the Social Protection Budget Management Unit (SPBMU MIS). The SPBMU MIS has been linked with eight major social protection schemes of a number of ministries (including the Ministry of Social Welfare, Ministry of Women and Children Affairs, Ministry of Education, Ministry of Primary Education, Ministry of Disaster Management and Risks, and Ministry of Liberation War Affairs). Using the SPBMU MIS, the ministries can ensure timely transfer of payments and track all transactions. All cash-based programmes should be brought under the SPBMU.

Action Agenda:

- 1 Developing easy mobile-based grievance mechanism as a primary step to submit grievances (as Second-generation GRS software has not been very effective)
- 2 Bottom-up process in addressing grievances with proper monitoring.

Action Agenda 3: Making Delivery System Efficient

Challenge/Opportunity: The delivery process of social protection is not optimal, and we are yet to harness the full potential of Digital Financial Services to make sure that there is no leakage in our disbursement process. However, to aim at completely shifting the disbursement channel to digital money is not pragmatic. We need to keep the options wide open as well as establish an integrated system. That is possible with the establishment of a national payment gateway.

NSSS aims at strengthening the Government to Person (G2P) payment systems that promote financial inclusivity. The Finance Division designed and developed an MIS-integrated G2P payment system for transferring allowances directly to the beneficiaries. Under the current structure, the MISs prepared by different line ministries are linked with the SPBMU MIS. The recipients can choose the mode of receiving the allowances. The Mid-term review of the NSSS mentioned that only a few programs have come under this mechanism. However, a more integrated National payment gateway could make things easy.

Estimated Impact (Quantitative): If the cost of receiving assistance is reduced by widening and integrating the delivery channels, and expanding the digital financial inclusion, that will have multiple effects. The government can reduce the cost of operations in the delivery system and allocate more assistance. We can better estimate the impact and track the consumption pattern to redesign the programs.

Estimated Impact (Qualitative): If the citizens know that they can get assistance without any hustle, that will increase self-identification. When the female member of the household has direct and exclusive access to the assistance they receive, that is also empowering them and contributing to reducing gender inequality. This will also simplify the process of collecting disability allowances by the real recipients.

Action Agenda

- 1 Linking more program with SPBMU MIS
- 2 Utilizing multiple channels (post-office, schedule bank, mobile financing, agent banks etc.) with a national payment gateway.
- 3 Improving the capacity of concerned ministries to integrate with the system.
- 4 The amount to be transferred has to be inflation-adjusted. An inflation indicator could be added in the system of transfer payment.
- 5 ICT could be used to disburse assistance in form of e-token in a way that will make sure only a valid recipient can get the exact product (food basket) or service (health care) from the facilities while being covered of their cost.

Action Agenda 4: Making Monitoring System Effective

Challenge/Opportunity: One of the salient features of the NSSS proposed reforms was the establishment of a Monitoring and Evaluation (M&E) Framework. However, the mechanism envisaged in the NSSS document depends largely on fully functional MIS, digitized cash transfer programs, a single registry system of beneficiaries, availability of reliable data etc. There is also a lack of visibility as the local government can take part in identifying the vulnerable people, but they cannot know who are actually getting the benefits. That also excludes local government to provide support in monitoring. Thus, we need to devise a mechanism system that also includes ICT literacy of the local government to be a part of the monitoring system. Monitoring framework development had not been on much progress on most of the programs of social security. Systems like MIS can be used as tools for monitoring. However, these tools are not on itself useful without an established framework that has the direction on how to use the information for monitoring purposes.

Estimated Impact (Quantitative): Depending on the nature of programs, 25 to 55 percent leakages from the allocation could be avoided if we could improve the monitoring system. Leakages take place in targeting, delivery of benefits, sharing information, and even there is self-appropriation of benefits. Beneficiaries of different programs, mainly under cash transfer and food support programs will heavily be benefitted from improving the monitoring system.

Estimated Impact (Qualitative): Monitoring will ensure less miss targeting and low leakage and, therefore, build-up the trust of the citizens on social protection. A robust monitoring mechanism will enable policymakers to be more responsive to think and propose new programs as they will know that if the impact is high, they can continue the programs without any waste of public resources.

Action Agenda

- 1 Thematic cluster-based monitoring mechanism by respective ministries should be developed so that we can avoid duplications in monitoring.¹¹
- 2 Strengthening the capacity of the IMED, while integrating cluster-based monitoring by ministries linked to IMED's approach to monitoring social security programs.¹²
- 3 Making the monitoring results available to the local people (Even if partly).

Action Agenda 5: Improve Coordination of the Programs

Challenge/Opportunity: TLacks in coordination between different ministries lead to duplication of programs, beneficiaries, increased monitoring cost and result in slow progress in poverty reduction targets of the NSSS. One of the novel suggestions of the NSSS was the concept of thematic clusters' coordination. The five clusters, viz. social allowances, food security and disaster assistance, social insurance, labour/livelihood interventions, and human development and social empowerment, have appropriately been formed with each cluster being led by one concerned ministry. In practice, however, cluster meetings and coordination have not turned out to be effective. In this respect, the Central Management Committee will need to play an important role. We may think of utilizing various ICT based meeting tools for online meetings. Strengthened communications and the flow of information among the line ministries are critical ingredients in coordination and program consolidation. Setting up a web-based NSSS implementation dashboard for all the line ministries can also help sharing information. Many line ministries are preparing their own MIS in the absence of proper guidance on NSSS regarding the integrated MIS system. Those MIS systems might not be compatible with one another and severely damage the internal coordination by making that cross-ministry access and validation impossible.

The Institutional reform agenda of the NSSS includes preparing a master plan of Single Registry MIS in coordination with the Cabinet Division. The progress in this regard is abysmal (as has been mentioned in the Mid-term Review of the NSSS).

Estimated Impact (Quantitative): Improving coordination both between the central administration and local administration and among the ministries affiliated with different programs can increase productivity, efficiency, and responsiveness of the government in executing social protection. MIS can help to reduce information loss and the bureaucratic slowdown of the workflow.

We also need to expand coordination with ministries for facilitating trainees in getting jobs (trainees who received training under social security programs). Coordination with relevant ministries and other thematic clusters may facilitate beneficiaries to get more access to the labour markets.

Estimated Impact (Qualitative): Smooth coordination increases the active participation of all stakeholders and improves their capacity to contribute to the design and implementation. The absence of synergy derived from coordination not only limits the productivity but sometimes is essential to actually implement a program to the minimum degree of success in deliverables. Also, coordination helps to better address various cross-cutting issues involving decisions of different ministries.

Action Agenda

- 1 Coordination meetings of different relevant ministries of thematic clusters should take place regularly. The Mid Term Review of NSSS noted that infrequent meetings lead to unsatisfactory progress in the improvement of the service delivery system. In that context, more virtual meetings could be organized, which will save time.
- 2 Setting up a web-based NSSS implementation dashboard for all the line ministries.
- 3 Developing a knowledge repository for learnings from the experience
- 4 Quick implementation and adaptation of integrated or compatible MIS

11. Five thematic cluster groups of programs have already been identified. Those are i) Social Allowance, ii) Food Security and Disaster Response, iii) Social Insurance, iv) Labour and Livelihood and v) Human Development and Social Empowerment.

12. IMED monitors over 1,500 programmes every year. The assigned division within it for NSSS implementation is currently monitoring 183 programmes of which about 30 are SSPs. If the M&E of all the social protection programmes is also allocated to IMED, the workload could be unmanageable.

Top Five Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of Social Protection and ICT in the sector, the following five interventions have been identified for perusal, with the objective to re-emerge stronger.

Title	Universal Identity System for all citizens	Universal Access to Digital Devices, affordable Internet, and mandatory digital learning	Universal Access to Digital Financial Services	AMulti-stakeholder monitoring system of social protection programmes	Launching of a separate Ministry/ Authority for Social Protection under Prime Minister's Office
Why (To address:)	There is no clear and uniform targeting criteria that is responsive and adaptive. The absence of a reliable single-entry database of selected recipients limits the capacity of the government in providing quick and direct assistance to the citizens in need. The poorer a person, the higher is the possibility of being missed-targeted in the social security net. Though exclusion errors reduce with increased coverage, it does not account for the sizeable errors during implementation	It will allow all citizens to take advantage of the digital technology for education, livelihood, healthcare, and accessing social protection benefits. Although initial investment for this initiative is high, it will reduce cost of identification and delivery	Digital Financial Services (DFS) is yet to make sure that there is no leakage in the disbursement process of social protection. The Government to Person (G2P) payment system under the NSSS shows promise in transferring allowances directly to the beneficiaries. However, only a few programs have come under this mechanism till date	Leakages take place during targeting, delivery of benefits, sharing information, and even self-appropriation of benefits. Monitoring and Evaluation (M&E) Framework of the NSSS depends largely on a fully digitalised system when ICT literacy of the local government is not up to par	Lack of coordination between different ministries leads to duplication of programs, beneficiaries, increased monitoring costs, and results in slow progress in poverty reduction targets of the NSSS
What	A single-entry database for all citizens with information on various characteristics and vulnerability measurement. This will allow to track and monitor the assistance received by each household	Launching of program for all citizens to purchase a digital device with affordable high quality internet and digital learning program with mobilization of resources form all sectors and stakeholders: public-private-NGOs-volunteers. The cost of delivery of the facility will be differential based on the status of wealth and vulnerability.	Inclusion of all citizens into DFS by utilizing multiple channels (post-office, schedule bank, mobile financing, agent banks etc.) with a national payment gateway; linking more programs with Social Protection Budget Management Unit (SPBMU) MIS; and improving the capacity of concerned ministries to integrate with the system. Disburse assistance in from of e-token ensuring the actual recipient gets the specific product (food basket) or service (health care) being covered though social security net	Thematic cluster-based monitoring mechanism to be developed by respective ministries to avoid duplications in monitoring. ¹³ Strengthening the capacity of the Implementation Monitoring and Evaluations Division (IMED) programs ¹⁴	Establishment of the ministry and reduction of number of agencies dealing with social protection programs, keeping the coordination role with the new ministry and use of common vehicle for identification and delivery of benefits. Regular, virtual, coordination meetings of different relevant ministries of thematic clusters; a web-based NSSS implementation dashboard for all the line ministries; a knowledge repository for lessons learnt; quick implementation and adaptation of integrated and compatible MIS
Lead Agency	Ministry of Social Protection	ICT Division	Bangladesh Bank	IMED	National Parliament
Implementing Agencies/ Actors	All relevant ministries and agencies implementing social protection programs	Ministry of Post and Telecom/Ministry of education/MNOs/	All Banks/Fintech Companies/MFIs	Multi-stakeholder consortium	Cabinet Division/MOPA
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Government Partners	Ministry of Finance	Ministry of Local Government and rural Development/Local administration	Ministry of Finance	All relevant line ministries connected social protection programmes	All relevant line ministries
Private and Development Partners	MNCs with CSR programs	MNOs/Smartphone manufacturers/NGOs/BoP companies	All Banks/Fintech Companies/MFIs	CSOs-NGOs/BoP companies	
Financing and modality	Ministry of Finance/ Ministry of Planning/Development Partners	Ministry of Finance/ Ministry of Planning/Development Partners/Financial institutions/MFIs	Ministry of Finance/ Ministry of Planning/Development Partners/Financial institutions/MFIs	Ministry of Finance/ Ministry of Planning/Development Partners	

13. Five thematic cluster groups of programs have already been identified. Those are i) Social Allowance, ii) Food Security and Disaster Response, iii) Social Insurance, iv) Labour and Livelihood and v) Human Development and Social Empowerment.

14. IMED monitors over 1,500 programmes every year. The assigned division within it for NSSS implementation is currently monitoring 183 programmes of which about 30 are SSPs. If the M&E of all the social protection programmes is also allocated to IMED, the workload could be unmanageable.

Table 9: Proposed Programme Reform

Proposed Reform	Action Plan	Ministry/Division
Strengthening Social Security for the Children (age <1 – 18)		Ministry of Women & Children Affairs (MoWCA)
Child Benefit	• Submit detailed implementation plan for the Child Benefit to the Cabinet	Ministry of Women & Children Affairs (MoWCA)
Primary and Secondary School Stipends	• Submit detailed implementation plan for the scale up of the stipend programmes to the Cabinet Division	Ministry of Primary & Mass Education (MoPME) / Ministry of Education (MoE)
Continuing Orphan's and School Meals Programmes	• Maintain on-going programme	Ministry of Social Welfare (MoSW)/ MoPME
Ensuring Child Maintenance Payment for abandoned children	• Develop policy and start implementation, July 2016	MoWCA
Strengthen Immunization, Child Healthcare, Nutrition and Water and Sanitation Programmes.	• Take actions to strengthen supply and outreach of these programmes	Concerned Ministries
Strengthening Programmes for Working Age (age 19-59)		
Strengthen Education and Training	• Strengthen quality of education and training	MoPME/ MoE/ MoEWOE
Strengthen Workfare Programmes	• Consolidate all workfare programmes	Ministry of Disaster Management and Relief (MoDMR) / Local Government Division (LGD)
Introducing Unemployment, Accident, Sickness and Maternity Insurance under NSIS	• Commission study to design unemployment insurance for workers in the organized private sector; • Submit Plan to Cabinet Division for approval and start implementation	Ministry of Labour & Employment (MoLE)
Strengthening Programmes for Vulnerable Women (VWB) (age 19-59)		
Consolidate into one VWB programme on cash basis	• Submit detailed implementation plan for Vulnerable Women's Benefit (VWB) to the Cabinet Division	MoWCA
Provision of Childcare across all Formal & Informal Employment	• All government offices and formal private enterprises have childcare facilities;	MoWCA
Maternal health care	• Continue and prepare expansion plan	MoWCA
Training programme	• Continue training under VGD	MoWCA
Comprehensive Pension System for the Elderly		
Old Age Allowance (age 60+)	• Expand the Old Age Allowance programme	MoWCA
Government Service Pension	• Submit detailed implementation plan to Cabinet	Financial Institutions Division (FID)/ Finance Division (FD)
The National Social Insurance Scheme (NSIS)	• Initiate study to determine the viability of a NSIS; • Recommend options for a NSIS	FID/ FD
Private Voluntary Pensions	• Initiate study to determine the viability of a Pension Regulatory Authority	FID/ FD
Programmes for People with disabilities	• Initiate study to determine the viability of a Pension Regulatory Authority	FID/ FD
Strengthening the System of Social Security for People with disability	• Submit detailed implementation plan for the Child Dependency Benefit and the Working Age Disability Benefit to Cabinet; • Implement programme	oSW

Table 10: Proposed Institutional Reform

Proposed Reform	Action Plan	Ministry/ Division
CMC led cluster Coordination Approach of Implementing Ministries	<ul style="list-style-type: none"> • Introduce Cluster Approach to Ministries' SSP implementation; • Review efficiency and effectiveness of the cluster approach and CMC will ensure coordination and supervision of programmes (till 2025) 	Cabinet Division General Economics Division (GED)
Ministry of Social Welfare to implement Lifecycle Programmes and Coordinate with SSPs	<ul style="list-style-type: none"> • Strengthened and reformed Department of Social Services under Ministry of Social Welfare (from 2026 onwards) • Take preparatory measures from now onward. 	Ministry of Social Welfare Line Ministries
Establish a Single Registry Management Information System	<ul style="list-style-type: none"> • Commission a review of MISs across all Social Security schemes, December 2014; • Establish a Single Registry on a pilot basis within SID; • Establish nationwide Single Registry 	Statistics and Informatics Division (SID)
Strengthen Government to Person (G2P) Payment Systems that Promote Financial Inclusivity	<ul style="list-style-type: none"> • Initiate comprehensive review of current G2P system; • Initiate implementation of findings 	Finance Division/ FID / other Ministries
Strengthen Processes for Selecting Recipients of Social Security Schemes	<ul style="list-style-type: none"> • Review of selection criteria for all programmes; • Implement recommendations; • Combine PMT with use of LGIs and NGOs in identifying beneficiaries 	SID / GED / IMED/MoDMR/ Line Ministries
Establish a Complaints and Grievance Mechanism	<ul style="list-style-type: none"> • Commission study to design the mechanism; Initiate implementation 	Cabinet Division/ GED / LGD
Establish a Results Based Monitoring & Evaluation System	<ul style="list-style-type: none"> • Assign M&E responsibilities; Establish task force to develop M&E framework; Implement task-force recommendations 	Cabinet Division /GED / IMED

Post COVID-19 ICT Roadmap for Bangladesh

Financial Inclusion

Post COVID-19 ICT Roadmap for Bangladesh: Financial Inclusion

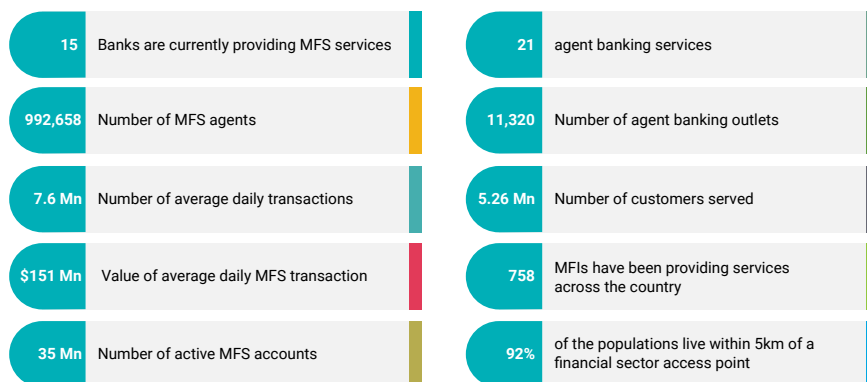
How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Financial Inclusion is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why Financial Inclusion

Economic distress resulting from the COVID-19 pandemic, ensuing lockdowns, and social distancing has exacerbated the long existing problem of lack of access to finance. Businesses need to switch to online channels, linking up with mobile wallets, mobile and digital financial services (MFS and DFS), and digital supply chain management to mitigate the ramifications of the crisis in the medium term. Interconnectivity between players and analysis of shared data can accelerate financial inclusion. Mobile operators' data on users' recharge; MFS transaction data; microfinance institutions (MFIs) and Microcredit Regulatory Authority (MRA) data on small and medium enterprises' (SMEs') credit; bank and non-bank financial institutions' (NBFIs') transaction data; and emergency relief package disbursement data - can all be used to create a platform that facilitates the inclusion of at least 24 million citizens, pushing overall financial inclusion from 50% to 80%. The data from the platform can be also analysed to design better financial products for different segments of the population.

The pandemic and its ensuing crisis has also severely threatened the business operations of SMEs, the lifeblood of Bangladesh's economy providing livelihood for 31.2 million people. Exhaustive documentation has become an obstacle for many SMEs seeking working capital loans, which they are in dire need of now. Collaborating with MFIs and mobile operators in assigning digital credit scores can ensure inclusive distribution of the stimulus package to marginalised SMEs.

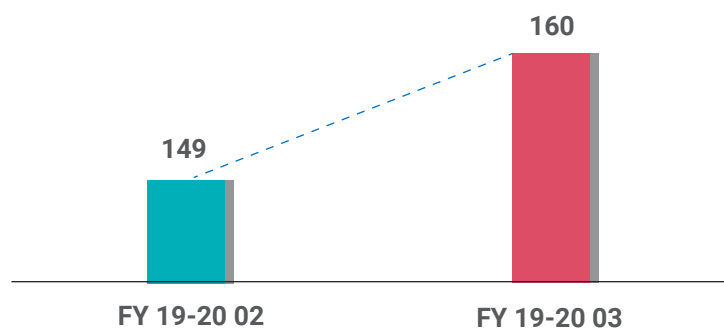


Source: Bangladesh Bank Data

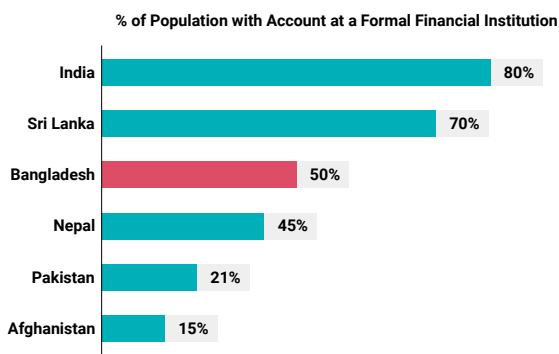
Impact of COVID-19

Despite combined effort of the public and private sectors to ensure greater financial inclusiveness, the disruption of economic activities has drastically reduced all financial transactions (even agent banking transactions), the exception being a 7% Q-o-Q increase in average daily MFS transactions in Jan-Mar FY20 and a 60% rise in electronic payment in April 2020.⁹ Only 30% of agent banking outlets are operating across the country, with a whopping 75% fall in their transaction volumes and rising operating costs.

Average daily MFS transaction (in US\$ Mn)



Source: Bangladesh Bank Data



Source: Global Findex Database, World Bank, 2017

Constraints

Poor financial inclusion and scanty use of financial services by end consumers; low usage of digital tools like paying through digital accounts, availing and maintaining loans, and insurance and saving packages; reluctance of financial institutions to lend beyond large corporates, with SMEs' creditworthiness being viewed as expensive; absence of specific financial inclusion targets and timelines for achieving a digital economy; and high level of procedural complications in getting approval from the central bank have constrained the efforts that service providers could have undertaken to minimize the intensity of the blow from the pandemic.

Despite the country's efforts in the last few years to propel the engine of financial inclusion, inadequate interaction among banks, NBFIs, MFIs, MFS and DFS platforms, and mobile phone operators regarding data sharing has held back the inclusion

9. Bangladesh Bank 2020, Mobile Financial Services Data, Retrieved: 13 July 2020 from <https://www.bb.org.bd/fnansys/paymentsys/mfsdata.php>

of the bottom of the pyramid citizens into financial channels. This has prevented the most vulnerable populations from availing financial support during the current pandemic.

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings regarding financial inclusion, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Interoperability to speed up financial inclusion by 10X within 2021	Direct incentives for availing financial services to promote financial inclusion till the middle of 2021	Digital credit score for SMEs to promote 4X growth	Devise a masterplan for a digital economy to secure a resilient financial ecosystem	The central bank should allow pilot testing before approval of a policy from the end of 2020 (establishing a regulatory sandbox)
Why (To address:)	Poor financial inclusion and use of financial services by end consumers	Low usage of digital methods like paying through digital accounts, availing and maintaining loans, insurance and saving packages	Reluctance of financial institutions to lend beyond large corporates due to assessment of SMEs' creditworthiness as expensive	Absence of specific financial inclusion targets and timeline for achieving a digital economy	High level of procedural complications in getting approval from the central bank
What	Partnership among public and private entities who collect data of end consumers and entities who might use the metadata platform to identify patterns for designing plans for inclusion	Direct incentives to people's accounts on digital transactions	Collaboration with MFIs and mobile operators to offer digital credit scores for SMEs	Blueprint for implementing a digital economy by setting targets within specific timelines	Regulatory sandbox and pilot testing of policies
Lead Agency	Bangladesh Bank	Ministry of Finance	Microcredit Regulatory Authority (MRA)	ICT Division	Bangladesh Bank
Actor	Banks, NBFIs, MFIs, MFS and DFS platforms, mobile phone operators	Financial service providers – Banks, NBFIs, MFS	MFIs, Mobile operators, MFS, Startups	Ministries and departments under the government, financial institutions	Financial institutions and organizations working for inclusion
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Government Partners	Financial Institutions Division, ICT Division, Credit Information Bureau, Financial Inclusion Department, SME and Special Programs Department, Payment Systems Department, Bangladesh Telecommunication Regulatory Commission, a2i, Microcredit Regulatory Authority, Insurance Development & Regulatory Authority, Palli Karma Sahayak Foundation	Financial Institutions Division, ICT Division, Financial Inclusion Department, Payment Systems Department, a2i - Digital Financial Service Department, Insurance Development and Regulatory Authority	Microcredit Regulatory Authority, ICT Division, Bangladesh Bank – SME and Special Programs Department, Payment Systems Department, Bangladesh Telecommunication Regulatory Commission, a2i – Digital Financial Service Department	ICT Division, Ministry of Finance – Financial Institutions Division, Ministry of Commerce, a2i	Bangladesh Bank, ICT Division, a2i - Digital Payment Division
Private and Development Partners	Banks and NBFIs (especially with agent banking), MFS – bKash, Nagad, Rocket, UCash, MFIs – BRAC, BURO, ASA, Sajida Foundation, Shakti Foundation, Mobile operators – Grameenphone, Banglalink, Robi, Credit and Development Forum, Startups – Sheba, Shopup, UNCDF – SHIFT, DFID	Scheduled banks and NBFIs, MFS – bKash, Nagad, Rocket, UCash, Startups – Pathao, Foodpanda, Shohoz, Sheba, Chaldal, UNCDF – SHIFT, Bill and Melinda Gates Foundations	Banks and NBFIs (especially with agent banking), MFS – bKash, Nagad, Rocket, UCash, MFIs – BRAC, BURO, ASA, Sajida Foundation, Shakti Foundation, Mobile operators – Grameenphone, Banglalink, Robi; Credit and Development Forum, Startups – Sheba, Shopup, UNCDF SHIFT, DFID	UN Agencies, World Bank	Financial service providers - banks, NBFIs, MFS, DFS, insurance companies
Financing and modality	PPP; technological framework from private sector such as IPDC's blockchain-based supply chain finance, bKash's in-house tech, Bank Asia's agent banking database; financial support from private sector such as fundraising strategies by startups and from development partners for developing infrastructure	PPP; funds support from development partners such as UNCDF and Bill & Melinda Gates Foundation	PPP; technological framework from private sector such as IPDC's blockchain-based supply chain finance, bKash's in-house tech, Bank Asia's agent banking database; financial support from private sector such as fundraising strategies by startups and from development partners for developing infrastructure	PPP; technical support from UN Agencies and the World Bank; domestic microsavings	PPP – BB, ICT Division and a2i to be involved in an agreement with financial service providers

Post COVID-19 ICT Roadmap for Bangladesh

Financial Inclusion

Thematic Paper

Post COVID-19 ICT Roadmap for Bangladesh: Financial Inclusion

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh [in collaboration with the Access to Information (a2i) Program, Innovision, LightCastle Partners, and DataSense @ iSocial] is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Financial Inclusion is one of the 14 priority sectors selected based on impact of COVID-19 and potential for transformation of economy and society.

