South-South & Triangular Cooperation:
An Alternative Framework of Cooperation and Resource Mobilization

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Index

1. Introduction

The Economy can be viewed from many different aspects, angles, viewpoints and time frames. The Economy can also be viewed from various perspectives – including the epistemological differences in the rationales deployed for applying the lenses which one ordinarily and generally uses for interpreting something which both happens to one and to which one contributes to at the same time. Apart from the cause-consequence algorithm of solid financial models, there also are philosophical and other argumentative articulations of the economic behaviour of the humankind.

For any useful discussion, understanding the definitions which contribute to the construct of the proposition is important. It is different from the Smithian perceptions of economies and market behaviours as nearly self-regulating and autonomous in respect of production and exchange of goods and services and that the bounded rationality confines even superior systems to a full deployment of resources and a full clearing of goods and services at an optimal price point. It is different from the psychological or behavioural aspects of human behaviour as well since it also takes into account factors exogenous to the more simplistic soloist factorisation of the human mind. While the many journeys of the discipline were initially premised on the more political aspects of the subject taxonomy and thereby had termed it 'political economy', the etymological source of the term 'economics' traces its roots in the ancient Greek οἰκονομικός (oikonomikos), "practiced in the management of a household or family" and therefore "frugal, thrifty", which in turn comes from οἰκονομία (oikonomia) "household management" which in turn comes from οἶκος (oikos "house") and νόμος (nomos, "custom" or "law") (Harper, 2007[1]; Free, 2010[2]; Marshall and Marshall, 1888[3]; Jevons, 1879[4]). Now, across the four major and many other minor schools of the subject, the dissonances and the differences between the political autonomy of the human individual or the political agenda of the human community as manifested in their group dynamics have never been really dissociated or had never experienced much dissonance and difference with their economic action and ultimately the economic well-being of either the individual or the group. Though not entirely parallel to the proposition, Akerlof and Kranotn (2010[5]) beautifully summarised the thoughts as 'identity economics'. The etymological roots still remain useful especially as we traverse the myriad ranges of definition and antagonism amongst the various proponents of those definitions especially across the last two centuries. Trivia: it appears that the first industrial revolution had not only rendered the previous modes of operation obsolete but had also rendered much of the previous histories of the human race, and in general, the

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[1] Harper, Douglas (February 2007). "Economy". Online Etymology Dictionary. Archived from the original on 12 May 2013.

[2] Free, Rhona C., ed. (2010). 21st Century Economics: A Reference Handbook. Vol. 1. SAGE Publications. p. 8. ISBN 978-1-4129-6142-4.

[3] Marshall, Alfred; Marshall, Mary Paley (1888) [1879]. The Economics of Industry. Macmillan. p. 2.

[4] Jevons, William Stanley (1879). The Theory of Political Economy (second ed.). Macmillan and Co. p. XIV.

[5] Akerlof, G.A. and Kranton, R.E., 2010. Identity economics. In *Identity Economics*. Princeton University Press.

natural contours of the planetary ecosystem a mere footnote on the great march of humanity. However, with high instability in income and wealth and with a rabid degeneration of the climatic conditions of the planet have warranted especially the neo-classical and behavioural economists coming to the fore of action in the field. The centrality of the human condition, and in particular, the individual's position in the spatial matrix of income, wealth and well-being are being considered once again as important constructs in the sphere of economic reasoning (McGregor and Pouw, 2017[6]). Before any concrete decision is made, a thorough understanding of the issues and constraints is necessary both for a more concrete understanding of what the ways forwards ought to be.

2. Aim

The aim of this paper is to propose an alternative framework of conceptualisation which would leverage itself on the existing constructive parts of the narrative arcs defining the range of South-South and Triangular (South-South-North, mostly) Cooperation and elucidate a way forward towards a more business-like approach towards realising the goals of the South-South and Triangular Cooperation in light of the rapidly evolving conditions of the Fourth (and eventually the Fifth) industrial Revolution.

3. Definitions and Frameworks

Several key documents outline the current contour of the South-South and Triangular Development agenda. These include:
1. Buenos Aires Plan of Action (1978)
2. New Directions for Technical Cooperation among Developing Countries (1995)
3. Revised Guidelines for the Review of Policies and Procedures Concerning Technical Cooperation among Developing Countries (2003)
4. Nairobi Outcome Document of the United Nations High-level Conference on South-South Cooperation (2010)
5. Framework of Operational Guidelines on United Nations Support to South-South Cooperation (2016)
6. Repositioning the UN Development System to Deliver on the 2030 Agenda (UN, 2017)
7. BAPA+40 Outcome Document, Report of the Second High-Level United Nations Conference on South-South Cooperation
8. Triennial Comprehensive Policy Reviews (1998, 2001, 2004, 2007)

In addition, there is a plethora of reports and conference and dialogue proceedings which highlight successful projects and lessons learnt. A fuller set of documents could be found from the UN's South-South portal: https://unsouthsouth.org/library/policy-documents/

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[6] McGregor, J.A. and Pouw, N., 2017. Towards an economics of well-being. *Cambridge Journal of Economics*, *41*(4), pp.1123-1142.

By definition, according to the UN (2022), "South-South cooperation is a common endeavour of peoples and countries of the South, born out of shared experiences and sympathies, based on their common objectives and solidarity, and guided by, inter alia, the principles of respect for national sovereignty and ownership, free from any conditionalities" (UNOSSC, 2022[7]). "Triangular cooperation involves Southern-driven partnerships between two or more developing countries supported by a developed country(ies)/or multilateral organization(s) to implement development cooperation programmes and projects", the UN goes on to add (ibid). UN goes on to add that, "South-South cooperation for development is a process whereby two or more developing countries pursue their individual and/or shared national capacity development objectives through exchanges of knowledge, skills, resources and technical know-how and through regional and interregional collective actions, including partnerships involving Governments, regional organizations, civil society, academia and the private sector, for their individual and/or mutual benefit within and across regions"(ibid). It also adds that the South-South mechanism only complements the North-South Dialogues in Development and does not compete or contradict with it.

4. Contrasting Economic Theories with SS/Triangular Ideation

The South-South and Triangular Cooperation Framework is a very broad range of ideations. Almost the entire range of PESTEL (Political, Economic, Social, Technological, Environmental and partly Legal) constructs are covered in the ideation. As such – there are major thematic overlaps and possibilities of conflict or contradiction which remain imbued with any such idealistic outlook. Additionally, there is also the possibility of stretching beyond the tactical and operational capabilities of state systems to carry out all stated objectives in a time bound manner