1. Why is Financial Inclusion Important?

Financial inclusion has emerged as a tool to achieve inclusive growth for poverty reduction since 2005 (United Nations-declared International Microcredit Year). Studies indicate that a positive correlation exists between financial development and economic growth (King et al, 2009)¹. Current development theories suggest that greater financial inclusion can generate a positive impact on the lives of the poor. Financial exclusion refers to the lack of access to financial services by limiting opportunities for employment and enterprise development and imposing a premium on the cost of basic services. Financial exclusion makes it difficult to reduce inequalities and alleviate poverty thus acts as a barrier to economic development. Financially excluded populations include marginal farmers, landless laborers, unorganized enterprises, urban slum dwellers, migrants, senior citizens and women. Financial inclusion is thus a high priority policy goal for developing and developed countries in order to ensure stable and equitable economic growth.

Financial inclusion refers to the ability of individuals to access appropriate financial products and services (The House of Commons - Treasury Committee, 2006)². An understanding of appropriate financial products and services includes financial awareness, knowledge about banks and banking channels, facilities provided by the banks and advantages of using the banking channel. The Center for Financial Inclusion (CFI), an affiliate of US-based nonprofit ACCION International, argues that quality financial services in a fully inclusive financial system would be provided at affordable prices, in a convenient manner, and with dignity for the clients. Mainstream providers considered as officially regulated and supervised entities provide quality products developing capacity and usage of financial services reflected in the perfect financial inclusive system (European Commission, 2008).

Financial inclusion improves income and increases savings enabling the previously underserved to invest in necessities, such as healthcare, education, food, own business growth and financial risk management. Digital inclusion, in particular, lowers the cost associated with sending and receiving payments such as subsidy payouts, or remittances, and paying recurring bills. Receiving social benefits through mobile phones saves recipients commuting and waiting time. In other words, financial inclusion enhances economic empowerment, which in turn improves overall welfare while providing the building blocks for further growth. Financial inclusion has been identified as an enabler for 7 of the 17 Sustainable Development Goals by the UN.

2. Situation Analysis before COVID-19 Outbreak - Global

In 2014, an estimated 2 billion adults lacked access to a transaction account and were excluded from the formal financial system (Kunt et al, 2014). In response, the World Bank Group (WBG) with private and public sector partners set an ambitious target to achieve Universal Financial Access (UFA) by 2020. The UFA goal envisions that, by 2020, adults globally will be able to have access to a transaction account or electronic instrument to store money and send and receive payments. Financial access is the first step toward broader financial inclusion, where individuals and firms can safely use a range of appropriate financial services, including savings, payments, credit and insurance.



1.7 Billion
Unbanked adults worldwide (2017)



1 Billion
Unbanked adults that the WBG has committed to enable to be reached



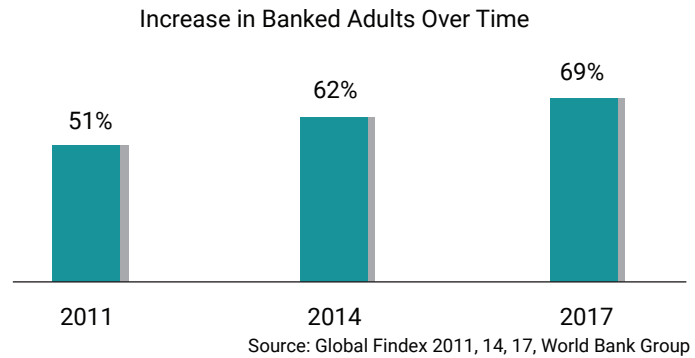
34 Partners
Made commitments towards the UFA goal

Source: The World Bank Group

1. King et. al, 1993; Beck et. al, 2000, 2004; Levine, 2005 and Demirgüç

2. House of Commons Treasury Committee, 2006

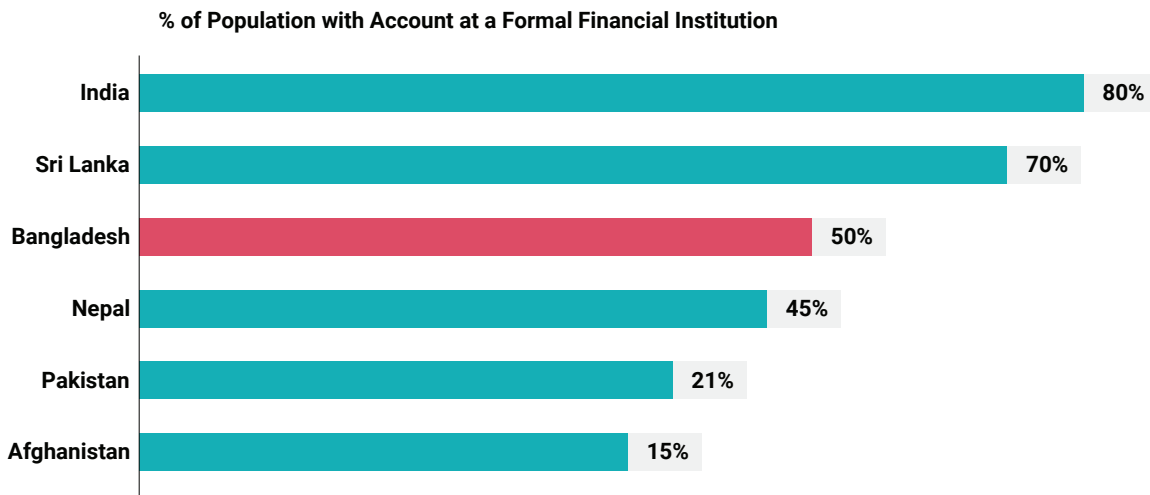
While 1.2 billion people have opened a financial account since 2011, there are still an estimated 1.7 billion adults worldwide (or 31% of adults) who don't have a basic transaction account (The World Bank Group, 2017).³ Globally, two-thirds of adults without an account cite a lack of money as a key reason, which implies that financial services are not yet affordable or designed to fit low-income users. Other barriers to account-opening include distance from a financial service provider, lack of necessary documentation papers and lack of trust in financial service providers.



3. Situation Analysis before COVID-19 Outbreak - Bangladesh

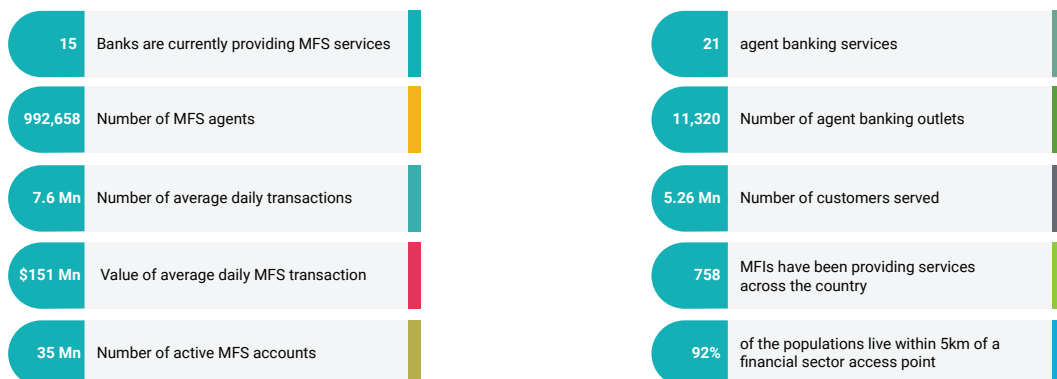
Over the past few years, financial inclusion has made great strides and delivered numerous benefits to all segments of society in Bangladesh. The Global Findex Report shows that 50 per cent of adults owned an account at a financial institution or through a mobile money provider in 2017. Financial institutions are the driving force in this inclusion story. In order to extend financial services to the un- and under-served populations, we need banks, policymakers, NGO-MFIs (non-governmental organisations and microfinance institutions), insurance companies, telcos and others to work together to eliminate obstacles and explore new solutions.

Technology is changing the cost equation in fostering financial inclusion and increasing the benefits for all parties involved. It is making it more cost-effective for traditional financial institutions to reach previously untapped markets and allow new market entrants to better serve customers at every part of the economic pyramid. Financial institutions are digitising the customer journey to create a seamless customer experience utilising technology to increase customer reach, make access on-demand 24/7, and reduce transaction costs.



Source: Global Findex Database, World Bank, 2017

One particular improvement is modernising the customer onboarding process. Regulators, in partnership with financial institutions, have introduced e-Know Your Customer (e-KYC) initiatives which have significantly increased the account ownership. Biometric information and digital NIDs (National Identity Cards) are being used to authenticate users and create credit histories, which in turn lowers default and fraud rates



Source: Bangladesh Bank Data

The four basic products – payments, savings, credit, and insurance - have undergone massive transformations over the past several years. The use of digital payments, meaning access through a mobile phone or the internet, is on the rise. The electronic mobile wallet, an application that enables P2P, P2B, G2P, P2G and other transactions, is a good example of an innovative product utilising digital payments. Electronic wallets allow remittances and bill payments to be conducted in a matter of minutes, saving low-income segments valuable time and money.

4. Situation Analysis after COVID-19 Outbreak

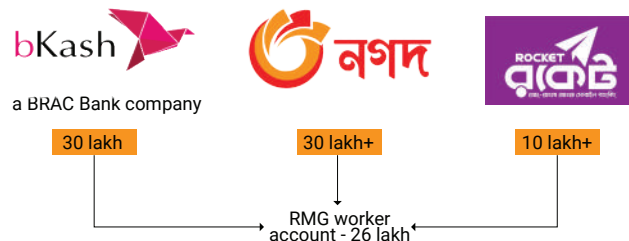
The unprecedented and aggressive nature of the COVID-19 outbreak has disrupted almost all aspects of Bangladesh’s primary economic activities. Despite combined effort of public and private sectors promising greater financial inclusiveness, a 7% Q-o-Q increase in average daily MFS transactions in Jan-Mar FY20, and a 60% rise in electronic payments in April 2020, other aspects of financial inclusion such as agent banking transactions have reduced drastically all over the country. Only 30% of agent banking outlets are operating across the country, with a whopping 75% fall in transaction volume and rising operating costs



Source: Bangladesh Bank Data

However, since April, more than 7 million new MFS accounts have been opened in the country among which 2.6 million belong to RMG workers. Bangladesh Bank's instruction to open MFS accounts for RMG workers to facilitate the process of stimulus check disbursement has created this effect. bKash has experienced a 144% increase in daily average remittance transactions from January 1 to April 18, 2020.

Simultaneously, electronic payment which was only at 5% previously has increased to 60% at the end of April 2020. At the beginning of the lockdown, bKash, Upay and other MFS platforms have introduced bill payment options to their apps. Recently, these platforms have started disbursing emergency relief and donations through their apps.



5. Global Scenario and Relevance for Bangladesh

According to the International Monetary Fund (IMF), globally COVID-19 has accelerated the expansion of digital financial services which can benefit low-income households and small firms while there is plenty that needs to be done to ensure maximum inclusion post-COVID-19.

a. Benefit for low-income households and small firms

The COVID-19 pandemic could be a game-changer for digital financial services. Low-income households and small firms can benefit greatly from advances in mobile money, fintech services, and online banking. Financial inclusion as a result of digital financial services can also boost economic growth. While the pandemic is set to increase use of these services, it has also posed challenges for the growth of the industry’s smaller players and highlighted unequal access to digital infrastructure. Several actions will need to be taken to ensure maximum inclusion going forward.

The shift towards digital financial services was already helping societies advance financial inclusion before the pandemic started, benefiting many low-income households and small firms with typically little access to traditional financial institutions. Lockdowns and social distancing are accelerating the use of digital financial services, just as the SARS epidemic in 2003 hastened China’s launching of digital payments and e-commerce.

b. Countries lowering fees and increasing limits on mobile money transactions

Many countries (for example, Liberia, Ghana, Kenya, Kuwait, Myanmar, Paraguay and Portugal) are supporting this shift with measures such as lowering fees and increasing limits on mobile money transactions. Africa and Asia lead digital financial inclusion, but with significant variation across countries. In Africa, Ghana, Kenya and Uganda are front runners. In comparison, the Middle East and Latin America tend to use digital financial services more moderately. In some countries, such as Chile and Panama, this likely reflects a relatively higher level of bank penetration.

c. Digital payment services are morphing into digital lending

In most countries, digital payment services are evolving into digital lending as companies accumulate users' data and develop new ways to use it for creditworthiness analysis. Marketplace lending, which uses digital platforms to directly connect lenders to borrowers, doubled in value from 2015 to 2017. While so far concentrated in China, the UK and the US, it appears to be growing in other parts of the world, such as in Kenya and India.

During the COVID-19 lockdowns, digital financial services are enabling governments to provide quick and secure financial support to "hard-to-reach" people and businesses, as demonstrated in Namibia, Peru, Zambia and Uganda. This will help mitigate the economic fallout and potentially strengthen the recovery.

d. Equal access to digital infrastructure

To tap the high potential of digital financial services in the post-COVID era, many factors need to fall into place. Equal access to digital infrastructure (access to electricity, mobile and internet coverage, digital ID); greater financial and digital literacy; and the avoidance of data biases are necessary for a more inclusive recovery.

e. Interoperability to lead the way

At the onset of the pandemic, the World Economic Forum launched a global survey with more than 70 stakeholders – fintech firms, central banks, regulatory bodies and banks. The survey revealed that regulators need to keep up with fast-paced technological changes in fintech to ensure consumer and data protection, cybersecurity and interoperability across users and national borders. Fintech firms also indicated a global shortage of "coders"—software developers and programmers.

f. Overall competitiveness of financial landscape

At the same time, it is important to ensure that the fintech landscape remains sufficiently competitive to maximize the gains from digital financial services. The COVID-19 crisis has presented potential benefits for the sector but also poses challenges for smaller fintech companies: tightening of funding, rising non-performing loans, decline in transactions and credit demand. Some halted new lending since the onset of lockdowns. Widespread consolidation and retrenchment of startups would lead to greater concentration in the sector and could set back inclusion. In the public's interest, this points to accelerating the creation of governance frameworks for big fintech companies.

The pandemic shows that the trend towards greater digitalization of financial services is here to stay. To build inclusive societies and address rising inequalities during and after the ongoing crisis, global and national leaders must close the digital divide across and within countries to reap the benefits of digital financial services. This means finding the right balance between enabling financial innovation and addressing several risks: insufficient consumer protection, lack of financial and digital literacy, unequal access to digital infrastructure, and data biases that need action at the national level; as well as addressing money laundering and cyber risks through international agreements and information sharing, including antitrust laws to ensure adequate competition.

6. Estimated Negative Impact

Despite Bangladesh's efforts in propelling the engine of financial inclusion for the last few years, inadequate interaction among banks, NBFIs, MFIs, MFS and DFS platforms and mobile phone operators regarding data sharing have been holding back the efficiency of including the bottom of the pyramid citizens in financial channels. This has left the most vulnerable out of reach of financial support in the current pandemic.

Poor financial inclusion and scanty use of financial services by end consumers; low usage of digital methods like paying through digital accounts, availing and maintaining loans, and insurance and saving packages; reluctance of financial institutions to lend beyond large corporates due to assessment of SMEs' creditworthiness as expensive; absence of specific financial inclusion targets and timeline for achieving a digital economy; and high level of procedural complications in getting approval from the central bank have constrained the effort of the players in the landscape which could have been undertaken to minimize the intensity of the blow from the pandemic.

a. Absence of an interoperable system

Industry players who regularly collect a huge volume of data on end consumers do not interact among themselves nor share data collected through their platforms. By plugging in interoperability and data sharing mechanisms, huge value can be unlocked in bringing citizens under formal financing channels.

b. Payment transfer remains the only service frequently used by financially included population

Although the number of formal financial account holders are rising, the collective usage of different financial services has not increased yet. Even the most frequent MFS and other digital service users only avail fund transfer through digital channels. Unless everyone is conducting everyday financial activities using digital channels, a huge portion of the population will be included only in definition but not in reality.

c. Inadequacy of digital credit providing services for SMEs

Traditionally, large banks that have controlled capital investments in Bangladesh. Most financial institutions have been reluctant to lend beyond large corporates. One prevalent reason is - most scheduled banks and NBFIs have reported assessing the creditworthiness of SMEs as expensive. In recent times, startups like Sheba.xyz and Shopup are providing digital credit for SMEs apart from managing e-commerce platforms for them. These platforms are also catering to the underserved SMEs by providing digital credit assessments.

d. Absence of specific financial inclusion targets and timeline for achieving a digital economy

The government has a number of targets to achieve within the next decade and meeting SDG indicators is one of them. One of the promises of SDGs is to ensure equitable growth for every citizen. A digital economy can certify equitable growth.

e. Lack of policies that enable innovative measures for inclusion

High level of procedural complications in getting approval from the central bank hinders the scheduled banks, NBFIs and MFS's effort in launching new products or integrating new technologies.

7. Estimated Opportunities

At a time of crisis, it is instrumental to leverage partnerships and develop informed awareness through it. Mutual sharing of insights and experience will help mitigate the impact of COVID-19 on the financial system and the broader economy.

a. Creation of an interoperable metadata platform

If interconnectivity between players can be established and data shared by them can be analyzed, financial inclusion will accelerate by 10X and overall status will go up by 30% in the next one year. Mobile operators' data on 85 million users' recharge, MFS transaction data on 35 million active users, MFIs and MRA data on SMEs credit, bank and NBFIs' transaction data and emergency relief package disbursement data all together can create a metadata platform. Analysis report from this database can facilitate the inclusion of at least 24 million Bangladeshi citizens pushing the overall inclusion from 50% to 80%. Additionally, the analysis will help financial institutions and MFS to design better savings, insurance and loan products and drive the overall volume of financial transactions in the country by 150%.

b. Incentivizing digital transactions to accelerate inclusion

People who have been financially included as a result of the increasing measures taken by the public and private sector entities have not started to explore their options yet. Presently 94% of the MFS users are using the platforms solely for fund transfer in forms of inward remittance and cash out. If 45 billion active MFS users are encouraged to avail other financial services such as – loans, insurances, savings and finally start using the MFS platforms as mobile wallets, we can finally transform to a cashless economy by 2030.

c. Digital credit for SMEs

SMEs are the bloodline of Bangladesh's economy creating employment for 7.8 million people directly and providing livelihood for 31.2 million. Currently, the sector contributes to 25% of the GDP but has the potential to contribute even more. In the wake of COVID19, the government has allocated a BDT 20,000 crore stimulus package which will be available to affected SMEs in the form of subsidised working capital loans. Half of the stimulus package will be financed by banks and financial institutions, who can also avail a Bangladesh Bank-funded BDT 10,000 crore revolving refinancing scheme to fund the other half.

d. Systematic financial inclusion to promote a digital economy

If the government undertakes a 5-year plan to systematically include at least 80% of the population, it will be easier for the associated ministries and departments under government to track the outcomes of the interventions and revise the strategies based on it. At present, only 50% of the population have access to financial channels. If in five years this number can be increased by 30%, the country will still experience the benefits of financial inclusion.

e. Policy sandbox that enables innovative financial instruments/practices

If financial institutions, MFIs, MFS and other private and public sector players step up and initiate pilot projects first and simultaneously ask for central banks approval, it will speed up the process of formalizing guidelines by 3 times. For example, although Bangladesh Bank has undertaken measures to formalize the usage of blockchain and cloud computing for banks, no particular department of the entity has not yet started to implement the plans.

8. Road Map

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings regarding financial inclusion, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Interoperability to speed up financial inclusion by 10X within 2021	Direct incentives on availing financial services to promote financial inclusion till the middle of 2021	Digital credit score for SMEs to promote 4X growth	Devise a masterplan for a digital economy to secure a resilient financial ecosystem	The central bank should allow pilot testing before approval of a policy from the end of 2020 (establishing a regulatory sandbox)
Why (To address:)	Poor financial inclusion and use of financial services by end consumers	Low usage of digital methods like paying through digital accounts, availing and maintaining loans, insurance and saving packages	Reluctance of financial institutions to lend beyond large corporates due to assessment of SMEs' creditworthiness as expensive	Absence of specific financial inclusion targets and timeline for achieving a digital economy	High level of procedural complications in getting approval from the central bank
What	Partnership among public and private entities who collect data of end consumers and entities who might use the metadata platform to identify patterns for designing plans for inclusion	Direct incentives to people's accounts on digital transactions	Collaboration with MFIs and mobile operators to offer digital credit scores for SMEs	Blueprint for implementing a digital economy by setting targets within specific timelines	Regulatory sandbox and pilot testing of policies
Lead Agency	Bangladesh Bank	Ministry of Finance	Microcredit Regulatory Authority	ICT Division	Bangladesh Bank
Actor	Banks, NBFIs, MFIs, MFS and DFS platforms, mobile phone operators	Financial service providers – Banks, NBFIs, MFS	MFIs, Mobile operators, MFS, Startups	Ministries and departments under the government, financial institutions	Financial institutions and organizations working for inclusion
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Government Partners	Financial Institutions Division, ICT Division, Credit Information Bureau, Financial Inclusion Department, SME and Special Programs Department, Payment Systems Department, Bangladesh Telecommunication Regulatory Commission, a2i, Microcredit Regulatory Authority, Insurance Development & Regulatory Authority, Palli Karma Sahayak Foundation	Financial Institutions Division, ICT Division, Financial Inclusion Department, Payment Systems Department, a2i - Digital Financial Service Department, Insurance Development and Regulatory Authority	Microcredit Regulatory Authority, ICT Division, Bangladesh Bank – SME and Special Programs Department, Payment Systems Department, Bangladesh Telecommunication Regulatory Commission, a2i – Digital Financial Service Department	ICT Division, Ministry of Finance – Financial Institutions Division, Ministry of Commerce, a2i	Bangladesh Bank, ICT Division, a2i - Digital Payment Division

Private and Development Partners	Banks and NBFIs (especially with agent banking), MFS – bKash, Nagad, Rocket, UCash, MFIs – BRAC, BURO, ASA, Sajida Foundation, Shakti Foundation, Mobile operators – Grameenphone, Banglalink, Robi, Credit and Development Forum, Startups – Sheba, Shopup, UNCDF – SHIFT, DFID	Scheduled banks and NBFIs, MFS – bKash, Nagad, Rocket, UCash, Startups – Pathao, Foodpanda, Shohoz, Sheba, Chaldal, UNCDF – SHIFT, Bill and Melinda Gates Foundations	Banks and NBFIs (especially with agent banking), MFS – bKash, Nagad, Rocket, UCash, MFIs – BRAC, BURO, ASA, Sajida Foundation, Shakti Foundation, Mobile operators – Grameenphone, Banglalink, Robi; Credit and Development Forum, Startups – Sheba, Shopup, UNCDF SHIFT, DFID	UN Agencies, World Bank	Financial service providers - banks, NBFIs, MFS, DFS, insurance companies
Financing and modality	PPP; technological framework from private sector such as IPDC's blockchain-based supply chain finance, bKash's in-house tech, Bank Asia's agent banking database; financial support from private sector such as fundraising strategies by startups and from development partners for developing infrastructure	PPP; funds support from development partners such as UNCDF and Bill & Melinda Gates Foundation	PPP; technological framework from private sector such as IPDC's blockchain-based supply chain finance, bKash's in-house tech, Bank Asia's agent banking database; financial support from private sector such as fundraising strategies by startups and from development partners for developing infrastructure	PPP; technical support from UN Agencies and the World Bank; domestic microsavings	PPP – BB, ICT Division and a2i to be involved in an agreement with financial service providers

Action Agenda 1

Challenge/Opportunity: Industry players such as - banks, NBFIs, MFIs, MFS and DFS platforms and mobile phone operators who regularly collect a huge volume of data on end consumers do not interact among themselves nor share data collected through their platforms. By plugging in interoperability and data sharing mechanisms, huge value can be unlocked in bringing citizens under formal financing channels.

Estimated Impact (Quantitative): If interconnectivity between players can be established and data shared by them can be analyzed, financial inclusion will accelerate by 10X and overall status will go up by 30% in the next one year. Mobile operators' data on 85 million users' recharge, MFS transaction data on 35 million active users, MFIs and MRA data on SMEs credit, bank and NBFIs' transaction data and emergency relief package disbursement data all together can create a metadata platform. Analysis report from this database can facilitate the inclusion of at least 24 million Bangladeshi citizens pushing the overall inclusion from 50% to 80%. Additionally, the analysis will help financial institutions and MFS to design better savings, insurance and loan products and drive the overall volume of financial transactions in the country by 150%.

Estimated Impact (Qualitative): If an interoperable and interconnected platform is created, all involved parties will be benefited by analyzing the relationships among the information. Each financial institution, MFS, mobile operator, MFI is using graph databases internally as a useful part of the way they run their own environments. Their use cases are ranged across generating graphs to help with dependency management, impact analysis, network management, downtime reduction, root-cause analysis and routing, and quality-of-service mapping. To be effective, such strategies demand a fully joined-up, 360-degree view of customer transactions, something made impossible by siloed data found in most financial services firms. Harnessing the power of connected data (i.e. metadata platform) is essential to fuel the expansion of financial inclusion and services. With proper planning and implementation strategies, this interoperable model will take Bangladesh forward by a decade in terms of financial inclusion.

Action Agenda:

Title: Interoperability to speed up financial inclusion by 10X within 2021.

Summary: With a view to promoting greater financial inclusion as well as increasing the usage of financial services by end consumers, a partnership among all public and private entities who collect the transaction data of end consumers on a regular basis and entities who might use the metadata platform to identify patterns for designing effective plans for inclusion has been suggested.

Possible Lead Agency: Bangladesh Bank with strong support from the Financial Institution Division under the Ministry of Finance will act as the lead agency to facilitate the partnership among partners and the creation of a metadata platform.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Ministry of Finance – Financial Institutions Division	Facilitate policy reforms required for implementation.
	ICT Division	Initiate metadata platform formulation and advocate the formulation of data protection law.
	Bangladesh Bank Departments - Credit Information Bureau, Financial Inclusion Department and SME and Special Programs Department, Payment Systems Department	Lead agency for implementation.
	Bangladesh Telecommunication Regulatory Commission (BTRC)	Regulator for all mobile operators.
	a2i - Digital Financial Service Department	Conduct the risk assessment of the final implementation plan and run the pilot phase of the proposed solution.
	Microcredit Regulatory Authority (MRA)	Regulator for all MFIs.
	Insurance Development and Regulatory Authority	Regulator for insurance companies who might be consulted later in devising insurance plans for the consumers based on financial practices.
	Palli Karma Sahayak Foundation (PKSF)	They have been planning to launch a crowdfunding platform which can be utilized at the later stage of metadata platform development.
Private agencies	All scheduled banks and NBFIs (especially banks with agent banking network i.e. Bank Asia, Dutch Bangla Bank, Al-Arafah Islami Bank)	They will provide their user transaction data to devise the implementation of the project. In the second phase they will design products based on customers' usage pattern.
	MFS – bKash, Nagad, Rocket, UCash	To get access to their database of 35 million active users.
	MFIs – BRAC, BURO Bangladesh, ASA, Sajida Foundation, Shakti Foundation	They have credit scores and lending data of 7.9 million lenders.
	Mobile operators – Grameenphone, Banglalink, Robi;	They have the mobile recharge data of 85 million unique subscribers.
	Credit and Development Forum (CDF)	Association for the MFIs which releases a consolidated report based on data collected from MFI operations all across Bangladesh.
	Startups: Sheba, Shopup	These startups integrate small and medium business over the country and are practicing some of the best data collection practices. They must be brought in the group to design the intervention.

Development organizations	UNCDF SHIFT	UNCDF- SHIFT regularly collects data on financial inclusion. They are also running a project on digitizing micro merchants who annually transact USD 18,42 billion mostly using cash. Collaboration with them will guarantee a seamless implementation of the plan.
	DFID	DFID has funded BFP-B to formulate a micro enterprise lending guideline for MRA in 2019. DFID can be approached for technical and financial (if needed) support for the implementation plan.

Role of ICT Division:

- ICT division can be the lever in bringing in startups like Sheba and Shopup to ensure that the best practices in digitization have been brought into the implementation process.
- It will also ensure the participation of a2i which is funded jointly by the division and UNCDF, to take part in the pilot phase.
- ICT division will ensure the overall ethical usage of the database and lead the legalization of data protection act in partnership with the cabinet and other relevant agencies.

Process of implementation:

- Bangladesh Bank will release the circular mandating all banks, NBFIs and MFS to share their data and get into a partnership agreement;
- Ministry of Finance, MRA, BTRC to mandate all MFS, MFIs and mobile operators to join the coalition.
- ICT Division to supervise the technical implementation of the metadata platform and bringing in startups and MFS players to make the process error free.
- The piloting done by a2i will help to identify the probable fault lines in the plan and facilitate further improvement.
- Based on the data analysis financial service providers (banks, NBFIs, insurance, MFS, MFI) will design better suited products for customers and can facilitate segmented targeting for speeding up the inclusion process.

Timeline: The necessary requirement for drafting financial policy must start immediately and the 10X result could be achieved within 2021.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Inability to derive business intelligence report from the shared database	MFS like bKash has access to the most advanced analytics program which allows them to collate large volumes of data and draw patterns from it.	High
Partnership	As organizations from various backgrounds will be brought together, conflict of interests might arise.	Strategic partnership management should be managed by the lead agency with support from another key regulator, the Ministry of Finance.	High
Ethical	Unethical usage of transaction data	ICT Division can play an instrumental role in preventing data misuse by legalizing the process of data anonymization.	High
Timeline	Implementation process might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	Financial assistance from development partners (i.e. UNCDF SHIFT, DFID) might be explored in case of budget shortage.	Low

Scope of PPP:

- One of the core propositions to implement collaboration to ensure interconnectivity and interoperability between platforms and partners is private-public partnership.
- Government agencies (BB, MRA, Ministry of Finance among others) will be involved in a proactive agreement with private sector entities (banks, NBFIs, MFIs, MFS, mobile operators) and development partners.
- To build the metadata platform partnerships with startups is a precondition. Startups and MFS will once again come in action when ensuring the analysis of the data and drawing patterns from it.

Resources from Private sector [technical]: After completing the initial partnership agreement, a technological framework needs to be built based on which information sharing will take place. IPDC has launched the country's first blockchain based digital supply chain finance platform. BKash has been analyzing millions of transaction data and drawing meaning from it utilizing in-house tech team and third-party big data analytics firms. Bank Asia has been maintaining their agent banking transaction database for years now. Partnerships like this need to be leveraged in order to conduct the technical part of the proposed plan.

Resources from Private Sector [financial]: One of the core value propositions for private sector entities can be – if they agree to share their data, they will be automatically given access to others' data as well as business intelligence reports. As this will increase the overall competitiveness of the market, more private sector partners will be encouraged to join. In order to attract financial support from the private sector, fundraising strategies followed by Sheba, Shopup, iFramer can be followed. UNCDF and DFID can be the two most relevant targets while targeting for funds in building the infrastructure for increased financial inclusion.

Action Agenda 2

Challenge/Opportunity: Although the number of formal financial account holders are rising, the collective usage of different financial services has not increased yet. Even the most frequent MFS and other digital service users only avail fund transfer through digital channels. Unless everyone is conducting everyday financial activities using digital channels, a huge portion of the population will be included only in definition but not in reality.

Estimated Impact (Quantitative): People who have been financially included as a result of the increasing measures taken by the public and private sector entities have not started to explore their options yet. Presently 94% of the MFS users are using the platforms solely for fund transfer in forms of inward remittance and cash out. If 45 billion active MFS users are encouraged to avail other financial services such as – loans, insurances, savings and finally start using the MFS platforms as mobile wallets, we can finally transform to a cashless economy by 2030.

Estimated Impact (Qualitative): As per the provisions of the global 'financial inclusion 2.0' movement, people should not only be financially included rather they need to use the financial services. In order to implement that in the short to medium term, people need to get incentivized for using digital methods for transactions. The way bKash and other MFS providers offer 10-25% cashbacks to its users is something the government should provide in the initial stage to accelerate financial inclusion. When people will get used to the platforms and get into the mindset of availing every financial service online, gradually they will stop solely relying on physical transactions.

Action Agenda:

Title: Direct incentives on availing financial services to promote financial inclusion till the middle of 2021.

Summary: Direct incentives to people's accounts on digital transactions can be provided to promote increased and advanced usage of digital methods like paying through digital accounts, availing and maintaining loans, insurance and saving packages online.

Possible Lead Agency: Ministry of Finance will act as the lead implementer, firstly by allocating a portion of ADP budget for conducting this process for one year and then coordinating with financial service providers to carry out the proposed plan. Bangladesh Bank will support with releasing necessary circulars and enabling the scheduled banks, NBFIs and MFS to proceed with providing the incentives.

Broad Group	Specific Entities	Role in Implementation
Government agencies	Ministry of Finance – Financial Institutions Division	Lead agency for implementation. Facilitate policy reforms required for implementation
	ICT Division	Supervise the technical implementation process.
	Bangladesh Bank - Financial Inclusion Department, Payment Systems Department	Facilitate policy reforms required for implementation.

	a2i - Digital Financial Service Department	Conduct the risk assessment of the final implementation plan and run the pilot phase of the proposed solution.
	Insurance Development and Regulatory Authority	Regulator for insurance companies who might be consulted later in devising insurance plans for the consumers based on financial practices.
Private agencies	All scheduled banks and NBFIs	To add incentives to their digital wallets associated with their bank accounts.
	MFS – bKash, Nagad, Rocket, UCash	To add and promote incentives associated with digital wallet usage.
	Startups: Pathao, Foodpanda, Shohoz, Sheba, Chaldal	These startups must be on board to initiate the implementation of providing incentives (coupon code, cashback) on digital payments.
Development Partners	UNCDF - SHIFT	UNCDF has been working relentlessly over the past few years to increase financial inclusion in Bangladesh as they have a strong focus on facilitating countries to achieve SDGs by 2030. They can be approached for financial assistance if required.
	Bill and Melinda Gates Foundations	The organization has been funding financial inclusion measures in Bangladesh since the past few years and can be approached for technical and financial (if needed) support for the implementation plan.

Role of ICT Division:

- ICT division can be the lever in collaborating with MFS like bKash to ensure that the best practices in linking incentives to digital accounts are brought into the implementation process.
- It will also ensure the participation of a2i which is funded jointly by the division and UNCDF, to take part in the pilot phase.

Process of implementation:

- The Ministry of Finance will act as the lead implementer, firstly by allocating a portion of the ADP budget for conducting this process for one year and then coordinating with financial service providers to carry out the proposed plan.
- Bangladesh Bank will support the initiative by releasing necessary circulars and enabling the scheduled banks, NBFIs and MFS to proceed with providing the incentives.
- ICT Division to supervise the technical implementation of the process and bringing in MFS players to make the process error free.
- The piloting done by a2i will help to identify the probable fault lines in the plan and facilitate further improvement.
- Based on the success of the project financial sector players (banks, NBFIs, insurance, MFS, MFI) will design better suited products for customers and can facilitate segmented targeting for speeding up the inclusion process.
- Partnerships with startups like Pathao, Foodpanda, Shohoz, Sheba among others who provide tech enabled solutions and lifestyle services to consumers must be on board to initiate the implementation of providing incentives (coupon code, cashback) on digital payments.

Timeline: The process should start immediately and the first milestone can be achieved by end of 2020 if the initiative can give rise to the usage volume. To bring about the desired behavioral change, incentives should continue till the end of 2021.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	Financial assistance from development partners (i.e. UNCDF SHIFT, DFID) might be explored in case of budget shortage.	High

Technical	Implementation of the process might face some technical challenges if financial service providers lost the track of disbursed incentives.	Strategic partnership with organizations with expertise in blockchain management (i.e. IPDC) can be an appropriate mitigation strategy. Also, bKash and other MFS who have been offering cashback offers can also be consulted for better management.	High
Impact	The desired impact might not result in if people do not start practicing availing financial services online or do not expand their range.	A countrywide financial literacy program can mitigate this issue. Already a number of public, private and development sectors (i.e. a2i digital payment division, UNCDF SHIFT) are working to expand financial inclusion through financial literacy. Partnership with these organizations might help in the scaling up process.	High
Timeline	Implementation process might take longer than anticipated due to the broad range of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Behavioral	People might altogether stop using the digital platforms once the incentives program stops.	ICT division in collaboration with a2i can run several promotional programs to initiate a behavioral change that stays even after the flow of incentives stops after a few years. However, the chance of this is low as the COVID19 scenario has taught people the value of availing financial services online.	Low

Scope of PPP:

- - One of the core propositions to implement collaboration to ensure interconnectivity and interoperability between platforms and partners is private-public partnership.
- - Government agencies (BB, Ministry of Finance, a2i) will be involved in a proactive agreement with private sector entities (banks, NBFIs, MFS) and development partners.

Resources from Private Sector [financial]: UNCDF and Bill and Melinda Gates Foundations can be the two most relevant targets while targeting for funds in building the infrastructure for increased financial inclusion. UNCDF has been working relentlessly over the past few years to increase financial inclusion in Bangladesh as they have a strong focus on facilitating countries to achieve SDGs by 2030. Bill and Melinda Gates Foundations has been working in emerging economies to digitize specific sectors and can be approached if additional funding needs arise.

Action Agenda 3

Challenge/Opportunity: Traditionally, large banks that have controlled capital investments in Bangladesh. Most financial institutions have been reluctant to lend beyond large corporates. One prevalent reason is - most scheduled banks and NBFIs have reported assessing the creditworthiness of SMEs as expensive. In recent times, startups like Sheba.xyz and Shopup are providing digital credit for SMEs apart from managing e-commerce platforms for them. These platforms are also catering to the underserved SMEs by providing digital credit assessments.

Estimated Impact (Quantitative): SMEs are the bloodline of Bangladesh's economy creating employment for 7.8 million people directly and providing livelihood for 31.2 million. Currently, the sector contributes to 25% of the GDP but has the potential to contribute even more. In the wake of COVID19, the government has allocated a BDT 20,000 crore stimulus package which will be available to affected SMEs in the form of subsidised working capital loans. Half of the stimulus package will be financed by banks and financial institutions, who can also avail a Bangladesh Bank-funded BDT 10,000 crore revolving refinancing scheme to fund the other half.

Estimated Impact (Qualitative): The exhaustive documentation required for the working capital loan applications is an obstacle for many SMEs, especially in rural areas. Banks and financial institutions that are funding the working capital loans would be aided significantly by a judicious credit guarantee scheme to alleviate the burden of uneven risk. The digital guarantee scheme can also come into play in scaling up the sector by providing quick access to digital small loans.

Action Agenda:

Title: Digital credit score for SMEs to promote 4X growth.

Summary: Collaboration with MFIs and mobile operators to offer SMEs digital credit scores for optimizing the benefits of the stimulus package can increase SMEs' success at public and private procurement, enhance access to formal markets, and ensure inclusive distribution of the stimulus package to marginalised SMEs.

Possible Lead Agency: Microcredit Regulatory Authority (MRA) with extensive support from Bangladesh Bank, Department and SME and Special Programs will act as the lead agency to facilitate collaboration among MFIs, telcos, MFS and startups to create a digital credit providing platform for SMEs.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Microcredit Regulatory Authority (MRA)	Lead agency for implementation.
	ICT Division	Initiate platform formulation and advocate the formulation of data protection law.
	Bangladesh Bank Departments - Department and SME and Special Programs Department, Payment Systems Department	Help mobilizing existing resources and mandate banks and NBFIs to
	Bangladesh Telecommunication Regulatory Commission (BTRC)	Regulator for all mobile operators.
	a2i - Digital Financial Service Department	Conduct the risk assessment of the final implementation plan and run the pilot phase of the proposed solution.
Private agencies	All scheduled banks and NBFIs (especially banks with agent banking network i.e. Bank Asia, Dutch Bangla Bank, Al-Arafah Islami Bank)	They will provide their user transaction data to devise the implementation of the project. In the second phase they will design products based on customers' usage pattern.
	MFS – bKash, Nagad, Rocket, UCash	To get access to their database of 35 million active users.
	MFIs – BRAC, BURO Bangladesh, ASA, Sajida Foundation, Shakti Foundation	They have lending data of 1.08 million SMEs.
	Mobile operators – Grameenphone, Banglalink, Robi;	They have the mobile recharge data of 85 million unique subscribers.
	Credit and Development Forum (CDF)	Association for the MFIs which releases a consolidated report based on data collected from MFI operations all across Bangladesh.
	Startups: Sheba, Shopup	These startups integrate small and medium business over the country and are providing them digital credit scores.
Development organizations	UNCDF SHIFT	UNCDF- SHIFT regularly collects data on financial inclusion. They are also running a project on digitizing micro merchants who annually transact USD 18.42 billion mostly using cash. Collaboration with them will guarantee a seamless implementation of the plan.
	DFID	DFID has funded BFP-B to formulate a micro enterprise lending guideline for MRA in 2019. DFID can be approached for technical and financial (if needed) support for the implementation plan.

Role of ICT Division:

- ICT division can be the lever in bringing in startups like Sheba and Shopup to ensure that the best practices in digitization have been brought into the implementation process.
- It will also ensure the participation of a2i which is funded jointly by the division and UNCDF, to take part in the pilot phase.
- ICT division will ensure the overall ethical usage of the database and lead the legalization of data protection act in partnership with the cabinet and other relevant agencies.

Process of implementation:

- Bangladesh Bank will release the circular mandating all banks, NBFIs and MFS to share their credit data and get into a partnership agreement;
- MRA will facilitate all MFS and MFIs and mobile operators to join the coalition.
- CT Division to supervise the technical implementation of the digital credit platform and bringing in startups and MFS players to make the process error free.
- The piloting done by a2i will help to identify the probable fault lines in the plan and facilitate further improvement.
- Based on the initial data analysis financial service providers (banks, NBFIs, insurance, MFS, MFI) will design better suited products for customers and can facilitate segmented targeting for SMEs across subsectors.

Timeline: The initial steps required for developing a policy sandbox that enables digital SME lending should begin immediately so that digital disbursement of stimulus packages can take place within the end of 2020. By 2025, the overall contribution to GDP by SMEs can go up by 5-10%.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Inability to derive credit report from lending and mobile data	MFS like bKash has access to the most advanced analytics program which allows them to collate large volumes of data and draw patterns from it.	High
Partnership	Inability to derive credit report from lending and mobile data	Strategic partnership management should be managed by the lead agency with support from another key regulator, the Ministry of Finance.	High
Ethical	Unethical usage of transaction data	ICT Division can play an instrumental role in preventing data misuse by legalizing the process of data anonymization.	High
Timeline	Implementation process might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	Financial assistance from development partners (i.e. UNCDF SHIFT, DFID) might be explored in case of budget shortage.	Low

Scope of PPP:

- One of the core propositions to implement collaboration to ensure interconnectivity and interoperability between platforms and partners is private-public partnership.
- Government agencies (BB, MRA, Ministry of Finance among others) will be involved in a proactive agreement with private sector entities (banks, NBFIs, MFIs, MFS, mobile operators) and development partners.

Resources from Private sector [technical]: After completing the initial partnership agreement, a technological framework needs to be built based on which information sharing will take place. IPDC has launched the country's first blockchain based digital supply chain finance platform. BKash has been analyzing millions of transaction data and drawing meaning from it utilizing in-house tech team and third-party big data analytics firms. Bank Asia has been maintaining their agent banking transaction database for years now. Partnerships like this need to be leveraged in order to conduct the technical part of the proposed plan.

Resources from Private Sector [financial]: In order to attract financial support from the private sector, fundraising strategies followed by Sheba, Shopup, iFramer can be followed. UNCDF and DFID can be the two most relevant targets while targeting for funds in building the infrastructure for increased financial inclusion.

Action Agenda 4

Challenge/Opportunity: Absence of specific financial inclusion targets and timeline for achieving a digital economy. The government has a number of targets to achieve within the next decade and meeting SDG indicators is one of them. One of the promises of SDGs is to ensure equitable growth for every citizen. A digital economy can certify equitable growth.

Estimated Impact (Quantitative): If the government undertakes a 5-year plan to systematically include at least 80% of the population, it will be easier for the associated ministries and departments under government to track the outcomes of the interventions and revise the strategies based on it. At present, only 50% of the population have access to financial channels. If in five years this number can be increased by 30%, the country will still experience the benefits of financial inclusion.

Estimated Impact (Qualitative): Implementing a digital economy is a combined result of push and pull strategies. By push strategies, government and other agencies will mandate financial institutions to focus more on financial inclusion and by pull strategies government will incentivize financial institutions and people to avail financial services. When every ministry and department within the government and central bank will know their specific targets and timeline to achieve those targets, inclusion efforts will get new dimensions. Additionally, the disruptions created by the onslaught of COVID19 has made the fault lines within the economy more vivid and digital solutions have the potential to make the economy resilient against future disruptions.

Action Agenda:

Title: Devise a masterplan for a digital economy to secure a resilient financial ecosystem by 2020.

Summary: The government should devise a blueprint for implementing a digital economy by setting achievable targets within specific timelines. If each ministry under the government is mandated to work towards a shared target, digital adoption in the financial sector will experience accelerated growth.

Possible Lead Agency: ICT Division with strong support from Ministry of Planning, Ministry of Commerce and Ministry of Finance, in collaboration with other ministries will act as the lead agency to facilitate the transformation to a digital economy.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	ICT Division	Lead agency for implementation.
	Ministry of Finance – Financial Institutions Division	Facilitate policy reforms required for implementation.
	Ministry of Commerce	Facilitate policy reforms required for implementation.
	a2i	Assist the government in the technical aspect and target setting.
Development organizations	UN Agencies	UN agencies have been assisting governments to devise and execute strategies for achieving digital economies. Technical support from them is necessary to set and meet specific goals.
	World Bank	The World Bank annually collects data across economies to identify whether they meet the indicators for a digital economy and release their annual report based on the research findings. They should be consulted to gain a deep understanding of the outcomes.

Role of ICT Division:

- ICT division will work closely with the regulators to set specific goals and objectives as well as realistic timelines for achieving those.
- It will also ensure the participation of a2i which is funded jointly by the division and UNCDF, to take part in the pilot phase.
- The division will facilitate the technological framework development required for the long-term goal - digital economy.

Process of implementation:

ICT Division in association with other ministries and development partners will set timed goals with emphasis on these core areas -

- a. Data and indicators
- b. Digital economy enabling environment
- c. Cybersecurity
- d. Internet access for all
- e. Digital government
- f. Mainstreaming digital services, solutions, and platforms.

- All involved parties will maintain a timeline to track the progress of the initial plan.
- ICT Division will closely monitor the progress of each goal and take necessary steps to mitigate the challenges in execution.

Timeline: The initial steps required for drafting the policies should come into action by the end of 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Inability to onboard every agency to the same pace in achieving targets.	Strategic partnerships with the cabinet and the ministries might help in minimizing the risk.	High
Infrastructure	To ensure business mobility and reliance on data, a country must have to secure a strong digital infrastructure which Bangladesh currently does not have	ICT division can work as a lever in advocating the ideas - internet for all, minimum cost of data, interoperable financial service ecosystem. If all of these can be implemented, the overall status of the digital ecosystem will rise.	High
Cybersecurity	As the majority of the transaction will be done online and powerful insights can be extracted from the metadata platforms, the threat of cybersecurity will keep rising.	ICT Division in partnership with private sector players and development partners can minimize this challenge.	High
Timeline	Implementation process might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	Medium
Financial	The actual spending might go beyond the allocated budget as several processes will be carried on simultaneously.	Financial assistance from development partners (i.e. UN agencies and World Bank)) might be explored in case of budget shortage.	Medium

Scope of PPP:

- One of the core propositions to implement collaboration to ensure interconnectivity and interoperability between platforms and partners is private-public partnership.
- Government agencies will be involved in a proactive agreement with private sector entities and development partners.
- To build digital platforms partnership with development organizations is a precondition. Governments which have successfully implemented the idea can be consulted for further clarification and guidance.

Resources from Private sector [technical]: UN agencies have been assisting governments to devise and execute strategies for achieving digital economies. Technical support from them is necessary to set and meet specific goals. The World Bank annually collects data across economies to identify whether they meet the indicators for a digital economy and release their annual report based on the research findings. They should be consulted to gain a deep understanding of the outcomes

Resources from Private Sector [financial]: Long term financial assistance is required to materialize a digital economy. In the first phase of development, the budget can come from the government ADP but in the second phase the budget can be sourced from the private sector - domestic microsavings. If citizens can be encouraged to save their money using the digital channels to invest in their own economy, an unprecedented opportunity of private sector financing will take place.

Action Agenda 5

Challenge/Opportunity: High level of procedural complications in getting approval from the central bank hinders the scheduled banks, NBFIs and MFS's effort in launching new products or integrating new technologies.

Estimated Impact (Quantitative): If financial institutions, MFIs, MFS and other private and public sector players step up and initiate pilot projects first and simultaneously ask for central banks approval, it will speed up the process of formalizing guidelines by 3 times. For example, although Bangladesh Bank has undertaken measures to formalize the usage of blockchain and cloud computing for banks, no particular department of the entity has not yet started to implement the plans.

Estimated Impact (Qualitative): If the central bank speeds up the procedures and empowers banks to carry on pilot projects, more innovative products will be made available to the end users. For example, IPDC has already launched a blockchain platform to monitor supply chain activities. Enabling policies allow businesses and financial institutions thrive and cater to the needs of the consumer effectively. Based on the success stories in Kenya and India, financial institutions and DFS can come up with innovative solutions and pilot test them even before the launch of necessary regulation.

Action Agenda:

Title: The central bank should allow pilot testing before approval of a policy from the end of 2020 (establishing a regulatory sandbox).

Summary: Financial institutions and organizations that work towards an inclusive Bangladesh, should work together to implement successful pilot projects and based on the success of the initiative suggest recommendations to the central bank. Bangladesh bank should also promote policies that support innovations to ensure better financial inclusion.

Possible Lead Agency: Bangladesh Bank will act as the lead implementer here.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Bangladesh Bank	Lead agency for implementation. Facilitate policy reforms required for implementation.
	ICT Division	The division will facilitate financial service providers to launch their innovative solutions by providing the initial temporary license and assessing the overall ethical approach of that innovation.
	a2i - Digital Payment Division	Assist the central bank to conduct the risk assessment of the pilot projects done by financial service providers.
Private agencies	Financial service providers - banks, NBFIs, MFS, DFS, insurance companies and others.	These entities will introduce financial products that guarantee the highest volume of financial inclusion and financial service usage on their own. Before getting final approval from the central bank, they will run the pilot projects and strengthen their cases with the results from these projects.

Role of ICT Division:

- ICT division will facilitate financial service providers to launch their innovative solutions by providing the initial temporary license and assessing the overall ethical approach of that innovation.

Process of implementation:

- Financial service providers will introduce financial products that guarantee the highest volume of financial inclusion and financial service usage on their own. Before getting final approval from the central bank, they will run the pilot projects and strengthen their cases with the results from these projects.
- ICT Division will provide financial service providers with a temporary license to conduct pilot projects and closely monitor the progress of these projects.
- Bangladesh Bank will be prompt in releasing policies that enables the legal operation of innovative financial products. It will also allow financial service providers to run pilots with temporary licenses from the ICT Division.

Timeline: The initial steps required for drafting the policies should come into action by the end of 2020.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Timeline	Pilot project might take longer than anticipated due to the novelty of the program.	The entire timeline should be segmented in phases and contingencies should be carefully calculated to avoid any disruption to the flow due to delay.	High
Ethical	Some financial organizations might start piloting products that might enable money laundering and other fraudulent activities.	ICT Division can play an instrumental role in mitigating this challenge by proactively assessing overall proposals. A2i might assist the division in determining the acceptability of these solutions.	High
Infrastructure	To ensure business mobility and reliance on data, the economy must secure a strong digital infrastructure which Bangladesh currently does not have.	ICT division can work as a lever in advocating the ideas - internet for all, minimum cost of data, interoperable financial service ecosystem. If all of these can be implemented, the overall status of the digital ecosystem will rise.	Medium
Volume	If a large number of pilots take place simultaneously it might get difficult to monitor those.	Financial service providers have to proactively update the central bank and ICT division about the progress of their projects.	Medium
Acceptability	People might show initial reserve in availing innovative financial products.	The countrywide financial literacy program to be carried out by the ICT division and a2i will help minimizing this risk.	Low

Scope of PPP

- One of the core propositions to implement a pilot project model before getting final approval is private-public partnership. Government agencies (BB, ICT Division and a2i) will be involved in a proactive agreement with financial service providers to take the state of financial inclusion forward.

Post COVID-19 ICT Roadmap for Bangladesh

Supply Chain

Post COVID-19 ICT Roadmap for Bangladesh: The Supply Chain Sector

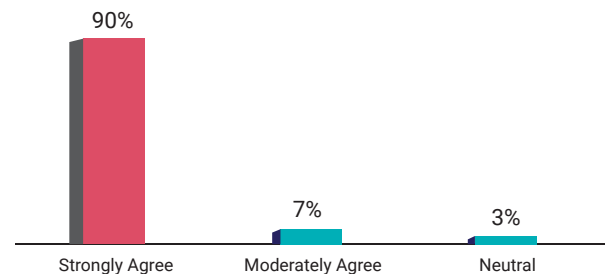
How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Supply Chain is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why Supply Chain

Food security has been threatened with smallholder farmers failing to buy agri-inputs from intermediaries either due to unavailability or price hikes stemming from scarcities. FMCG distribution channels have been disrupted during this lockdown owing to absence of digitized inventory management platforms. With sales forces being cut down to half, collection of real time inventory data is being compromised resulting in inaccurate forecasts. This has in turn led to supply chain crises like stockouts, stockpiling, and price inflation of essential goods.

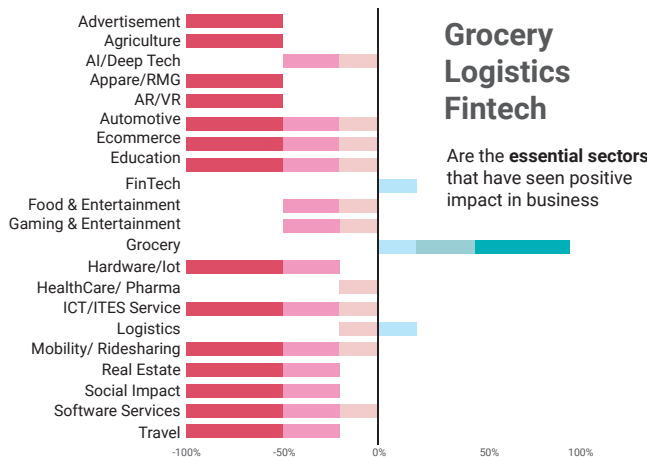
90% SMEs strongly agreed they have been experiencing delays/disruptions in the supply chain



Source: LightCastle Analytics & Sheba.xyz, 2020

Impact of COVID-19

Movement restrictions during the shutdown led to a plunge in demand for transportation services. Unavailability of transportation coupled with unequal distribution of farm laborers across the country led to acute scarcities of labour in the agricultural sector.²⁰ Even though there was uptick in demand on e-commerce sites for agri produce, the service providers failed to procure at scale from the rural markets to meet the urban demand. In the industrial sector, Bangladesh is forecasted to be affected by the Chinese slowdown through global value chains. It is predicted that Bangladesh will directly incur a loss of USD 16 million in total because of China's slowdown. An astounding 94% of this loss, approximating US \$ 15 million, will be borne by the leather industry.²¹



Source: Bangladesh Startup COVID-19 Response Group & LightCastle Analysis, 2020

Constraints

Presently most agri-input manufacturers only have capacity to supply to Upazilla level and thus cannot cater to the needs of marginal farmers. Smallholder farmers failing to buy expensive agri-input products from intermediaries face a grim reality which might eventually result in a shortage of food supply. Moreover, absence of digitised inventory management platforms has created disruption in the FMCG distribution channel during this lockdown. The increasing mobile data cost is making it more difficult for the people belonging to the lower income group to reap the benefits of using mobile applications to avail digital services such as - agri-based app, logistics app, and e-commerce platforms.

20. LightCastle Analytics Wing, Impact of Coronavirus on Livelihoods: Rural and Low-Income Population of Bangladesh, LightCastle Partners, 12 May, Retrieved 13 July 2020 from <<https://www.lightcastlebd.com/insights/2020/05/12/impact-of-coronavirus-on-livelihoods-rural-and-low-income-population-of-bangladesh-2>>

21. LightCastle Analytics Wing, Withstanding the Outbreak of COVID-19 in the Footwear Industry, LightCastle Partners, 15 April, Retrieved 13 July 2020 from <<https://www.lightcastlebd.com/insights/2020/04/15/footwear-industry-another-casualty-of-the-catastrophic-outbreak-in-the-economy>>

Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings regarding financial inclusion, the ICT Ministry is proposing the following five interventions in the immediate and short term:

Title	Empowering marginal farmers will strengthen agri supply-chain, which could be implemented as a part of 8FYP	Fully digitizing inventory management by the end of 2021, will make the FMCG supply chain more efficient and resilient	Onboarding policymakers to lower the cost of the mobile internet packages by 2020	Popularize use of smartphones in rural areas by 8FYP	Policy reform to modify the law of lending fleets by corporations within 2020
Why (To address:)	Manufacturers only have capacity to reach Upazilla level and thus cannot cater to the needs of marginal farmers. Smallholder farmers failing to buy expensive agri-input products from intermediaries have to face a grim reality which ultimately results in a shortage of food supply.	As salesforce has been curtailed in half to prevent the transmission of COVID-19, companies are failing to collect proper inventory data thus cannot forecast demand, which ultimately resulted in supply chain disruptions giving rise to problems like stockouts, stockpiling and price hike of essential goods.	High cost of data is making internet connectivity unaffordable for rural people to avail digital services such as - agri-based app, logistics app, and e-commerce platforms.	Smartphones are still not preferred by rural mass people over feature phones. Therefore, causing hindrances on the implementation of digital supply chain system	Large corporations are legally bound to only carry their own goods using their fleet. The biggest ramification of this law is that the vehicles have to complete the return trips with an empty load which results in huge transportation costs for companies.
What	Formation of effective partnerships among agri-product manufacturers, logistics startups, Bangladesh Railway and Bangladesh Post Office to ensure last mile reach in the agri-supply chain	Logistics startups which have expertise in managing end-to-end digitized supply chains should step up and collaborate with FMCG industries to ensure smooth digital management of inventory.	Government should enforce restrictions on telecom companies by putting a price ceiling to limit data package costs.	Government could partner with telecom companies to incentivize use of smartphones in the rural regions.	Firstly, the law should be changed by collaborating with specific policy making bodies so that corporations can lend to or share their fleets with other companies and government entities
Lead Agency	Ministry of Post and Ministry of Railways	Ministry of Industry	Ministry of post and tele-communication	Ministry of Finance	Ministry of Road Transport and Bridges
Actor	Agri-product, manufacturers Traditional Logistic, Companies Logistics startup	CMSMEs, Startups	Telecom Companies	Smartphone producer/importer/w wholesaler/retailers/customers	Conglomerates, MS MEs Logistics Startups
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Partners	Bangladesh Post-Office Ministry of Agriculture	ICT Division	ICT Division	ICT Division	ICT Division
Partners	UNCDF, Syngenta Foundation (SFSA-B)	ADB, WB, IFC	Telecom Companies	Distributors and wholesalers	Truck/cover-van owners
Financing and modality	PPP; cost of implementing last mile delivery for famers	PPP for app development; cost of goods and services for inventory management	PPP; to make most of the change in policy	PPP; to make most of the change in policy	PPP; change in policy; lower overall logistics cost and time.

It is high time for supply chains of industries, especially those focused on international trade, were digitized. At present, many of the processes involved in trade, including customs clearance, are conducted in person. For instance, a bill of lading document has to go from carrier to shipper to consignee and back to the carrier at the destination and, on the way, go through several other stakeholders. By digitizing such documents, it is possible to transfer them in the right sequence from one stakeholder to the next with a click of a button. Such documents can also go through blockchain technology in the future to ensure proper audit trail and transparency.

Post COVID-19 ICT Roadmap for Bangladesh

Supply Chain

Thematic Paper

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh [in collaboration with the Access to Information (a2i) Program, Innovision, LightCastle Partners, and DataSense @ iSocial] is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Supply Chain is one of the 14 priority sectors selected based on the impact of COVID-19 and potential for transformation of economy and society.

1. Why is Supply Chain Important?

Supply chain is a complex mix of activities that are focused on cost-effectively delivering products or services. It refers to the start-to-finish process that involves everything, from researching, inventory, logistics, and manufacturing to distributing and delivering the product to the customers. Supply chain is the lifeline for any company. Any mismatch or a missing link of a single department may jeopardise the whole productivity of the company resulting in loss of sales, consumers' sufferings and loss of competitive edge of the company.

The critical success of a business largely depends on its supply chain management. According to a survey by Deloitte from 2014, 79% of companies with high-performing supply chains achieve revenue growth superior to the average within their industries. Conversely, just 8% of businesses with less capable supply chains report above-average growth. That figure highlights like no other how critical the interrelations are between an enterprise and its supply chain.

Critical Success of any Business

Given that something like 50% of businesses, regardless of their size, fail or close down within five years of launch, it can be deduced that poor supply chain performance commonly contributes to corporate or business failure. Companies with global supply chains—a category which includes a fast-growing number of corporations, medium-sized companies, and even small businesses—can be standing on a cost base of which 90% is attributable to supply chain expenditure.

In many businesses, the supply chain has never been subject to a design process, but has instead just evolved. According to a 2012 report into corporate insolvencies by the Australian Securities and Investments Commission, 44% of businesses in Australia failed because of poor strategic management. Supply chain strategy is critical to business success, but companies often underestimate its importance and hence pay it less leadership attention than other areas of operation. It is also common for the supply chain to be the least understood area of strategic business management, which for an activity generating up to 90% of overall business costs, is alarming indeed.

Retailers depend on supply chains to quickly deliver expensive products to avoid holding costly inventories in stores any longer than necessary. For example, electronics stores require fast delivery of 60" flat-panel plasma HDTV's to avoid high inventory costs. Manufacturers depend on supply chains to reliably deliver materials to assembly plants to avoid material shortages that would shutdown production. For example, an unexpected parts shipment delay that causes an auto assembly plant shutdown can cost USD 20,000 per minute and millions of dollars per day in lost wages.

Manufacturers and retailers depend on supply chain managers to design networks that meet customer service goals at the least total cost. Efficient supply chains enable a firm to be more competitive in the marketplace. For example, Dell's revolutionary computer supply chain approach involved making each computer based on a specific customer order, then shipping the computer directly to the customer. As a result, Dell was able to avoid having large computer inventories sitting in warehouses and retail stores which saved millions of dollars. Also, Dell avoided carrying computer inventories that could become technologically obsolete as computer technology changed rapidly.

Agriculture and Food Security

It is expected that 70% more food will be needed to feed the world within the next 40 years, as the world's population continues to increase, purchasing behaviour evolves, and consumers demand a wider range of food products.¹ This rise in consumption will place even more importance on global supply chains.

Typically, value chains feature two types of bargaining power relationships: buyer-driven and producer-driven. In the buyer-driven, producers have few options for selling their goods or services. These chains typically have low barriers to entry at the producer level. In the developing countries, buyer-driven value chains are often characteristic of labour-intensive industries like agriculture, clothing and furniture (Webber and Labaste, 2010). Producer-driven value chains are often characterized by knowledge intensity, relatively higher levels of technology or skills, scarcity, high levels of marketing or capital-intensive activities. These chains usually have barriers to entry, often requiring high research and development expenditures, or costly marketing. They are present in agricultural sectors when standards, product differentiation, packaging and logistics are important, or when research and development are critical.

The primary risks to food security are at the country level: as the coronavirus crisis unfolds, disruptions in domestic food supply chains, other shocks affecting food production, and loss of incomes and remittances are creating strong tensions and food security risks in many countries. The United Nations World Food Programme has warned that an estimated 265 million people could face acute food insecurity by the end of 2020, up from 135 million people before the crisis, because of income and remittance losses.

Food producers also face large losses on perishable and nutritious food as buyers have become limited and consumption patterns shift. Though food insecurity is by and large not driven by food shortages, disruptions to the supply of agricultural inputs such as fertilizers, seeds or labor shortages could diminish next season's crop. If farmers are experiencing acute hunger, they may also prioritize buying food today over planting seeds for tomorrow, raising the threat of food shortages later on.

1. Karsten Horn, Director of International Sales, Inventory and Supply Chain Division of INFORM, 2014

2. Situation Analysis before COVID-19 Outbreak - Global

Over the last thirty years, logistics has undergone a tremendous change: from a purely operational function that reported to sales or manufacturing and focused on ensuring the supply of production lines and the delivery to customers, to an independent supply chain management function that in some companies is already being led by a CSO - the Chief Supply Chain Officer. The focus of the supply chain management function has shifted to advanced planning processes, such as analytical demand planning or integrated S&OP, which have become established business processes in many companies, while operational logistics has often been outsourced to third-party LSPs. The supply chain function ensures integrated operations from customers to suppliers.

Industry 4.0 creates a disruption and requires companies to rethink the way they design their supply chain. Several technologies have emerged that are altering traditional ways of working. On top of this, mega trends and customer expectations change the game. Besides the need to adapt, supply chains also have the opportunity to reach the next horizon of operational effectiveness, to leverage emerging digital supply chain business models, and to transform the company into a digital supply chain.

Several mega trends have a heavy influence on supply chain management: **there is a continuing growth of the rural areas worldwide, with wealth shifting into regions that have not been served before.** Pressure to reduce carbon emissions as well as regulations of traffic for socioeconomic reasons add to the challenges that logistics are facing. But changing demographics also lead to reduced labor availability as well as increasing ergonomic requirements that arise as the workforce age increases.

At the same time **customer expectations are growing:** the online trend of the last years has led to increasing service expectations combined with a much stronger granularization of orders. There is also a very definite trend towards further individualization and customization that drives the strong growth of and constant changes in the SKU portfolio. The online-enabled transparency and easy access to a multitude of options regarding where to shop and what to buy drives the competition of supply chains.

The digitization of the supply chain enables companies to address the new requirements of the customers, the challenges on the supply side as well as the remaining expectations in efficiency improvement. Digitization brings about a Supply Chain 4.0, which will be -

a) Faster: New approaches to product distribution reduce the delivery time of high runners to a few hours. The basis for these services is built by advanced forecasting approaches, e.g., predictive analytics of internal (e.g., demand) and external (e.g., market trends, weather, school vacation, construction indices) data as well as machine status data for spare-parts demand, and provides a much more precise forecast of customer demand. Forecasts are not carried out on a monthly basis, but weekly, and for the very fast-moving products even every day. In the future we will see "predictive shipping," for which Amazon holds a patent - products are shipped before the customer places an order. The customer order is later on matched with a shipment that is already in the logistics network (being transported towards the customer region) and the shipment is rerouted to the exact customer destination.

b) More flexible: Ad hoc and real-time planning allows a flexible reaction to changing demand or supply situations. Planning cycles and frozen periods are minimized and planning becomes a continuous process that is able to react dynamically to changing requirements or constraints (e.g., real-time production capacity feedback from machines). Once the products are sent, increased flexibility in the delivery processes allows customers to reroute shipments to the most convenient destination.

c) More granular: The demand of customers for more and more individualized products is continuously increasing. That gives a strong push towards microsegmentation, and mass customization ideas will finally be implemented. Customers are managed in much more granular clusters and a broad spectrum of suited products will be offered. This enables customers to select one of multiple "logistics menus" that exactly fits their needs. New transport concepts, such as drone delivery, allow companies to manage the last mile efficiently for single and high-value dense packages.

d) More accurate: The next generation of performance management systems provides real-time, end-to-end transparency throughout the supply chain. The span of information reaches from synthesized top-level KPIs, such as overall service level, to very granular process data, such as the exact position of trucks in the network. This range of data provides a joint information basis for all levels of seniority and functions in the supply chain. The integration of data of suppliers, service providers, etc. in a "supply chain cloud" ensures that all stakeholders steer and decide based on the same facts.

e. More efficient: Efficiency in the supply chain is boosted by the automation of both physical tasks and planning. Robots handle the material (pallets/boxes as well as single pieces) completely automatically along the warehouse process - from receiving/unloading to putting away to pick, pack, and ship. Autonomous trucks transport the products within the network. To optimize truck utilization and increase transport flexibility, cross-company transport optimization is applied to share capacities between companies. The network setup itself is continuously optimized to ensure an optimal fit to business requirements.

3. Situation Analysis before COVID-19 Outbreak - Bangladesh

Supply chain management is relatively a new term for the Bangladeshi industries, although professionally recognised since early 2000. Supply chain management plays an important role in developing small and medium enterprises (SME) through this collaborative function as they supply to the big companies. About 3,500 supply chain professionals were produced in the country over the last seven years by the ISCEA that indicates there is a growing demand. Local companies have grown so large that almost all have supply chain departments, whatever the name is-commercial, logistics, supply chain.

Supply chain operation in Bangladesh can be segmented into three broad categories - Manufacturers' (RMG, importer, FMCG) supply chain, Agricultural supply chain and E-commerce supply chain. The manufacturers' and agri supply chains are largely driven by traditional distribution methods while e-commerce supply chains are managed through digital methods.

Second mile means carrying goods from one district to another district. In Bangladesh, companies which provide this service are known as the Traditional providers. The second mile delivery market is dominated by a few players namely – Sundarban Courier, S. A Paribahan, Sonar Courier, Bangladesh Express Co Ltd, Continental courier service etc. These providers conduct CapEx heavy operations and that enable them to carry on second mile delivery services for smaller logistics firms as well as e-commerce firms.

Logistics is one of the major challenge areas for most of the e-commerce companies. E-commerce players often lose customers because of delayed delivery, order misplacing etc. Third party logistics providers who are currently serving the market often lack the capability to ensure a transparent and trackable fulfillment and delivery cycle. In order to cater the needs of e-commerce, a number of e-com logistics service providers have emerged in recent years. Paperfly, Pathao, Biddyut, E-courier are some of the notable ones among those.

4. Situation Analysis after COVID-19 Outbreak

Since the beginning of the lockdown, Bangladeshi supply chain managers have been working in a more uncertain condition compared to any other country, unsure about delivery of goods from the Chattogram port. **Poor infrastructure, transportation problems** and lack of planning have been identified as the major challenges limiting the smooth operation of supply chains, especially in the manufacturing sector. The ongoing restriction on movement has resulted in loss of productivity, sufferings of the consumers and trouble for companies.

Currently, activities at Chattogram port, which handles 80% of the country's external trade, have come to a standstill as the number of import containers has exceeded the port's storage capacity. On 23rd May, the volume of import containers at the port reached 49,468 TEUs (Twenty-foot Equivalent Units) whereas it has a storage capacity of 49,019 TEUs. A bulk portion of import containers stuck at the port constitute raw materials for the RMG sector followed by other industrial raw materials.² Large business conglomerates like Meghna Group of Industries, City Group, Abul Khair Group, Bashundhara Group, and Akij Group are facing disruptions in three areas e.g. Chattogram port, productions in factories, and transportation within the country. Resistance from local people is preventing entry and exit of trucks, eventually hampering transportation to and from factories in different locations across Bangladesh.

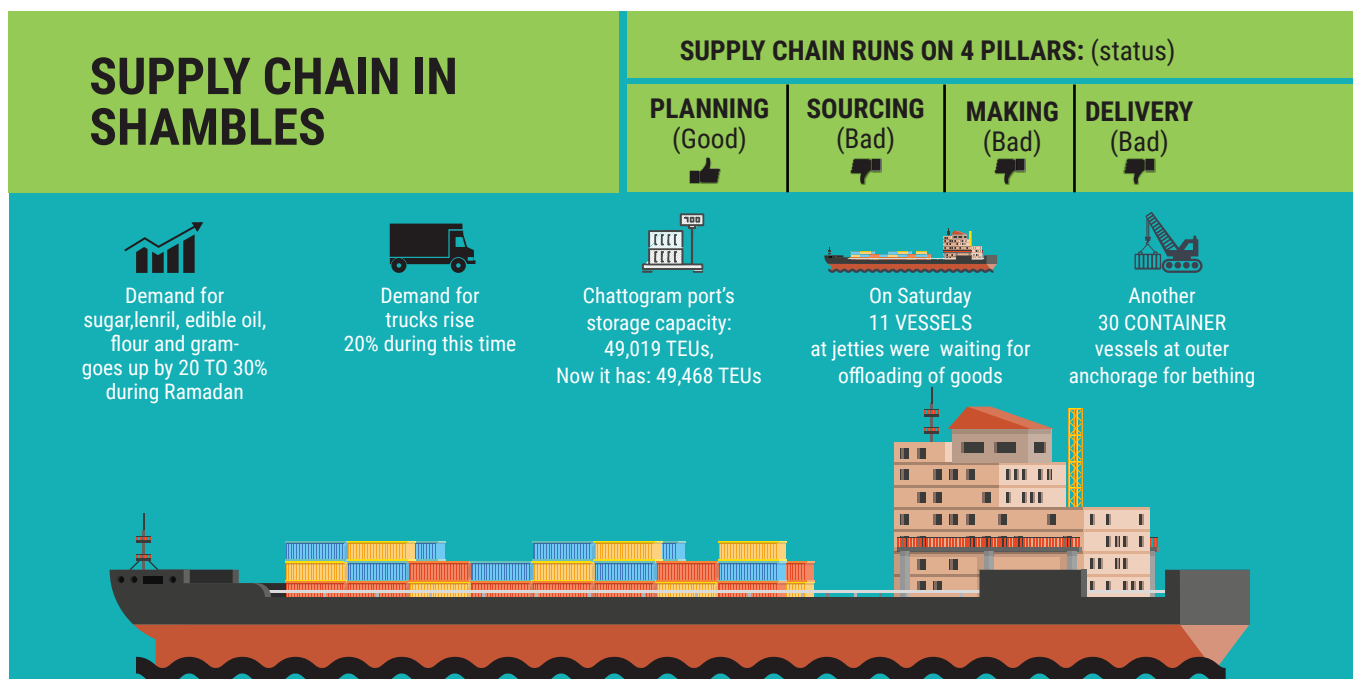


FIGURE: Supply chains in shambles under current coronavirus situation / Source: The Business Standard

As a remedy, Chattogram Port Authority (CPA) is trying to move some containers to private Inland Container Depots (ICDs) as an alternative measure to tackle the current situation. If the National Board of Revenue (NBR) permits, they will be able to transfer 15,000 TEUs.

Remittance and RMG Sector Struggle Amidst Lockdowns

Bangladesh imported USD 5.02 billion worth of textiles and other raw materials in fiscal year 2018-19. 40% of the country's capital machinery and spare parts for the garment industry comes from China, which has the epicenter of the viral infection.³ Due to the current situation, Bangladeshi suppliers started facing troubles as buyers including H&M, Nike, Zara, Primark started closing their stores in major cities. Moreover, orders worth USD 1.5 billion have already been postponed or cancelled by international buyers according to BGMEA.⁴

According to a World Bank report published in April, Bangladesh's remittance is expected to fall by 22 percent due to the current economic crisis. It could come down to USD 14 billion in 2020 from USD 18.3 billion in 2019. Restrictions in host countries are causing migrant workers to lose out on wages.

Supply Chain Disruptions Cause Distress for Dairy Farmers

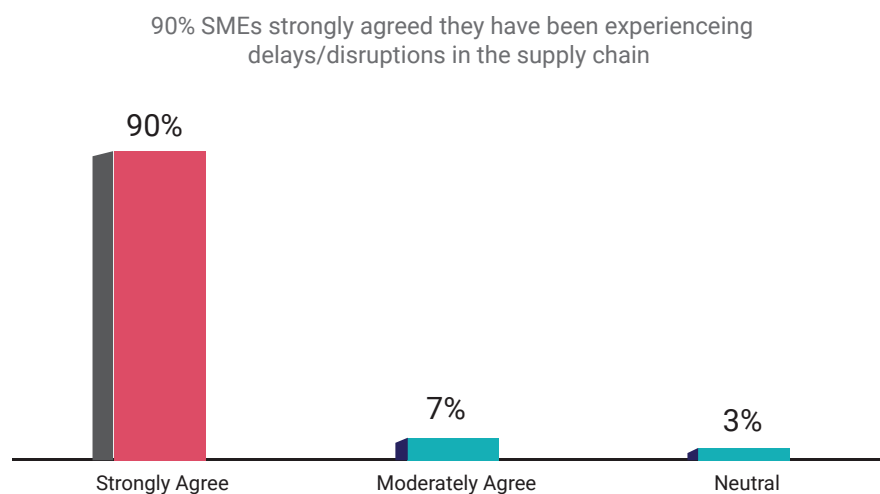
According to Bangladesh Dairy Farmers's Association, approximately 110-220 thousand litres of milk worth BDT 570-600 million (USD 6.71-7.07 million) have been thrown away daily during the shutdowns. Most of produced milk was used by ice cream factories, sweetmeat shops, and eight large producers (Aftab Milk and Milk Producer Ltd, Akij Food and Beverage Ltd, American Dairy Ltd, BRAC Dairy and Food Project, Danish Dairy Farm Ltd, Igloo Dairy Ltd, Pran Dairy Ltd, and Bangladesh Milk Producers' Cooperative Ltd) of pasteurized liquid milk. These entities are not buying enough milk during the pandemic as they are no longer producing food products like they used to as a result of the lack in consumer demand. According to the Palli Karma-Sahayak Foundation, the typical daily demand for liquid milk is 17 million litres per day. 12 to 14 million litres or approximately 70% of this demand is met from the country's 70,000 local farms.

Cold storage capacities need to be built to save rural farmers during the current crisis. In order to avoid wastage, cream separator machines can be introduced to produce ghee or cheese that can be stored more easily than liquid milk. To protect the agriculture sector of Bangladesh from the supply chain disruptions, the government has allocated BDT 50 billion (USD 588.83 million) for the agriculture sector, from the total financial incentive fund of BDT 727.5 billion. The World Bank has decided to help 17,69,733 rural dairy farmers with a grant of BDT 5 billion to be distributed in cash.

SMEs Got Affected by Supply Chain Disruption

SMEs are the bloodline of Bangladesh's economy creating employment for 7.8 million people directly and providing a livelihood for 31.2 million in total. The COVID-19 pandemic has affected all spheres of life and business but one of the hardest hit are the already vulnerable SMEs due to dependence on a short cash cycle, supply chain disruption, and loss of sales.

To understand the current impact of the crisis on SMEs in detail, LightCastle Partners & Sheba.xyz collaborated on an independent study about the "COVID-19 Impact on the SMEs of Bangladesh". The research revealed that 28% SMEs have seen revenue drop by at least 50%, while 52% SMEs have locks hung over their businesses generating no revenue at all. 2/3rd of the SMEs have a window of less than four months to survive in current conditions before they exhaust all their cash reserves. 90% SMEs strongly agreed that they have been experiencing delays/disruptions in the supply chain.



Source: LightCastle Analytics & Sheba.xyz, 2020

3. Coronavirus impact: Disruption in supply chain worries garment exporters – The Financial Express

4. The Effect of COVID-19 on Bangladesh's Apparel Industry – LightCastle Partners

5. Global Scenario and Relevance for Bangladesh

The impacts of COVID 19 on the agri-supply chain will be felt widely, but unevenly. Farm operations may be spared the worst, while small and medium-sized enterprises (SMEs) in urban areas will face significant problems. Governments will have to develop policies to respond to these varied impacts to avoid supply chain disruptions, higher food prices, and severe economic fallout for millions of employees.

Most urban and rural consumers now depend on markets, in contrast to 30-40 years ago when a large share of rural populations lived “off the grid” in subsistence agriculture. Consumers purchase 80% of all food consumed in Africa and Asia, and thus FSCs provide 80% of all food consumed (Reardon et al. 2019).

Modern FSCs (food supply chains) (dominated by large processing firms and supermarkets, capital-intensive, with relatively low labor intensity of operations) constitute roughly 30%-50% of the food systems in China, Latin America, and Southeast Asia, and 20% of the food systems in Africa and South Asia.

Transitional FSCs (stretching from rural to urban areas, fragmented and dominated by thousands of labor-intensive SMEs) dominate food systems, with 50%-80% of the food economies of developing Asia and Africa. SMEs in transitional FSCs in developing countries tend to be found in clusters such as dense sets of food processing SMEs, scores of meal vendors at truck stops, and dense masses of wholesalers and retailers in public wholesale markets and wet markets. Each of these clusters could have numerous SMEs. In these venues, large numbers of clients gather in dense crowds. Here are seven hypotheses, based on a research by International Food Policy Research Institute (IFPRI) about the likely effects of COVID-19 on FSCs in developing regions:

- a.** Direct impacts will overwhelmingly be felt post-farm. Namely, the “midstream” (e.g., wholesale, logistics, and processing), and “downstream,” in food-service enterprises.
- b.** The impacts are likely to be largest in dense urban and rural peri-urban areas. Given the properties of the novel coronavirus, which is transmitted most easily via human contact, greater population densities tend to facilitate its spread.
- c.** Effects will be strongest in the downstream segments of retail and food service. These downstream firms are mostly informal-sector SMEs, and are thus labor-intensive with high densities of workers in small spaces. They have little control over the hygiene practices of their product suppliers or customer habits.
- d.** Retail and food service firms in modern FSCs face fewer problems. They are far less vulnerable to mandatory business closures, and also face a lower risk of clients and employees contracting the disease. The least affected are likely to be supermarket chains. Their stores can enforce the flow of entering customers and social distancing measures. Supermarkets and fast-food chains also have more control over the food safety and hygienic practices of their FSCs, as they typically vertically coordinate with contracts and private standards (Swinnen 2007).
- e.** Direct impacts on farm population and farm production will be much smaller than on the FSC downstream and midstream. This is because most small farmers in developing countries rely on family labor. The farm sector, however, will be affected indirectly by COVID-19 through the disruption of input supply chains, and of consumer demand due to lost income and other economic impacts of the pandemic.
- f.** COVID-19 is likely to increase food prices, both as a cause and consequence of food shortages. Restrictions on FSC logistics will increase transaction costs and thus consumer prices. Speculative hoarding may occur and trigger price increases. Higher food prices are, in turn, likely to signal impending shortages. These effects can compound each other in a vicious cycle likely to cause social unrest (Bellemare, 2015).
- g.** COVID-19 responses will create economic hardship. Enforcing social distancing and limits on internal and external logistics in FSCs, will transform health risk problems into income and employment risks, and political risks.

As most of these FSCs are in the “transitional” stage, they are composed mostly of informal sector SMEs, with employees lacking formal registration and safety nets such as unemployment insurance. In the short term, millions of these businesses will face lower foot traffic, lower incomes, and substantial unemployment. In the medium term, COVID-19 impacts on these segments may be like past episodes of avian flu in Southeast Asia in the 2000s, which induced rapid concentration, leading to the rise of large processing firms and supermarkets.

6. Estimated Negative Impact

Supply chain sector in Bangladesh has some inherent problems which are being amplified by this ongoing pandemic and restriction on movement.

a. Exclusion of marginal and smallholder farmers from the agri-value chain

Presently most agri-input manufacturers only have capacity to supply to Upazilla level and thus cannot cater to the needs of marginal farmers. Smallholder farmers failing to buy expensive agri-input products from intermediaries have to face a grim reality which ultimately results in a shortage of food supply.

b. FMCG supply chains do not practice digitized inventory management

Absence of digitized inventory management platforms has created disruption in the FMCG distribution channel during this lockdown. As salesforce has been curtailed in half to prevent the transmission of coronavirus, companies are failing to collect proper inventory data thus cannot forecast demand of products which ultimately resulted in supply chain disruptions giving rise to problems like stockouts, stockpiling and price hike of essential goods.

c. Surging cost of internet and lack of access to digital infrastructure are deterring rural income groups to avail digital services

The increasing mobile data cost is making it more difficult for the people belonging to the lower income group to reap the benefits of using mobile applications to avail better services such as - agri-based app, logistics app, and e-commerce platforms. During the pandemic there has been an unprecedented surge in data usage in the urban areas. However, the same can not be claimed about the rural areas. This could be attributed to the lower purchasing power of the people belonging to lower income households living in rural areas.

Smartphones are still not preferred by rural mass people over feature phones. Therefore, causing hindrances on the implementation of digital supply chain system

d. Legal frameworks do not support cost optimization in distribution

Large corporations are legally bound to only carry their own goods using their fleet. The biggest ramification of this law is that the vehicles have to complete the return trips with an empty load which results in huge transportation costs for companies. Simultaneously, the logistics sector has been experiencing a surge in demand for trucks during this lockdown.

7. Estimated Opportunities

The government needs to respond to minimize supply chain disruptions and fallout from lockdowns and other restrictions. The general strategy must be two-pronged: Implement robust public health measures to slow the spread of disease; and address food security impacts, particularly the potentially enormous effects on income and employment.

Manufacturers' Supply Chain

a. Going forward, large companies, both national and international, should think more about offsetting risks and diversifying their supply chains. It is already evident as giants like Honda, Toyota, and Samsung from Asia's larger economies are already looking at a "China+1" strategy to reduce dependence on a single supplier country.

b. According to expert predictions, China might lose their central position in many global supply networks to Mexico, Brazil, and some emerging markets in South-east Asia. The two reasons behind it are:

- The initial shock from the China-centered supply chains caused by the industrial shutdown across the country in February and March.

- The US-China trade war, which had already been pushing some companies to look elsewhere.

c. Companies in electronics, textiles, and energy sectors are the most likely to relocate parts of their operations to the South-east Asia trade bloc as the region offers multiple energy trade options and has scope for private sector participation.[5] This could be a good opportunity for Bangladesh.

d. The Bangladesh government needs to take initiatives to bring goods carrier vehicles out on roads to keep port activities and countrywide supply smooth. Also, businesses need to get their imported goods released from the ports following the relaxation of government restrictions.

e. According to Moody's, the disruption in RMG supply chain due to global coronavirus outbreak will be a temporary one as demand will increase in the global market later this year. The international credit rating firm further added that Bangladesh's proximity to Asia's largest markets, with growing middle-class populations, would continue to support industry performance. However, the country might face a downward pressure on its Ba3 (not prime in the short run but has a stable outlook) rating level if there is a marked deterioration in the government's fiscal position, erosion in the government's revenue base, or sharp increase in financing costs.

There are multiple immediate, end-to-end supply-chain actions to consider in response to COVID-19

Supply-chain actions

Create transparency on multitier supply chain

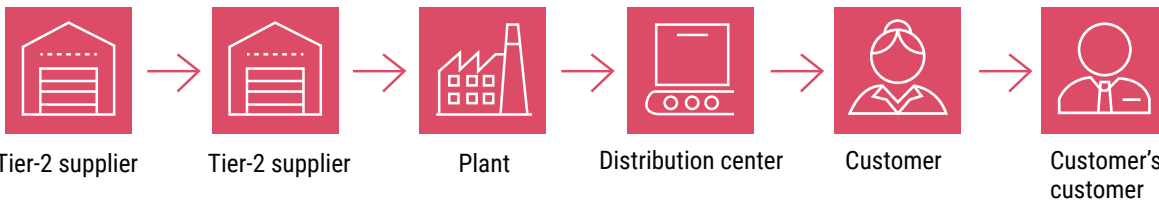
- Determine critical components and determine origin of supply
- Assess interruption risk and identify likely tier-2 and onward risk
- Look to alternative sources if suppliers are in severely affected regions

Optimize production and distribution capacity

- Assess impact on operations and available resource capacity (mainly) workforce
- Ensure employee safety and clearly communicate with employees
- Conduct scenario planning and assess impact on operations, based on available capacity
- Optimize limited production, according to human-health impact, margin, and opportunity cost/ penalty

Assess realistic final-customer demand

- Work with sales and operations planning to get demand signal to determine required supply
- Leverage direct-to-consumer channels of communication
- Use market insights/external databases to estimate for customer's customers



Estimate available inventory

- Estimate inventory along value chain, including spare parts/ remanufactured stock
- Use after-sales stock as bridge to keep production running

Identify and secure logistics capacity

- Estimate available logistics capacity
- Accelerate customs clearance
- Change mode of transport and prebook air/rail capacity, given current exposure
- Collaborate with all parties to leverage freight capacity jointly

Manage cash and net working capital

- Run supply-chain stress tests vs major suppliers' balance sheets to understand when supply issues will start to stress financial or liquidity issues

McKinsey
& Company

Agriculture and Food Security

This strategy presents significant challenges for developing countries. Addressing the FSC issues will require three complementary policy paths:

a. In the short run, implement new, broad safety nets for SMEs and workers in the midstream and downstream segments of FSCs; for example, governments could use cash-for-work schemes to employ workers to distribute emergency food rations, upgrade sanitation in wholesale markets and wet markets, and maintain essential operations in their own enterprises so that the latter are there when the crisis passes.

B. In the short and medium term, monitor and regulate wholesale markets, retail wet markets, and processing clusters more strictly, and redesign their sites for improved health practices.

C. Finally, make long-term investments to help SMEs change hygiene practices and better site design that will help them remain competitive.

At the country level, the World Bank Group is working with governments and international partners to closely monitor domestic food and agricultural supply chains, track how the loss of employment and income is impacting people's ability to buy food and ensure that food systems continue to function despite COVID-19 challenges. In Bangladesh, a USD 96 million Emergency Action Plan, mobilized as part of a Livestock Dairy Development project will include cash transfers to vulnerable dairy and poultry farmers for business continuation.

8. Road Map

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the Startup Sector, the ICT Ministry is proposing the following five interventions in the immediate short term:

Title	Empowering marginal farmers will strengthen agri supply-chain, which could be implemented as a part of 8FYP.	Fully digitizing inventory management by the end of 2021, will make the FMCG supply chain more efficient and resilient	Onboarding policymakers to lower the cost of the mobile internet packages by 2020.	Popularize use of smartphones in rural areas by 8FYP	Policy reform to modify the law of lending fleets by corporations within 2020.
Why (To address:)	Manufacturers only have capacity to reach Upazilla level and thus cannot cater to the needs of marginal farmers. Smallholder farmers failing to buy expensive agri-input products from intermediaries have to face a grim reality which ultimately results in a shortage of food supply.	As salesforce has been curtailed in half to prevent the transmission of COVID-19, companies are failing to collect proper inventory data thus cannot forecast demand, which ultimately resulted in supply chain disruptions giving rise to problems like stockouts, stockpiling and price hike of essential goods.	High cost of data is making internet connectivity unaffordable for rural people to avail digital services such as - agri-based app, logistics app, and e-commerce platforms.	Smartphones are still not preferred by rural mass people over feature phones. Therefore, causing hindrances on the implementation of digital supply chain system	Large corporations are legally bound to only carry their own goods using their fleet. The biggest ramification of this law is that the vehicles have to complete the return trips with an empty load which results in huge transportation costs for companies.
What	Formation of effective partnerships among agri-product manufacturers, logistics startups, Bangladesh Railway and Bangladesh Post Office to ensure last mile reach in the agri-supply chain	Logistics startups which have expertise in managing end-to-end digitized supply chains should step up and collaborate with FMCG industries to ensure smooth digital management of inventory.	Government should enforce restrictions on telecom companies by putting a price ceiling to limit data package costs.	Government could partner with telecom companies to incentivize use of smartphones in the rural regions.	Firstly, the law should be changed by collaborating with specific policy making bodies so that corporations can lend to or share their fleets with other companies and government entities.
Lead Agency	Ministry of Post and Ministry of Railways	Ministry of Industry	Ministry of post and tele-communication	Ministry of Finance	Ministry of Road Transport and Bridges
Actor	Agri-product, manufacturers Traditional Logistic, Companies Logistics startup	CMSMEs, Startups	Telecom Companies	Smartphone producer/importer/wholesaler/retailers/customers	Conglomerates,MSMEs Logistics Startups
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Partners	Bangladesh Post-Office Ministry of Agriculture	ICT Division	ICT Division	ICT Division	ICT Division
Partners	UNCDF, Syngenta Foundation (SFSA-B)	ADB, WB, IFC	Telecom Companies	Distributors and wholesalers	Truck/cover-van owners
Financing and modality	PPP; cost of implementing last mile delivery for famers	PPP for app development; cost of goods and services for inventory management	PPP; to make most of the change in policy	PPP; to make most of the change in policy	PPP; change in policy; lower overall logistics cost and time to deliver

Action Agenda 1

Challenge/Opportunity: Presently most agri-input manufacturers only have capacity to supply to Upazilla level and thus cannot cater to the needs of marginal farmers. Smallholder farmers failing to buy expensive agri-input products from intermediaries have to face a grim reality which ultimately results in a shortage of food supply.

Estimated Impact (Quantitative): If marginal farmers can be served by leveraging partnership among parties: agri-product manufacturers, logistics startups and government entities such as Bangladesh Railway and Bangladesh Post Office, the overall agri-production status in union and village level will increase threefold.

Estimated Impact (Qualitative): Empowering the marginal farming communities through effective collaboration will guarantee both higher supply of food products and higher income for the farmers as they might then have the opportunity to use the same supply chain network to distribute their surplus produce. The benefit will eventually trickle down to the final customer who will benefit from cheaper and better-quality products. The end goal of this intervention is to build a resilient agri-supply chain that will remain unaffected by future disruptions.

Action Agenda:

Title: Empowering marginal farmers will strengthen agri supply-chain, which could be implemented as a part of 8FYP.

Summary: Formation of effective partnerships among agri-product manufacturers, logistics startups, development organizations and government entities such as Bangladesh Railway and Bangladesh Post Office to ensure last mile reach in the agri-supply chain. The Ministry of Agriculture can act as an implementer and facilitate proactive collaboration among mentioned parties. The agreement will assure better reach for agri-input manufacturers, increased business and unique branding opportunities for startups. Lastly, the government as an implementer will have better control and visibility over the agri-value chain.

Possible Lead Agency: Ministry of Post and Ministry of Railways to take lead and form mandates for all the parties involved to collaborate and develop a platform, which will allow a seamless agri-supply chain to flow from last mile producers to final customers.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Bangladesh Railway	Enable alternative transportation means which could be cheap and effective when transporting large amounts of goods.
	Bangladesh Post-Office	They have deep reach in the rural areas that will make it possible to reach the marginal farmers and extend the supply-chain reach to last mile
	Ministry of Agriculture	The ministry of Agriculture will take the lead to coordinate all the parties and develop a agri-supply chain which will have the last mile reach
	ICT Division	Conduct the risk assessment of the final implementation plan and run the pilot phase of the proposed solution.
Private agencies	Agri-product manufacturers	They will share both their technical resources and financial resources to help develop the platform. Such as PRAN, Square Consumer Goods, ACI.
	Traditional Logistic Companies	Having ventured into the industry in the early years and a vast network in the domestic market the companies can provide valuable insights, market experience and add in the logistic value chain.
	Logistics startups	Being the expert in tech based logistic platforms they will dictate how the logistical operations can be made more effective and efficient by cutting down on inefficiencies.
Development organizations	Syngenta Foundation (SFSA-B)	As they have experience of working in the last mile of the chain, they will guide to achieve similar outcome
	UNCDF	UNCDF has been instrumental in providing funds for digitization processes in various industries. Their funds and expertise will help in making the digital supply chain more efficient and effective.

Role of ICT Division:

- ICT division could act as a coordinator between Public and Private agencies
- Create a national supply chain software to track all the government trains and postal cargo trucks
- Tracking all the deliverables and transport vehicles (trucks and trains) will ensure traceability and backstopping if anything gets delayed
- Formulate laws and policies that will ensure data integrity and privacy of the stakeholders involved.
- Help ensure credibility of the platform so that public and private organizations gain trust in using

Process of implementation:

- Ministry of Postal Services and Ministry of Railway to initiate a collaboration between the private logistic providers and come to a common platform
- ICT Division to create a platform for the supply chain management system
- This will be done in collaboration with Private Logistic Companies, Ministry of Postal Services and Ministry of Railways
- Rollout the project in phases firstly in the divisional regions where internet connectivity and transport means are widely available.
- Ministry of Agriculture and Ministry of Industries to assist by providing support functions in developing the supply chain ecosystem

Timeline: The project will be implemented as a part of 8FYP. The first phase could be completed by early 2021 given there will be no major disruption in the implementation process; the project is expected to be completed by 2025.

Possible Risks and Mitigation Strategies:

Risk	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Failure to develop integrated platform connecting the relevant parties	Startups like Shohoz, Trucklagbe and private organizations ACI, PRAN have agile skilled teams which have been executing projects with immense success. A combined team of experts from multiple organizations could help mitigate the risk and make the most out of the project.	High
Ethical	Unethical usage of user data	ICT ministry will play a pivotal role in order to ensure data privacy of the users and the organizations involved	High
Partnership	As there will be multiple organizations, conflict of interest might arise	Strategic partnership management should be ensured by the lead agency and should involve another key stakeholder, Ministry of Agriculture	High
Timeline	The project being innovative and unique might take longer time to execute, especially with a lot of parties being directly involved	The segmentation of the project into multiple phases could help to reduce the disruption and calculated contingency plan should be in place to avoid delay	Medium
Financial	The actual cost of implementing the project could be above and beyond the budget because of delays	Incase of budget shortages assistance from development partners like (UNCDF, BRAC) could be explored	Low

Scope of PPP: It will be crucial to establish public and private partnership to accomplish the desired outcome. Agri-product producers like (ACI, PRAN), logistics startups like (Shohoz, Trucklagbe) and government entities like Bangladesh Railway and Bangladesh Post Office, will have to work in unison to implement this project.

Resources from the Private sector [technical/intellectual]: The startups and other private parties will mainly help with their technical and intellectual expertise.

Resources from the Private sector [financial]: Here the private sector could be vastly benefited from the project. Therefore, it could be expected that they will also make investment in the project to ensure last mile agri-supply chain.

Action Agenda 2

Challenge/Opportunity: Absence of digitized inventory management platforms has created disruption in the FMCG distribution channel during this lockdown. As salesforce has been curtailed in half to prevent the transmission of coronavirus, companies are failing to collect proper inventory data thus cannot forecast demand of products which ultimately resulted in supply chain disruptions giving rise to problems like stockouts, stockpiling and price hike of essential goods.

Estimated Impact (Quantitative): Establishing an end-to-end digitized platform to see live updates on inventory will help minimize the problem. Presently, FMCGs are sending their salespersons to the shops to physically keep track of inventory, which results in a huge operating cost and also gives rise to threat of transmission of coronavirus. Implementing the proposed solution will not only reduce operating cost by half but also minimize the reliance on sales staff in the future.

Estimated Impact (Qualitative): The proposed solution can create an unprecedented opportunity to bring thousands of manufacturers, wholesalers, retailers, logistics service providers under one single platform and uplift the overall efficiency of the FMCG value chain. Data collected through the platform can be analyzed using predictive analytics tools to forecast growth and proceed with a scenario based planning method of inventory management. One challenge in digitizing is that a group of tax-evasive retailers might refuse to digitize their inventory as they fear that keeping digital records will lead to paying the right amount of tax on each product.

Action Agenda:

Title: Fully digitizing inventory management by the end of 2021, will make the FMCG supply chain more efficient in the short term and make them resilient against upcoming shocks.

Summary: Logistics startups which have expertise in managing end-to-end digitized supply chains should step up and collaborate with FMCG industries to ensure smooth digital management of inventory. In order to ensure 100% cooperation from retailers/distributors, the National Board of Revenue can look into options of providing tax benefits or rebates to these groups.

Possible Lead Agency: Ministry of Industry with support from ICT division, will act as the lead agency to facilitate the partnership among parties in the creation of an inventory management platform.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Ministry of Industry	Facilitate collaboration with other ministries required for implementation.
	ICT Division	Lead agency for implementation of the digital platform.
Private agencies		Small business will have to be receptive towards using the digital platform and be adaptive to digital change
	Startups	Startups like Shohoz, Pathao, UBER, eCourier, Paperfly could leverage the data from their platform and share valuable insights
Development organizations	ADB	ADB is also related to strengthening management, enhancing quality, and improving equity and access to secondary education. They can also share their experience of digital transformation of supply chain
	WB	WB has been helping Bangladesh by financing projects worth millions of dollars. They have been a major financier of this project and can help in the future project fundings as tech infrastructure is very capital intensive.
	IFC	Considering this to be a big project this will turn out to be, IFC can assist in providing loans on soft terms.

Role of ICT Division:

- ICT division will have to develop the platform and enable digitalization of inventory management.
- This will ensure a dynamic platform in which hundreds of thousands of organizations will become part of digital inclusion.

Process of implementation:

- Considering the bottlenecks the implementation process should be as follows:
- Ministry of Industries to initiate a collaboration between the private and public organizations and come to a common platform
- ICT Division to create a platform for the supply chain management system
- This will be done in collaboration with Private Logistic Companies, Ministry of Postal Services and Ministry of Railways
- Rollout the project in phases firstly in the divisional regions where internet connectivity and transport means are widely available.
- Ministry of Agriculture and Ministry of Industries to assist by providing support functions in developing the supply chain ecosystem

Timeline: Integrating the different platforms into one central database could be completed by the end of 2020. Onboarding the retailers around Dhaka will approximately take up till the end of 2021.

Possible Risks and Mitigation Strategies:

Risk	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Failure to develop integrated inventory management platform connecting the relevant parties	Startups like Shohoz, Pathao and private organizations ACI, PRAN have agile skilled teams which have been executing projects with immense success. A combined team of experts from multiple organizations could help mitigate the risk and make the most out of the project.	High
Ethical	Unethical usage of user data	ICT ministry will play a pivotal role in order to ensure data privacy of the users and the organizations involved	High
Partnership	As there will be multiple organizations, conflict of interest might arise	Strategic partnership management should be ensured by the lead agency and should involve another key stakeholder, Ministry of Agriculture	High
Timeline	The project being innovative and unique might take longer time to execute, especially with a lot of parties being directly involved	The segmentation of the project into multiple phases could help to reduce the disruption and calculated contingency plan should in be in place to avoid delay	Medium
Financial	The actual cost of implementing the project could be above and beyond the budget because of delays	Incase of budget shortages assistance from development partners like (UNCDF, BRAC) could be explored	Low

Scope of PPP: It will be crucial to establish public and private partnership to accomplish the desired outcome. Agri-product producers like (ACI, PRAN), logistics startups like (Shohoz, Pathao) and government entities like Bangladesh Railway and Bangladesh Post Office, will have to work in unison to implement this project.

Resources from the Private sector [technical/intellectual]: The startups and other private parties will mainly help with their technical and intellectual expertise.

Action Agenda 3

Challenge/Opportunity: The increasing mobile data cost is making it more difficult for the people belonging to the lower income group to reap the benefits of using mobile applications to avail better services such as - agri-based app, logistics app, and e-commerce platforms. During the pandemic there has been an unprecedented surge in data usage in the urban areas. However, the same can not be claimed about the rural areas. This could be attributed to the lower purchasing power of the people belonging to lower income households living in rural areas.

Estimated Impact (Quantitative): Implementation of policy to set a price ceiling on data price will enable millions of rural people to access digital platforms. Therefore, in order to encourage them to onboard into digital platforms it is imperative that the data cost is brought down.

Estimated Impact (Qualitative): The proposed measure could make it more affordable for lower income groups to access mobile agri-based apps, logistics apps, and e-commerce platforms will make their lives much easier.

Action Agenda:

Title: Onboarding policymakers to lower the cost of the mobile internet packages by 2020.

Summary: Government should enforce restrictions on telecom companies by putting a price ceiling to limit data package costs. This will encourage more rural people to onboard into digital platforms and enjoy digital products/services. Overall, this is aligned with the government digital Bangladesh objective and will also increase telecom companies' revenue in the long run.

Possible Lead Agency: Ministry of post and tele-communication with strong support from the Technical division under the ICT Ministry will act as the lead agency to facilitate the partnership among partners and the creation of an inventory management platform.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Ministry of Post and Tele-communication	Facilitate policy reforms required for implementation.
	ICT Division	Information dissemination
Private agencies	Telecom Companies	Telecom companies will be executing the orders

Role of ICT Division:

ICT division will have to disseminate information about the massive impact in the economy of reducing the cost of data. It will be a pivotal role which will help the stakeholders realize the impact and act accordingly to achieve the goal of digital Bangladesh.

Process of implementation:

- Considering the bottlenecks the implementation process should be as follows:
- Collaboration between public and private agencies and coming to an agreement about the scope of work. At this point all the parties should be well informed about their role.
- A project timeline should be locked, and a detailed Gantt Chart should be developed.
- Budget and implementation plan should be formulated.

Timeline: The Ministry of Post and Tele-communication could implement the regulation of reducing the data price by 2020.

Possible Risks and Mitigation Strategies:

Risk	Risk Factor	Risk Mitigation	Risk Intensity
Compliant	Telecom companies might reduce some packages and increase cost of other	They might increase the cost of certain packages by reducing others. Close monitoring will help to mitigate this risk.	High
Ethical	Unethical usage of user data	ICT ministry will play a pivotal role in order to ensure data privacy of the users and the organizations involved	High
Alternative	If broadband services price are also reduced mobile data usage may not increase	If alternative means of using internet becomes cheaper than care should be taken to restrict such actions	High
Ineffective communication	If people are not completely aware of the new changes, it will not be effective	The marketing communication must be localized and importance and benefits of digital inclusion should be communicated effectively in rural areas.	Medium
Financial	Telecom companies are already experiencing lower margins from talk-time as a result of software like WhatsApp and Messenger. Data cost reduction could take further toll on profitability	Tax could be slightly reduced in the short-time to mitigate the risk	Low

Scope of PPP: The ICT division, Ministry of Post and Telecommunication and the Telecom Companies will have to work closely in order to achieve effective results from data cost reduction.

Resources from the Private sector [technical/intellectual]: The telecom companies have excellent marketing team which could help disseminate the information regarding the reduction of cost of data. Moreover, benefits of digital inclusion should also be clearly communicated.

Action Agenda 4

Challenge/Opportunity: Smartphones are still not preferred by rural mass people over feature phones. Therefore, causing hindrances on the implementation of digital supply chain system

Estimated Impact (Quantitative): Making smartphones accessible is potentially the biggest step towards digital inclusion of millions of rural people.

Estimated Impact (Qualitative): Improve quality of lives of farmers/rural traders as they will be able to take advantage of innovative technologies that are designed to cater their needs

Action Agenda:

Title: Popularize use of smartphones in rural areas by 8FYP

Summary: Government could partner with telecom companies to incentivize use of smartphones in the rural regions. Talk time bonus could be provided and the overall price of the smartphone could be reduced by providing subsidies. Cost of project implementation could be shared between telecom companies. Other startups and conglomerates could also be encouraged to take part in the project who might be directly benefited by bringing rural communities within the realm of digital inclusion.

Possible Lead Agency: Ministry of Finance with strong support from the Ministry of Industry which will act as the lead agency to ensure policy to reduce the cost of smartphones.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Ministry of Finance	Facilitate policy reforms required for implementation.
	Ministry of Industry	Will take lead to implement policy
	ICT Division	Telecom companies will be executing the orders
Private agencies	Telecom Companies	Telecom companies will be executing the orders
	Distributors and wholesalers	Will ensure distribution in rural areas

Role of ICT Division: ICT division will have to coordinate between the parties. It will bring the parties together and steer towards a common goal. It will play a pivotal role which will help the stakeholders realize the impact and act accordingly to achieve the goal of digital Bangladesh.

Process of implementation: Considering the bottlenecks the implementation process should be as follows:

- Collaboration between public and private agencies and coming to an agreement about the scope of work. At this point all the parties should be well informed about their role.
- A project timeline could be locked, and a detailed Gantt Chart should be developed
- Budget and implementation plan will be formulated.

Timeline: The implementation of the project could be completed by 8FYP

Possible Risks and Mitigation Strategies:

Risk	Risk Factor	Risk Mitigation	Risk Intensity
Compliant	Ensuring same price in every location	Tight monitoring is required if caught selling at higher price, the seller should be punished	High
Ethical	For stock clearing selling feature phone at lower cost	They retailer should be ensured that excess stock of feature phone will be bought back	High
Partnership	As organizations from various backgrounds will be brought together, conflict of interests might arise.	Strategic partnership management should be managed by the lead agency with support from another key regulator, the Ministry of Finance.	High
Ineffective communication	If people are not completely aware of the new changes, it will not be effective	The marketing communication must be localized, and importance and benefits of digital inclusion should be communicated effectively in rural areas.	Medium
Financial	Telecom companies are already experiencing lower margins from talk-time as a result of software like WhatsApp and Messenger. Data cost reduction could take further toll on profitability	Tax could be slightly reduced in the short-time to mitigate the risk	Low

Scope of PPP: The ICT division, Ministry of Post and Telecommunication and the Telecom Companies will have to work closely in order to achieve effective results from smartphone cost reduction.

Resources from the Private sector [technical/intellectual]: The telecom companies have an excellent marketing team which could help disseminate the information regarding the reduction of cost of smartphones. Moreover, benefits of digital inclusion should also be clearly communicated.

Timeline: The implementation of the project could be completed by 8FYP

Action Agenda 5

Challenge/Opportunity: Large corporations are legally bound to only carry their own goods using their fleet. The biggest ramification of this law is that the vehicles have to complete the return trips with an empty load which results in huge transportation costs for companies. Simultaneously, the logistics sector has been experiencing a surge in demand for trucks during this lockdown.

Estimated Impact (Quantitative): Reformation of the law that binds corporations to not to carry other companies' goods need to be changed to ensure commercial viability for both parties. On an average, a truck with 5-tonnes capacity incurs a cost of BDT 12,000 (fuel, toll fee and port fee combined) to make a return trip to Dhaka to Chattagram. These transport costs can be cut in half if corporations can lend their fleet when not in use or during zero load trips.

Estimated Impact (Qualitative): To optimize and share resources between companies, a common understanding needs to be developed along with necessary policy reform. Collaboration with government agencies can also be explored by large corporations. For instance, lending some of their unused fleets to carry government supply of emergency reliefs and packages is one of the areas that can be further looked into.

Action Agenda:

Title: Policy reform to modify the law of lending fleets by corporations within 2020.

Summary: Firstly, the law should be changed by collaborating with specific policy making bodies so that corporations can lend to or share their fleets with other companies and government entities. In this arrangement, both cost and resources can be optimized.

Possible Lead Agency: Ministry of Road Transport and Bridges with strong support from the ICT division which will ensure better utility of carrier truck and lorries.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government agencies	Ministry of Road Transport and Bridges	Facilitate policy reforms required for implementation.
	ICT Division	Coordinate between public and private entities
Private agencies	Conglomerates	Will be the party to take advantage of new policy
	MSMEs	Increase utility of present transportation vehicles
	Logistics Startups	Tech startups like loop and Truck lagbe can take advantage of new policy and induct the privately available fleets onto their platform

Role of ICT Division:

- ICT division will have to coordinate between the parties.
- It will bring the parties together and steer towards a common goal.
- It will play a pivotal role which will help the stakeholders realize the impact and act accordingly to achieve the goal of digital Bangladesh.

Process of implementation:

- Ministry of Road Transport Authority to take lead in reforming the policy
- ICT Ministry to develop a platform for providing data of access capacity in trains and postal cargos
- Private logistic companies can induct the privately registered trucks into their fleet, this will make the best possible utilization of resources and allow the owners of the private cargo vehicles to earn extra revenue.
- Private organizations can share their access capacity over the platform to rent out to other organizations or the government.

Timeline: Ministry of Road Transport Authority will be able to reform policy regarding private fleet lending by 2020.

Possible Risks and Mitigation Strategies:

Risk	Risk Factor	Risk Mitigation	Risk Intensity
Compliant	Ensuring same price in every location	Tight monitoring is required if caught charging higher price, the seller should be punished	High
Ethical	For stock clearing selling feature phone at lower cost	They retailer should be ensured that excess stock of feature phone will be bought back	High
Partnership	As organizations from various backgrounds will be brought together, conflict of interests might arise.	Strategic partnership management should be managed by the lead agency with support from another government agency, ICT division	High
Ineffective communication	If people are not completely aware of the new changes, it will not be effective	The marketing communication must be localized, and importance and benefits of digital inclusion should be communicated effectively in rural areas.	Medium
Financial	Telecom companies are already experiencing lower margins from talk-time as a result of software like WhatsApp and Messenger. Data cost reduction could take further toll on profitability	Tax could be slightly reduced in the short-time to mitigate the risk	Low

Scope of PPP: The ICT division, Ministry of Road Transport and Bridges will have to work closely in order to achieve effective results from better utility of private trucks/lories.

- 1) Karsten Horn, Director of International Sales, Inventory and Supply Chain Division of INFORM, 2014
- 2) Coronavirus Shutdown: Supply chain at risk – The Business Standard
- 3) Coronavirus impact: Disruption in supply chain worries garment exporters – The Financial Express
- 4) The Effect of COVID-19 on Bangladesh's Apparel Industry – LightCastle Partners

Post COVID-19 ICT Roadmap for Bangladesh

Private Service Transformation and Innovation

Post COVID-19 ICT Roadmap for Bangladesh: Private Sector Transformation and Innovation

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh is developing a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Private Sector Transformation and Innovation, with special focus on the cottage, micro, small and medium enterprises (CMSMEs), is one of the 18 priority sectors selected based on the impact of COVID-19 on the sector and its potential for transformation of the economy and society.

Why Private Sector Transformation and Innovation

Private sector plays a pivotal role in Bangladesh's economy and contributes towards economic growth through investment, production, and export. Private investment to GDP ratio in Bangladesh grew to 23.40 percent in 2018-19 according to Bangladesh Economic Survey 2019.

The cost of doing business, knotted with myriad bottlenecks and obstacles, is high in Bangladesh. This is reflected in the 'Ease of Doing Business' (EBD) index where Bangladesh was ranked between 177 and 178 out of 190 countries till 2015. The matter was recognised in 2016 and resulted in the formation of Bangladesh Investment Development Authority (BIDA); Bangladesh's rank has since improved to 168 as of 2019. Bangladesh's economy has sustained steady and impressive growth despite the high cost of doing business thanks to the resilience of Bangladeshi consumers in bearing the burden of high cost of living, emanating from the high cost of products and services, which do not give them 'value for money'.

There is a need for transformation of private sector from within, and COVID-19 outbreak has further emphasised need for a two-pronged transformation: one, embracing technology for efficiency and survival even in the midst of crisis, e.g. improving adaptability; second, improving the EDB rank so that cost burdens and hassle are minimised, attracting investment and growth and lowering of cost of living for all.

Impact of COVID-19

The pandemic has accentuated the challenges that businesses already face on a daily basis. Disruptions in production, sales, and delivery of goods and services have resulted in diminishing profits leading to reduced output and in some cases complete shutdown.

Constraints

In the wake of COVID-19, companies have had to reduce workforce, implement alternative office and factory hours, and allow work from home in response to the restrictions and realities imposed by the pandemic. The resulting need for flexible and agile management has proven challenging to the whole sector, more so for CMSMEs since majority of them have little to no familiarity with good management and leadership practices. Furthermore, their low levels of knowledge and capacity in taking advantage of available ICT tools coupled with the lack of access to digital devices, affordable Internet, and digital literacy have restrained them from taking advantage of the opportunities that digital integration could bring. Though mainstream businesses (formal sector) fared better at absorbing the shock of disruption due to variable levels of adaptability of digital means, many still could not prevent shutdown. As customers refrain from going to traditional brick and mortar outlets to purchase their goods and services, many businesses have been compelled

to transform by developing alternative sales channels through online sales and e-commerce. With shutdowns, lockdowns, and social distancing in place, both the supply chain and distribution networks have been severely hit, hampering both sourcing and sales of raw material, further increasing the price of the products and services for consumers.

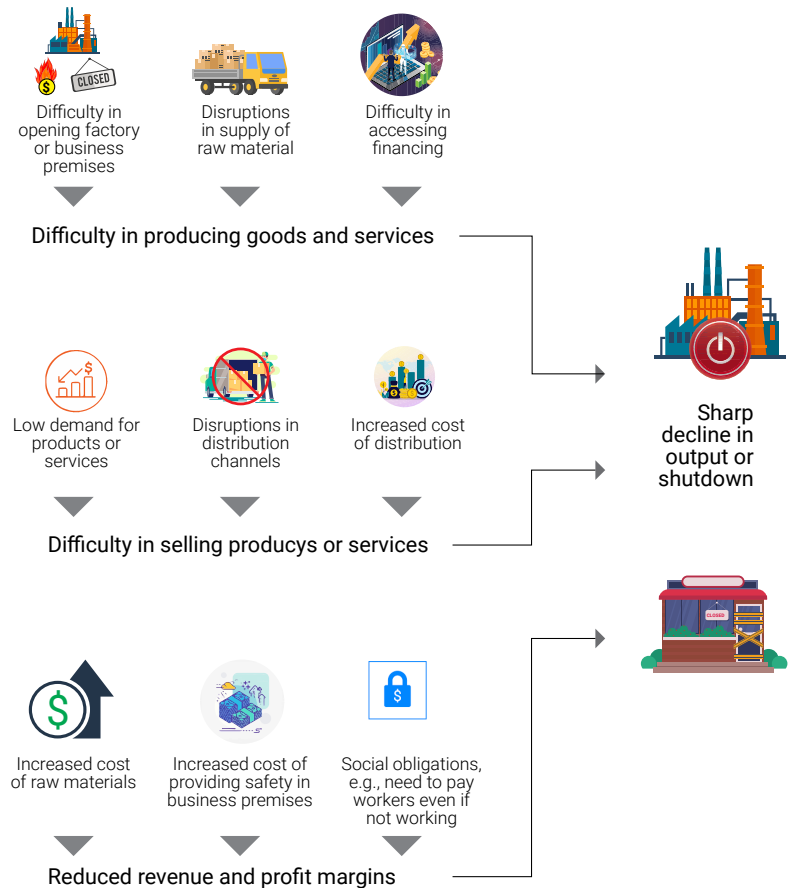


Fig 1: How businesses were affected by the COVID-19 pandemic

Ease of Doing Business indicators capture specific areas where improvements will allow the private sector to thrive as a whole, including CMSMEs, who are the resilient backbone of the economy. Essential indicators like regulation when starting a business, fluidity in acquiring construction permits or utility services, registration for acquisition of property, access to credit, protecting the interests of minority investors, paying taxes, cross-border trading, enforcements of contracts, and managing insolvency are some of the most critical areas where private sector, particularly CMSMEs, need practical interventions. Regulatory constraints have prevented the private sector from taking advantage of global marketplaces or e-commerce sites to sell their products. The emerging Gig economy and start-up ecosystem require preferential treatment if they are to retain domestic market shares against global giants, while at the same time serving customers beyond borders. The lack of a simplified compliance system has kept CMSMEs from taking advantage of stimulus packages announced by the government, especially during times of crisis. This requirement has now reached high levels of urgency if we are to avert shutdown of large numbers of small businesses and prevent massive unemployment. The lack of a comprehensive database for CMSMEs makes it very difficult to support those in need, especially during crises, since without information on them proper planning cannot take place.

Top Five Action Agenda

Taking learnings from local and global best practices and to tackle: (i) the effects of the pandemic, and (ii) the existing systemic and regulatory shortcomings of the Private Sector Transformation and Innovation and ICT in the sector, the following five interventions have been identified for perusing to remerge stronger.

Title	Access to digital device, affordable Internet and digital literacy for CMSMEs	Digital online training platform	Linking local manufacturers with global marketplaces	Launching of CMSME registry	Achieving 50th rank in the Ease of Doing Business
Why (To address :)	Mobile data, broadband and smartphone penetration low, data cost is high	Unprepared to adopt ICT technologies because of lack of skills and knowledge	Dependency on foreign bulk buyers for export	Appropriate labour planning cannot be made without a proper workforce database	This achievement will allow the private sector including CMSMEs grow faster, bringing more investment and achieving the target of Vision 2041
What	Reducing tariff to make internet and smartphone accessible to all	Develop digital online training platform including industry-specific skills development programmes	Accessing online retail stores and selling directly to the consumers through global marketplaces	Creation and regular maintenance of a sector-specific workforce database involving various trade bodies	Simplification of regulation for starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency
Lead Agency	ICT division	ICT division	Ministry of Commerce	Ministry of Labour and Employment	BIDA
Implementing Agencies/ Actors	Telecom operators, Device OEMs and resellers	Trade bodies, training content creator and training provider, digital payment partners	Exporters, content developers, trade bodies	All trade organizations	Cabinet Division, Ministry of Finance, Ministry of Commerce, Ministry of Power and Energy, BSEC
Coordinator	ICT division	ICT division	ICT division	ICT division	Cabinet Division
Partners	BTRC, NBR, Bank/ MFS, education / training institutions	Ministry of Education, Ministry of Commerce	Export promotion Bureau, Bangladesh Bank, NBR and customs	Bangladesh Skills Development Authority, Ministry of Commerce	Bangladesh Bank, NBR, RJSC
Financing and modality	Ministry of Finance, Development Partners Government to fix target and provide tariff incentive, private sector to make smartphone and data available and accessible, banks / MFS to ensure consumer financing	Ministry of Commerce, Ministry of Industries, Ministry of Education Development of e-learning platform, develop content in discussion with stakeholders, motivate private sector to participate in the program. Government to invest in the development of the platform, while the participants or their organization will pay for the training	Ministry of Finance Developing alternative sales channel for the exporters, establishment of global consumer brands, removing policy barriers to send products without L/C and settling payments for these exports. Exporters will bear the cost of setting things up	Ministry of Finance Preparation of a database model, develop database platform, plan periodic update mechanism. Government can take the development cost, while trade bodies will coordinate with respective private sector companies to collect workforce information	Ministry of Finance, Development partners, specially World Bank Undertaking year by year target for achieving desired ranking by FY2025

Post COVID-19 ICT Roadmap for Bangladesh

Private Sector Transformation

Thematic Paper

Background

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh has developed a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Private sector transformation, with special focus to the cottage, micro, small and medium enterprises (CMSMEs) is one of the priority sectors selected based on impact of COVID-19 and potential for transformation of economy and society.

Importance of Private Sector Transformation

Private sector plays a pivotal role in Bangladesh economy to grow and contributes towards the economic growth through investment, production and export. Private investment to GDP ratio in Bangladesh was grown to 23.40 percent in 2018-19 according to Bangladesh Economic Survey 2019.

The cost of doing business is high in Bangladesh with bottlenecks and obstacles, which is reflected in the 'Ease of Doing Business' (EBD) index. Bangladesh was ranked between 177 and 178 out of 190 countries till 2015. As the issue has been recognized in 2016, resulted in formation of Bangladesh Investment Development Authority (BIDA), the rank has been improved since then and the ranking was 168 in 2019. The growth of Bangladesh economy happens despite high cost of doing business thanks to resilience of Bangladeshi consumers to bear the burden of high cost of living, emanated from high cost of products and services they consume, which does not match with the 'value for money'. For the next generation growth, specially for the growth towards becoming an upper middle-income country and high income country by 2041, the cost and hurdle for doing business need to be reduce drastically, within the period of 8FYP. Thus, a joint effort of private sector and government is required during the next five years for the transformation of business ecosystem.

The digital integration of private sector is relatively dispersed. To certain extent digital transformation of the public sector happened exponentially during last one decade, at a faster pace than the private sector. While selected private sector advanced fast, others fell back severely. Particularly this is true for CMSMEs. The geographical concentration of digital transformation of private sector is also noticeable, beyond major metropolitan cities, it remained largely traditional. Those, who could adapt to digital way of managing business have been able to turn around quickly to absorb the shock better than others, unless there were externalities beyond their control. For example, some gig economy players like ride-sharing, travel industry, was hit hard. However, they turned around with repositioning themselves for their digital preparedness. The COVID-19 have given a costly lesson to many private sector entities and forced them to invest in ICT infrastructure and digital integration of business process.

There is a need for transformation of private sector from within and transformation for the private sector, and COVID-19 outbreak has further emphasized need for a two-pronged transformation: one, embracing technology for efficiency and survival even in the midst of crisis, e.g. improving adaptation capability; the other is improving EDB so that cost burden and hassle are reduced, which will attract more investment and growth along with lower of cost of living for the citizens.

Impact of COVID-19 on Private Sector

The private sector is adversely impacted in many ways because of COVID19 that can be summarized in the framework below [Figure 1]. The private sector entities faced difficulty in production and sales of their goods and delivering services that resulted in reduced profit and ultimately lead to reduced output of in some cases complete shutdown.

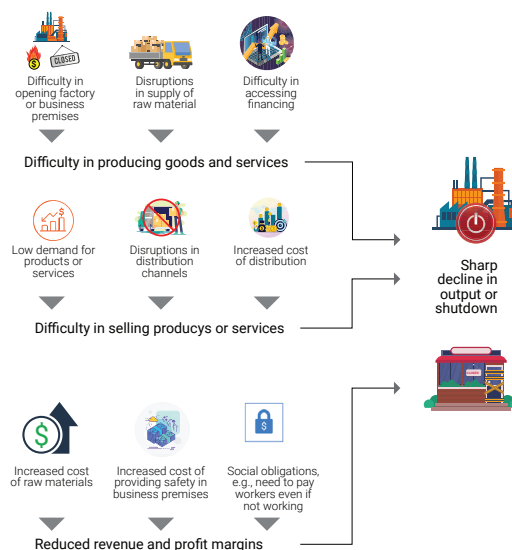


Fig 1: How businesses were affected by the COVID-19 pandemic

Challenges faced by the Private Sector

The constraints faced by the private sector are two-fold: constraints and challenges faced due to COVID-19 and systemic challenges. The private sector is facing problems in many ways because of COVID19.

The COVID-19 connected challenges

Continuity in production: Companies have had to reduce workforce, alternative office and factory hours, allow work from home to respond to COVID19 situation. This has been challenging to the whole private sector, particularly for the CMSMEs.

Alternate sales channel: Customers have stopped going to regular outlets to consuming products and services; the private sector needed to transform in developing alternative sales channels like online sales or e-commerce.

Distribution and supply chain network: Both the supply chain and distribution networks have been severely impacted because of COVID19 that hampered both raw material sourcing and sales as well as price of the products and services for the consumers.

Accessibility and utilization of ICT and digital tools: Bangladeshi private sector, especially CMSMEs are poorly prepared and has low levels of knowledge and capacity to take advantage of available ICT tools. The lack of access to digital devices, affordable Internet and digital literacy is also hampering the ideas for supporting them through digital means.

The mainstream private sector (formal sector) also absorbed the shock of disruption due to variable levels of adaptability to digital means of continuing business, as a result many of them could not prevent shutdown.

The systemic issues faced by private sector and multiplied during COVID-19

Cost of doing business: The EDB indicators capture specific areas where improvement will allow private sector to thrive as a whole including the smallholders, who are the resilient backbone of the economy. The essential indicators like regulation for starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency are the most important areas, where private sector, particularly smallholders are suffering.

Accessing global marketplace : Because of regulatory constraints, private sector companies cannot take advantage of large global marketplaces/e-commerce sites to sell their products.

Lack of Preferential treatment of domestic emerging sectors : The emerging Gig economy and start-up ecosystem require preferential treatment for retaining domestic market against global giants and serving consumers beyond Bangladeshi border.

Inability to take advantage of stimulus package : Due to lack of simplified compliance system for CMSMEs, they have not been able to take advantage of stimulus package announced by the government. There is an urgent need for this to prevent shutdown of large number of small businesses and massive unemployment.

Lack of CMSMEs Registry : Comprehensive database of CMSMEs is not available; hence it is very difficult to support the workers in need during the crisis and planning cannot take place properly.

Opportunities for the Private Sector

While private sector was hard hit by COVID-19, the emergent situation has also brought opportunities for the private sector. A number of private sector players have been able to reposition themselves with the new reality and have been able to meet new demand for products and services. Private sector in healthcare, supply chain, e-commerce, RMG have been able to meet the demand connected to restriction on movement and social distancing. Many CMSMEs have been able to join F-commerce for selling online. The demand for productivity and remote work related digital solutions increased manifold. The demand for mobile financial services increased.

Those, who moved to 'work from home' modality, have been to save cost on rental, electricity and other costs and employees have been able to save on transportation cost. For many private sector entities it is a discovery to combine work-from-home and in person officing and permanently reduce cost of doing business. COVID_19 has left a permanent mark on the work and collaboration culture across the globe and in Bangladesh.

The COVID-19 also identified new divides, especially digital divide for the population as for the CMSMEs, as they have suffered most for not having access to digital devices and Internet. Due to lack of digital literacy and affordability most of the children and students suffered and are continuing to suffer for not having classes. This situation is forcing the government and private sector to go for ambitious plan or universal access to digital ecosystem with access to device, Internet and digital learning. There is a scope for second wave of financial inclusion by covering all citizens under digital financial services, along with payment services, the private and government are now thinking to launch digital credit, savings and insurance. The market size for these two initiatives is USD 30 Billion in next five years. Quick turn around of the pharmaceutical industries with existing capacity is opening up opportunities for it for USD 50 Billion market for vaccine. The example may go on. It is time for working on listing of all these opportunities and working together with the government for grabbing these opportunities.

Action Agenda

The action agenda for the private sector, as mentioned is two-fold:

- A. Preparedness and Digital transformation for continuing business without significant disruption during any crisis.
- B. Leveraging new business opportunities while reducing digital, financial and other divides for building an inclusive and prosperous Bangladesh, as the agenda for 8FYP.

For ensuring these two, private sector and the government need to work together for removing all barriers hindering doing business with ease and with high standard of compliance.

The top 5 agenda are elaborated in the text below.

Action Agenda 1

Universal access to Digital Ecosystem with access to digital device, affordable Internet and Digital Literacy

Challenge/Opportunity: Despite phenomenal growth in last one decade, access to digital opportunities is still incremental. A majority of the population cannot afford a smartphone, which is increasingly becoming a tool for business or access business efficiently (like e-commerce and digital wallet etc.). A study suggests around 76% of the population don't have access to smartphones. The penetration of usage of computers or laptops are much less.

Besides, data access is still considered expensive as well as telecom network or internet access is not up to the mark in every location, especially in rural areas. Digital online classes are also not equally accessible everywhere and the cost of going online can be high for lower-income groups. There can be a campaign targeting lower-income groups for the benefit of the digital economy.

Estimated Impact (Quantitative): Though this will have a holistic impact across the nation but the target for the primary beneficiary will be lower-income people, especially MSME stakeholders. The remote students as well as rural producers. Only 35.4% have one smartphone, where majority may not be very standard smartphone, Target can be taken to increase it to 50-65% of standard smartphone user.

(Unless otherwise a project designed to subsidize the cost of devices and set a particular beneficiary group with a fixed number in mind.)

Estimated Impact (Qualitative): Encourage the digital economy. Enhances the adoption of digital technologies as well as its penetration. Increase of adoption of standard smartphone will make MFI usage easier and access to e-commerce activates. Which will encourage small to adopt to digital economy and trade through digital platforms.

Many students are the victim of digital divide when it comes to accessing education content online, to overcome this, the only way is to mitigate the digital divide.

Action Agenda:

Title: Enabling accessibility of the smartphones and internet by the less privileged, especially to be able to do business through digital channels and to access education through digital platforms.

Summary: Tariff issue can be addressed immediately, policymakers may decide to give such benefit for 2-3 financial year to encourage the digital economy growth.

One to three years for phase by phase project can also be implemented in case any specific subsidiary program is designed for income lower-income groups, where subsidized devices are provided.

Possible Lead Agency: ICT Division can take the lead, may appoint an existing project like 'leveraging ICT for Growth (LICT)' or a new committee to oversee the agenda.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government Agencies	Ministry of Posts, Telecom & ICT and ICT Division	Decision making on policy issues and take measures to ensure to reduce digital divide
	Bangladesh Telecommunication Regulatory Commission (BTRC)	Regulator for all mobile operators and internet. If mobile telecom's social obligation fund can be used for this purpose.
	NBR & Customs	Tariff and Taxes on digital device and services
Private Agencies	Telecom Operators	Telecom and data service providers, designing cost efficient data packages. Work with education institutions to provide free access to education content.
	Device OEMs & re-sellers	Can help to create or identify devices or price category of devices which can be given tax holiday or assist to design a project to provide loans or EMI facility to poor (through MFI or other financial institution. The devices should maintain standard.
	Banks, MFS & NGOs	Can enable easy access to finance acquiring smartphones through credit programs or EMIs.
	Education Institution	Design education and training program that can run in slower internet speed and cooperate with telecom to enable free access to education content.

Role of ICT Division:

- ICT Division can take the ownership and connect all the relevant stakeholders in public and private sectors to achieve the goal.
- Form a committee/or designate to work different stakeholder to achieve their goal.
- In addition can take.

Process of implementation:

- Define the goal, will it universal tariff waiver or limited subsidiary targeting a fixed number of beneficiaries or for a limited time. Include public sector stakeholders in the decision-making process (NBR Customs and BTRC)
- Selecting private sector partners. NGOs or microcredit organizations can also come forward here.
- Work with OEMs & re-sellers for reducing cost of devices.
- Working with education institutions to give their specific domain zero cost access through telecom operators (example they provide with Facebook WhatsApp and few other services.)
- Design campaigns elaborating on the benefit of adopting the digital economy.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Tariffs or taxes cannot be waived to bring down the cost.	Project and campaign can be designed to at least reach the partial goal, example working with OEMs and manufacturers for certain cheap models to be available. Free access to online education domains can be worked out between BTRC, Telecom operators and Education providers to achieve the partial success of the project.	High
Partnership	Partnership between OEM & resellers and	Strategic partnership management should be managed by the lead agency with support from another key regulator, the Ministry of Finance.	Low
Timeline	Government not able to modify taxes for this fiscal year, hence get delayed by a year.	Focus to bring down cost from other way or to make financial resources available to adopt smartphones or other devices by poor.	High
Ethical	Net neutrality not maintained by telecom providers by promoting their own digital products, while expected platforms are slow to access.	BTRC should enact strict net neutrality policy, and monitor.	Medium

Scope of PPP:

Partnership between government and Telecom operators where, depending on the policy adoption, government can provide subsidies or tax break. And telecom operators provide smartphones to certain select groups to encourage digital economy.

Resources from Private sector [technical]: Telecom providers to cooperate with the digital education content to be accessible freely. There can be microcredit loans for buying smartphones (But to note these have to be to the right individual with proper minimum income, least it become a burden. Otherwise there will be the opposite effect.).

Resources from Private Sector [financial]: Banks, MFS organizations and NGO can work with lower-income people in giving them finance to access smart devices.

Action Agenda 2

Digital Online Training Platform for Private

Challenge/Opportunity: Many organizations in the private sector are unprepared to adopt the ICT technologies, mainly due to the lack of skills. At the same time in the age of fourth industrial revolution it is necessary to adopt new technologies in respective industries.

There are efforts sporadically but yet to gain momentum and often lack uniform platform. During the COVID-19 crisis, many organization are left behind due to the lack of know-hows about ICT tools and technologies. This provides opportunity to create a platform for training and development of the private sector industries and their stakeholders. This can help to prepare, train and educate the private sector industries as well as the CMSMEs to adopt digital systems as well as other necessary skills. Respective industry sector skill training option should be made available or have the option to be added gradually. Also special attention should be made on preparing a comprehensive program where CMSME sectors producers and manufacturers are going to learn about online market places, digital payment systems, online marketing, supply chain, and usage & leveraging of existing distribution and delivery systems. The CMSME sector often not adequately skilled in ICT tools. It can be analyzed if the existing service providing organizations or platforms is enough or is there need for any new platforms for specific market.

Estimated Impact (Qualitative): Increase in business efficiency through better skilled human resource will overall increase the profile of the respective sectors. This will also prepare the human resource for the increasingly global competition.

Action Agenda:

Title: Digital Online Training Platform for Private Sector

Summary: Build digital online skill training platform where business and industries of all size can use for skill development training from ICT to industry specific skill training. The platform will be developed and maintained by the ICT Division and may take the lead in developing certain training content specifically for CMSME like training on online market places, digital payment systems, online marketing, supply chain, and usage & leveraging of existing distribution and delivery systems. While for larger industries private sector or respective trade bodies can come up with respective industry training content.

Possible Lead Agency: ICT Division or any of its organization, example A2I. The platform will be developed and maintained by the ICT Division and may take the lead in developing certain training content.

Possible connected agencies:

Broad Group	Specific Entities	Role and Resources
Government Agencies	ICT Division	Develop and maintain certain platform
	Ministry of Commerce	Supervise the technical implementation of various training content from different industrial sector. Coordinate with international trade partners to develop rich training program and implement through the platform
	Bangladesh Posts & E-posts	Public sector like Bangladesh Posts and its network initiative of E-Post should use the platform to train the business, especially CMSME on utilization of its services.
Private Agencies	Trade bodies (FBCCI, MCCI, BGMEA, BKMEA, BTMA, BTA, and LFMEAB, etc). Also BASIS & E-cab etc.	To assist in creating impactful training content.
	Digital/online payment & MFS – bKash, Nagad, Rocket, UCash etc.	To be incorporated as payment options (if applicable) and also to create financial system usage training contents.
	Any other training content creator or specialized skill certification provider	Create training content and and provide skill training and certification through the platform.

Role of ICT Division:

- Design and develop the platform based on feedback from various stakeholders.
- Taking ownership of the platform

Process of implementation:

- Form a committee comprising of members from different stakeholders
- Develop a e-Learning and training platform
- Develop relevant eLearning content by identifying the needs, including financial education
- Encourage private sector organization and trade bodies to come up their respective industrial sector skill training, which this new platform will host.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Financial	The cost recovery may not be possible from the platform. As most training need to be free for learners.	Some sponsored training programs and promotional activities can be there to recoup some cost. While specialized training program can be there as paid program.	High
Technical	Some sectors might be disadvantaged to make use of the platform, especially CMSME. Many CMSME's are informal.	Work with organization like SME Foundation and others to disseminate information and arrange workshops.	High
Competition	The platform will have competition from other online eLearning platforms, local and international, in certain skill categories.	Being competitive will benefit the platform in terms of quality. Maintenance and R&D team need to be deployed to keep the platform in the competition.	High

Scope of PPP:

- Private sector organization can partner-up with ICT Division in developing the platform.
- Trade bodies can also partner up in developing training content in certain industrial sectors.

Resources from Private Sector [Technical]: Respective private sector organization from various industrial sector need recognize different skill requirements and their global standards. Share technical resources while developing training content.

Action Agenda 3

Linking local manufacturers with global marketplace

Challenge/Opportunity: Recent COVID-19 have shown us our weakness on depending on foreign buyers for export orders. In RMG sector, BGMEA data shows that \$3.18 billion (BDT 27,000 Crore) worth of orders cancelled from 1,150 factories. The factories couldn't afford to give salaries to the workers and risks large number layoffs.

This risk could be minimized if manufacturers can access the buyers directly through the online retail stores, like Amazon, Ebay or Etsy, etc. This will help them establish the local manufacturers their own brand and alternative sales channel. Similar strategy is applicable for leather industry as well.

But due to local Different marketplace and platforms have different rules and guidelines. But there are policy hurdles to this, for example, it will need to ship products without opening LCs and receive payments later after completing sales or at a certain intervals. Which would also require quick transactions of foreign currency to local as the manufacturer will have to keep the production and operation running smoothly. Local factories can work with local ICT firms on supply chain and maintaining their virtual store on global online stores.

Estimated Impact (Quantitative): Global online fashion industry is estimated at USD \$600 Billion, where online market places like Amazon have a significant portion. Gaining a fraction of that market would be a great achievement.

Estimated Impact (Qualitative): Local manufacturers can create alternate sales channel, besides export orders. Some may create their own brand and establish foothold abroad. On the manufacturing side, it will help maintain steady work at the factories when there's slump in export orders.

Action Agenda:

Title: Policy reforms for local manufacturers to link directly with global marketplace.

Summary: There needs to be trade policy reform for our local manufacturers to have seamless access to the global marketplaces, where they can sell directly to the consumers. Different marketplace and platforms have different rules and guidelines. But there are policy hurdles to this, for example, it will need to ship products without opening LCs and receive payments later after completing sales or at a certain time. Which would also require quick transactions of foreign currency to local. This process of accessing the market through platforms like, Amazon, eBay, Etsy and Alibaba, etc, has huge potential for our manufacturers like RMG and leather. Local ICT firms can give service to the manufacturing in establishing supply chain and maintaining their virtual store at global online marketplace.

Possible Lead Agency: Ministry of Commerce, for trade policy reforms.

Possible connected agencies:

Broad Group	Specific Entities	Role and Resources
Government Agencies	Ministry of Commerce & Export Promotion Bureau	Policy reforms and promoting the business concept.
	Bangladesh Bank	Supervise the technical implementation of various training content from different industrial sector. Coordinate with international trade partners to develop rich training program and implement through the platform
	NRB & Customs	Public sector like Bangladesh Posts and its network initiative of E-Post should use the platform to train the business, especially CMSME on utilization of its services.
	ICT Division	Tax and custom charges regarding export (without L/C).
Private Agencies	Trade bodies (BGMEA, BKMEA, BTMA, BTA, and LFMEAB, etc)	Promote the concept among its members, once the policy is defined
	BASIS & E-CAB	Provide technical assistance to manufacturers on adopting technologies and work with its members companies and global e-commerce organizations.

Process of implementation:

- Form a high level committee for policy reform, and sub-committees to identify friendly policy needs for different sectors
ICT Division along with private sector prepare SOPs, which will help manufacturers adapt and design their supply chain accordingly.
- Trade bodies to promote the concept among its member.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Competition	Global competition	It will be up to the manufacturer to maintain quality and offer competitive prices in the market place. Manufacturers should invest in market research and promotions to understand customer preferences and sales.	High
Technical	Maintaining supply chain will be a challenge from time to time.	Manufacturers should give attention to the supply chains for production to in time shipment to partners and clients.	Medium
Financial	Manufacturers have to take the financial risk, and produce from own investments. And bank credit may also be hard to come by.	Sound business planning and understanding of the target market is required.	High

Action Agenda 4

Digital Registry of CMSMEs

Challenge/Opportunity: Lack of CMSME database and their workforce was felt severely during COVID-19, when the government wanted to support them. Appropriate labor planning cannot be made without one. As recently as during the CIVID-19 crisis RMG sector database was made for government stimulus, similar need is there for all sectors, particularly informal sector. Addressing he chillanges of informal sector is possible and the essential first step is to develop digital registry of all CMSMEs.

Estimated Impact (Quantitative): There are around 4.5 million employed in RMG sector and another 0.5 million in leather industry. Among an estimated 90 million working population, there are significant number employed in various industrial and service sector. Sector wise approach will give us proper picture of the workforce and their attribution.

Estimated Impact (Qualitative): CMSME registry will help us mapping the skills, needs, pattern of business, policy formulation, their training and development need assessment, skill upgradation and also advice in skill transfer from industry sector to sector.

Action Agenda:

Title: Prepare a digital CMSME registry, complete with skills & MFS information (along with general information).

Summary: The creation and regular maintenance of the workforce database through all the trade organizations will be crucial in planning future policies and workforce development plans. The database should contain relevant skill information, along with general information. It should also be connected with NID platform and have their respective bank or mobile wallet information.

Possible Lead Agency: Ministry of Commerce and Ministry of Industries together with Ministry of Labor and Employment and Ministry of Commerce in collaboration with other ministries will act as the lead agency to develop the workforce database.

Possible connected agencies:

Broad Group	Specific Entities	Role in Implementation
Government Agencies	ICT Division	Lead agency for implementation.
	Ministry of Labor & Employment	Facilitate policy reforms required for implementation.
	Ministry of Commerce	Facilitate policy reforms required for implementation.
	a2i	Assist the government in the technical aspects
	National Skill Development Authority	Facilitate skill development policy and recognition of skill sets required for various trades.
Private Agencies	All trade organizations	Assist the government in the technical aspects and access to the workforce data.
	MFS	Opening mobile wallets for all workers (if required)

Role of ICT Division:

- ICT division will work closely with the stakeholder to set specific target for each sectors as well as realistic timelines for achieving those.
- Develop and maintain the database.
- Ensure privacy and security of the database.

Process of implementation:

- Form a supervisory committee or team with respective ministries and all stakeholders on board.
- Prepare a standard database model, select host, and build the database platform. Study the available model like the one from BGMEA & BKMEA.
- Coordinate with stakeholders, ministry, and trade bodies for collecting their respective members' data, with in specific date.
- Set standards for the updating cycle.

Possible risks and mitigation strategies:

Risk Type	Risk Factor	Risk Mitigation	Risk Intensity
Technical	Some organizations may not be willing to share data. Data and information being missed out.	Bring the out value and benefit of sharing the data. Suggest policy changes to respective ministry to ensure access to data. Plan with the stakeholder onboard to ensure ground level survey to mitigate any missing data issue.	High
Privacy	Data and information leakage and miss-use, especially MFS information.	Ensure security of database through enterprise level security. Set SOP for data collection to ensure privacy.	Medium
Timeline	Ground level data survey may become necessary, which will be time consuming as well as financially costly.	Keep adequate time and have flexible phase design to ensure a coordinated effort and maintain a timeline.	Medium

Resources from Private sector [technical]: Cooperation between government institutions and private organization to share their respective data and information. Knowledge sharing on skill level and requirement for various trades. Private sector advisory board can be formed

Action Agenda 5

Title: Achieving 50th rank in the Ease of Doing Business

Summary: This achievement will allow private sector including CMSMEs grow faster, brining more investment and reaching target of Vision 2041. The agenda will cover the following issues:

- a. Simplification of regulation for starting a business,
- b. Dealing with construction permits
- c. Getting electricity
- d. Registering property
- e. Getting credit
- f. Protecting minority investors
- g. Paying taxes
- h. Trading across borders
- i. Enforcing contracts and resolving insolvency.

Possible Lead Agency: BIDA

Financing: Ministry of Finance, Development partners, specially World Bank.

Post COVID-19 ICT Roadmap for Bangladesh

Public Service Transformation and Innovation

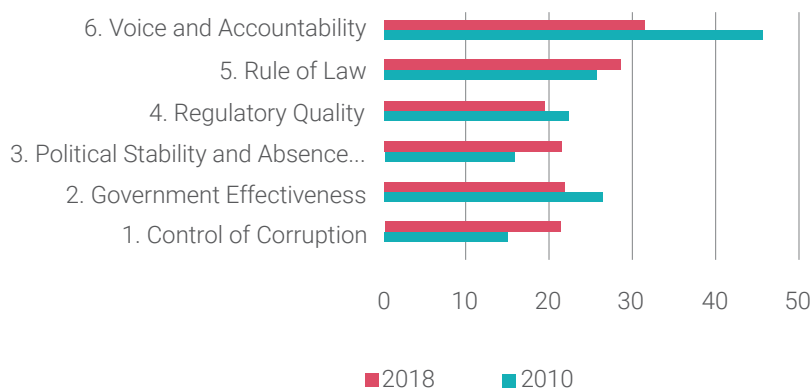
Post COVID-19 ICT Roadmap for Bangladesh: Public Sector Transformation and Innovation

How the Roadmap came to be

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh in collaboration with the Aspire to Innovate (a2i) Programme, DataSense @ iSocial, Innovision, and Light Castle Partners] has developed a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Public sector transformation and innovation is one of key agenda of this roadmap.

Why Public Sector Transformation

The Eighth Five Year Plan [8FYP] emphasizes on strengthening public administration, public institutions and governance and first chapter of the plan is on this issue. However, the most prominent cross-country comparison of progress in institutional performance and governance is "World Governance Indicators". Figure1 shows that Bangladesh's relative position has only moderately improved in three indicators – namely, 'Control of Corruption', 'Rule of Law' and 'Political Stability and Absence of Violence/Terrorism' – while remaining less than par in other key areas such as 'Voice and Accountability', 'Government Effectiveness' and 'Regulatory Quality'. The government understands that the governance and the institutional structures of UMIC and HIC are vastly different from those found in low income and LMIC countries [GED, 2020, pg. 4].



Source: WGI, World Bank, 2019 in GED [2020]

Figure 1. Bangladesh in The Worldwide Governance Indicators

What is Already Achieved

Since the launch of 'Digital Bangladesh' in 2009, Bangladesh has become a global example of digital transformation of public services. The Government has made all necessary information of the Ministries and other relevant notifications available for public through various websites. In addition, the Government has trained more than 50,000 public officials to maintain these websites and update data and information regularly. The Government also introduced a 'national portal' containing information from all the Ministries, while e-Service centres were introduced at the District level enabling the Districts to share information online. Moreover, a National Data Centre facilitating the dissemination of citizens' National Identification (NID) Cards and voter lists has been established and made operational.

The Government has also established the National ICT Infra-Network for Bangladesh

Government Phase II, which implemented 800 video conferencing systems at different Ministries, Departments and Upazila offices with the aim to ensure 10Gbps capacity network at the Upazila levels and 100 Gbps capacity networks at the District levels. The key public institutions such as the Bangladesh Investment Development Authority (BIDA) has introduced the system of online registration and work permits for foreign nationals and investors, while the National Board of Revenue (NBR) has introduced a system allowing the filing of tax returns online, using an online tax calculator. The Government has also launched "Shebakunjo" – a single access point that will provide about 400 services from 36 directories.

The government's e-governance initiative comprises 5 components i.e., Service Process Simplification (SPS), 'less paper office,' government services portal, land information services, and government forms portal. The SPS aims to simplify processes involved in public service delivery and reduce the time required to deliver them. A total of 424 public services were included in this programme till early 2020. The government is committed to strengthening e-governance further by including more services under SPS.

Constraints

The transformative aspiration articulated in perspective plan 2041 (PP2041) has become more challenging due to the Covid-19 global pandemic [GED,2020]. The challenges, inter alia, Bangladesh is going to face are: improving administrative capacity of public institutions, ensuring participation, accountability and transparency in decision-making, commitment to transparency and Participation of citizens, and addressing Corruption and grievance of citizens. However, the issue of 'Data Availability' requires special mention. There is serious scarcity of data; data is not also made available in a timely fashion, websites are not regularly updated and not user friendly.

Action Agenda

Taking learnings from national and global best practices and to make the government more resource-efficient and responsive to citizens' needs, the following top five action agenda have been identified.

Title	Effective and Scaled up 2000+ citizen centred services	Paperless Government	Institutionalization of innovation culture	Citizen's participation in governance	Data-driven policy framework:
Why (To address :)	Basic driver for digital innovation of the government was reducing time, cost and hassle of accessing government services. COVID-19 also reinforced the needs for digitization of services as it disrupted access to government services.	Reduction of time in the decision making cycle thus accelerating implementation of development plans. Reduction of corruption. Increase transparency and accountability. Efficient management of government documents and data. Facilitating data-driven governance.	Modernization of government for embracing challenges of becoming a middle income country. Promotion of indigenous solutions for unique challenges of Bangladesh governance system.	Realization of principle of inclusion. Public accountability to citizens. Implementation of citizen-centered design of the government.	Ensuring participation of citizens/civil society/think tanks in policy support. Ensuring efficient and corruption-free utilization of scarce resources. Identification of the right solution for each problem.
What	Digital service platform will be developed for connecting individual services for interoperability. All services will be integrated with digital payment systems. One-ticket platform and digital government tracker will be created. Web-based services, mobile app-based services, digital centers and helpline 333 will be brought under one framework. Number of digital centres will be increased to 9,000.	Expansion of e-Nothi across all government offices by 2021. Introduction of advanced digital literacy of all government officials. Universal access to mobile digital devices for the government officials. Launching of KPI for each institution and official. Integration of national planning documents, APA and KPI. Completion of digital infrastructure.	Appointment of Innovation team in each line ministry, division and department. Institutionalization of system of the recognition of innovation. Introduction of a system of reward and reprimand. Allocation of adequate financial resource.	Development of national grievance redressal platform. Ensuring Citizen's access to government data. Decentralization of government and budget systems. District level planning and budgeting.	Strengthening open government data initiative with retrievable format. Intelligent Creation of Analytics Dashboards for specific category of issues to build a culture of using data in government decision making process
Lead Agency	Cabinet Division	Cabinet Division	Cabinet Division	Cabinet Division	MOP
Actors	MOPA and all line ministries, division, departments, local government institutions	MOPA/All line ministries and agencies.	MOPA/All line ministries and agencies.	MOPA/MOP/All line ministries and agencies.	Cabinet Division/BBS/MOF/All line ministries
Coordinator	ICT Division	ICT Division	ICT Division	ICT Division	ICT Division
Facilitator	a2i	a2i	a2i	a2i	a2i
Partners	MFS/DFS partners (e.g. Nodog, bKash), BTRC, AMOTOB/Mobile operators/e-CAB/BoP	UNDP/Government of Estonia/World Bank	ICT Industry/UNDP/Innovation fostering institutions	ICT Industry/UNDP	Development partners/Academia/ Think Tanks
Financing and modality	Line Ministries/PPP	MOF/World Bank	MOF/UNDP	MOF/World Bank/DFID/EU	MOF/World Bank/EU

Post COVID-19 ICT Roadmap for Bangladesh

Public Sector Transformation and Innovation

Thematic Paper

Background

With the growing certainty that COVID-19 is here to stay, the ICT Division of the Government of Bangladesh in collaboration with the Aspire to Innovate (a2i) Programme, DataSense @ iSocial, Innovision, and Light Castle Partners has developed a roadmap to fight the pandemic and ensuing crisis and to find innovative ways to flourish in the 'new normal'. Public sector transformation and innovation is one of key agenda of this roadmap.

Since 2009, the public sector's digital transformation started its journey under the aegis of 'Digital Bangladesh', and for the first time, the focus on digital transformation of the public sector was citizens. Since then, access to government services through digital means achieved significant success with many 'low hanging fruits', which created momentum for second generation digital transformation of public sector. This momentum was reached at a time, when COVID-19 pandemic outbreak when all the systems and services developed in last one decade had a real test. The COVID-19 vindicated the digital Bangladesh on the one hand, on the other, it also exposed the areas, where there is a need for paradigm shift for making Bangladesh truly inclusive. Most important, the necessary conditions for the paradigm shift are ready, all is we must ensure the sufficient conditions.

This thematic paper is about identifying areas, focusing on which will ensure Bangladesh's journey towards prosperity and inclusiveness. Eighth Five Year Plan period is coincided with the strategic roadmap laid out and the plan also emphasizes on strengthening public administration, public institutions, and governance and first chapter of the plan is on this issue.

Importance of Public Sector Transformation

A welfare state like Bangladesh has been attempting to make a breakthrough in a few areas:

- a. Equitable growth, meaning those who are left behind grow faster than who are ahead. This agenda is connected to rapid poverty alleviation, fostering growth of micro and small entrepreneurship, ensuring universal access to basic services, access to finance and generation of decent employment opportunities for all, especially youth. Ad hoc and real-time planning allows a flexible reaction to changing demand or supply situations. Planning cycles and frozen periods are minimized and planning becomes a continuous process that is able to react dynamically to changing requirements or constraints (e.g., real-time production capacity feedback from machines). Once the products are sent, increased flexibility in the delivery processes allows customers to reroute shipments to the most convenient destination.
- b. The next generation of performance management systems provides real-time, end-to-end transparency throughout the supply chain. The span of information reaches from synthesized top-level KPIs, such as overall service level, to very granular process data, such as the exact position of trucks in the network. This range of data provides a joint information basis for all levels of seniority and functions in the supply chain. The integration of data of suppliers, service providers, etc. in a "supply chain cloud" ensures that all stakeholders steer and decide based on the same facts.
- c. Social protection system, which addresses challenges of market failure and provisions for public goods for marginalized.
- d. Institutional strengthening for ensuring rule of law and maximum utilization of scarce resources, generated predominantly from domestic sources, by ensuring elimination of corruption.
- e. Ensuring public security and protection so that all citizens feel face enjoying freedom of belief, freedom of movement and freedom of choices, including choice of profession.
- f. Participation of citizens in building a democracy where citizens enjoy freedom of speech, religious beliefs, political choices, and culture of pluralism.

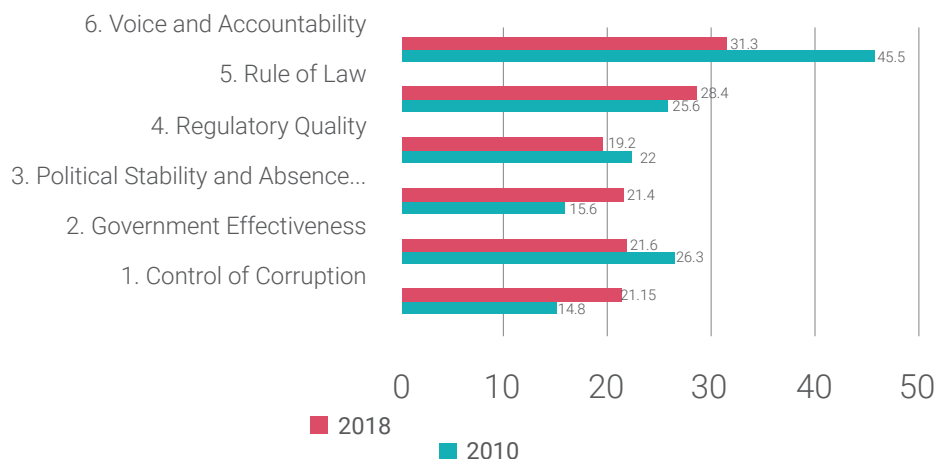
Bangladesh has made significant progress on most of the priority areas mentioned abroad, thanks to the efforts made for public sector transformation. As a welfare state, Bangladesh's public sector has two-pronged roles:

- A. Leading role in ensuring public infrastructure, policies and regulations, strong citizen-centric institutions, and rule of law.
- B. Facilitating role in ensuring creating adequate opportunities for all citizens and institutions to make their own choices for practicing good citizenship.

Bangladesh has been able to grow to the point when she can aspire to dive for a paradigm shift and COVID-19 has vindicated importance of this journey now. Whether we are on the right track on this journey, can be measured in many ways, one way is to measure our progress with global indicators. One such indicator is 'World Governance Indicators'. It is the most prominent cross-country comparison of progress in institutional performance and governance. Figure 1 shows that Bangladesh's relative position has only moderately improved in three indicators – namely, 'Control of Corruption', 'Rule of Law' and 'Political Stability and Absence of Violence/Terrorism' – while remaining less than par in other key areas such as 'Voice and Accountability', 'Government Effectiveness' and 'Regulatory Quality'.

The government recognizes that the governance and the institutional structures of upper middle income country (UMIC) and high income country (HIC) are vastly different from those found in low income and lower middle income country (LMIC) countries [GED, 2020, pg. 4]. Thus, public sector transformation and innovation is one of the central agenda of the ICT roadmap.

Figure 1. Bangladesh in The Worldwide Governance Indicators



Source: WGI, World Bank, 2019 in GED [2020]

The government understands that the governance and the institutional structures of UMIC and HIC are vastly different from those found in low income and LMIC countries [GED, 2020, pg. 4].

Bangladesh's Achievement

Bangladesh has become a global example of digital transformation of government services thanks to Digital Bangladesh agenda launch in 2009. The Government has made all necessary information of the Ministries and other relevant notifications available through various websites which are completely accessible to the public. In addition, the Government has trained more than 50,000 public officials to maintain these websites and update data and information regularly. The government also introduced a national portal containing information from all the Ministries, while e-Service centres were introduced at the District level enabling the Districts to share information online. Moreover, a National Data Centre facilitating the dissemination of citizens' National Identification (NID) Cards and voter lists has been established and made operational.

The Government has also established the National ICT Infra-Network for Bangladesh Government Phase II and has implemented 800 video conferencing systems at different Ministries, Departments and Upazilla offices. Additionally, successful implementation of the project will ensure 10Gbps capacity network at the Upazilla levels and 100 Gbps capacity networks at the District levels. In key institutions such as the former Board of Investment (BoI) now renamed as the Bangladesh Investment Development Authority (BIDA), the Government has introduced the system of online registration and work permits for foreign nationals and investors, while the National Board of Revenue (NBR) has introduced a system allowing the filing of tax returns online, using an online tax calculator. The Government has also launched "Shebakunjo" – a single access point that will provide about 400 services from 36 directories

The digitization of government services expanded and improved significantly. The government's e-governance initiative comprises 5 components:

- a. Service Process Simplification (SPS)
- b. Less paper office
- c. Government services portal
- d. Land information services, and
- e. Government forms portal.

The SPS aims to simplify processes involved in public service delivery and reduce the time required to deliver them. A total of 424 public services have been included in this programme till early 2020. "Seba Kunjo," a government services portal initiated in 2014, to provide access to the major services has expanded significantly to include more services during the 7th Plan period.

Challenges and Priorities

The transformative aspiration of Bangladesh articulated in perspective plan 2041 (PP2041) has become more urgent due to the economic realities associated with the Covid-19 global pandemic [GED,2020].

As identified in the 8FYP, the challenges, inter alia, Bangladesh is going to face in its journey towards middle income country and high-income country are:

- a. Improving administrative capacity of public institutions for institutionalization of innovation culture
- b. Ensuring participation, accountability, and transparency in decision-making, commitment to transparency and

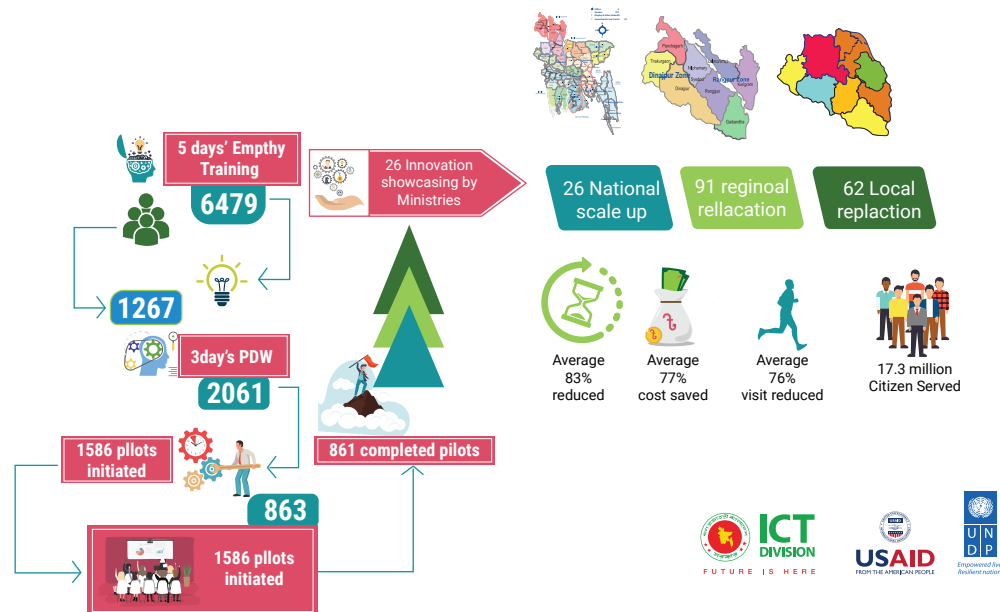
- c. Participation of citizens, addressing Corruption and grievance of citizens.
- d. Data availability.

COVID-19 exposed again the lack of necessary infrastructure and system for ensuring evidence-based decision making. There is serious scarcity of data; data is not also made available in a timely fashion, for example websites are not regularly updated. Availability of data and information needs to be given top priority to improve transparency and for conducting independent evaluation and assessment of government strategies, policies, activities, functions, etc. In many instances, the data provided in government websites are not user friendly. All public data collecting agencies, including BBS, needs to be strengthened to address this vital concern.

Improving administrative capacity of public institutions and institutionalization of innovation culture

There is a comprehensive Civil Service Innovation Culture program, spearheaded by A2I and it has generated significant positive results. Total 6479 government officials have been trained for 'empathy'; 1267 officials participated in innovation workshop followed by 3-day product development workshop for ideation of innovation for their respective agencies. This process resulted in 1586 pilots initiation, of which 861 was completed. Of these innovations, 26 have been scaled nationally, 91 in selected regions and in 62 local level replications. These innovations served 17.3 million citizens, which saved 83%-time, 77% average cost and 76% number of visits for accessing various services by the citizens [see Figure 2].

Major Achievements in Civil Service Innovation System Development



Major challenges and Lessons Learned

- a. Institutionalization of the innovation is required for sustaining success. It requires:
 - i. Inclusion of innovation management as part of the rules of business of each department
 - ii. Making participation or managing innovation as a part of job description of the officials
 - iii. Making innovation part of the annual programming agreements.
- b. A system of recognition worked very well. However, there is moral hazard identified, which is connected to those, who were not active part of the innovation process. This may be counter-productive for teamwork, which is essential for success of innovation.
- c. Ministry level ownership is required. A few issues are related to this:
 - i. Identifying fine balance between facilitating role and primary role of A2I.
 - ii. Ensuring continuation of innovation team until it reaches a stability in terms of serving the citizens.
 - iii. Scaling up require private sector engagement, where a defined boundary requires between A2I as a facilitating institution and private sector bringing expertise to follow the innovation design for large scale implementation and, most importantly Ministries as an owner of the innovation.

Action Agenda 1: Effective and Scaled up 2000+ citizen centered services

Purpose:

Accessing critical government services through digital means sitting at home or from UDCs. Upazilla Digital services Centres and District Digital services centres.

Basic driver for digital innovation of government was reducing time, cost, and hassle of accessing government services. COVID-19 also reinforced the needs for digitization of services as it disrupted access to government services due to restriction in movement and norms to be followed for health and safety.

Major components:

- a. Digital service delivery platform for each Ministry and agencies under the Ministry
- b. Introduction of mandatory Data interoperability protocol for delivery of all services by the government, private sector, and NGOs
- c. One stop service delivery for each category of services, where multiple Ministries or agencies are involved.
- d. Engagement of private sector in digitization of service delivery at scale and licensing service delivery to the private sector, where appropriate.
- e. Introduction of voice and other advanced technology for making access to services easier for all citizens, connected to 333 and Sebakunja.
- f. Introduction of integrated grievances management system by each Ministry and agencies and grievance management for each category of services, where Multiple Ministries and agencies are involved.
- g. Making service delivery related data available to various stakeholders, both government and non-government (private sector, development partners, research, and academia).

Lead Agency: Cabinet Division

Government Partners: All line ministries, divisions, departments, BTRC, AMOTOB, e-CAB local government institutions

Coordinator: ICT Division

Facilitator: a2i

Implementing Agencies: Private sector, especially BoP focused private entities, and NGOs

Financing: Ministry of Finance, Development partners

Action Agenda 2: Paperless Government

Purpose:

- a. Reduction of time in decision making cycle thus accelerating implementation of annual plan under five-year planning process.
- b. Reduction of corruption.
- c. Increasing transparency and accountability of government offices.
- d. Efficient management of government documents and data.
- e. Facilitating data-driven governance.

Major Components:

- a. Expansion of e-Nothi across all government offices by 2021.
- b. Simplification of decision-making process and automation.
- c. Introduction of advanced digital literacy of all government officials.
- d. Universal access to mobile digital device for all government officials.
- e. Launching of KPI for each institution and official.
- f. Integration of national planning documents, APA and KPI.
- g. Completion of digital infrastructure (connectivity, data center and data security).

Lead Agency: Cabinet Division

Government Partners: MOPA and all line ministries, division, departments, local government institutions

Coordinator: ICT Division

Facilitator: a2i

Financing: Ministry of Finance, UNDP/Government of Estonia/World Bank.

Action Agenda 3: Institutionalization of innovation culture within Government

Purpose:

Modernization of government for embracing challenges of becoming middle income and subsequently high-income country.

Major components:

- a. Promotion of indigenous solution for unique challenges of Bangladesh governance system.
- b. Appointment of Innovation team in each line ministry, division, and department.
- c. Institutionalization of system of recognition of innovation within institution.
- d. Introduction of system of reward and reprimand.
- e. Allocation of adequate financial resource and access to intellectual resources at home and abroad.
- f. Organize Virtual Academies for peer-to-peer learning, with global experts, country exchanges.
- g. Facilitate universal, affordable internet access as a critical public good.

Lead Agency: Ministry of Public Administration

Co-lead: Cabinet Division

Partners: All line ministries, divisions, departments, local government institutions

Coordinator: ICT Division

Facilitator: a2i

Implementing Agencies: Private sector and NGOs

Financing: Ministry of Finance, Development partners

Action Agenda 4: Citizen's participation in governance

Purpose:

- a. Realization of principle of inclusion.
- b. Public accountability to citizen.
- c. Implementation of citizen-centered design of the government.

Major Components:

- a. Development of national grievance redressal platform integrating grievance management system of institutions.
- b. Enrichment and regular update of opendata.gov.bd for ensuring citizen's access to government data.
- c. Decentralization of government and budget system.
- d. Introduction of District level planning and budgeting, thus introduction of bottom -up national budgeting.

Lead Agency: Cabinet Division

Co-lead: ICT Division and Ministry of Local Government and rural Development

Government Partners: MOPA/MOP/All line ministries, division, departments, local government institutions

Coordinator: ICT Division

Facilitator: a2i

Private Sector Partners: ICT Industry, NGOs

Financing: Ministry of Finance/World Bank/DFID/EU

Agenda 5: Data-driven policy framework: Open public data initiative

Purpose:

- a. Ensuring participation of citizens/civil society/think tanks in policy support.
- b. Ensuring efficient and corruption-free utilization of scarce resources.
- c. Identification of right solution for each problem nation is facing with a data-driven approach.

Major Components:

- a. Strengthening open government data initiative and making all data available in retrievable format.
- b. Intelligent Creation of Analytics Dashboards using artificial intelligence (AI) for specific category of issues to build a culture of using data in government decision making process.
- c. Transformation of Bangladesh Bureau of Statistics.
- d. Collaboration with national and international thin-tank and data enthusiast private agencies.

Lead Agency: Ministry of Planning: General Economic Division

Co-lead: Cabinet Division

Government Partners: Ministry of Finance /All line ministries

Coordinator: ICT Division

Facilitator: a2i

Implementing Agency: Bangladesh Bureau of Statistics

Non-government partners: Development partners/ Academia/ Thin Tanks

Financing: Ministry of Finance/World Bank/EU

Standalone Policy Agenda

- a. Containing the rise in fiscal deficits and consequent surges in national debt by optimizing budgets: review of existing revenue, spending, and financing priorities every six months.
- b. Coordinate at national and international level to address longstanding “fiscal termites” undermining national budgets:
 - i. Stoppage of tax evasion using tax
 - ii. Elimination of fossil fuel subsidies.
culture of using data in government decision making process.
- c. Advocate for debt service relief to heavily indebted countries, SIDS, LDCs.

Domino Effect Agenda:

Taking learnings from national and global best practices and to make the government more resource-efficient and responsive to citizens’ need, top five action agenda have been identified. Among them, the action agenda for creating paperless government has been identified as a ‘domino effect agenda’, which means the implementation of this ne agenda will allow transformation of the whole government. The following table elaborates on the top five action agenda for public sector transformation and innovatio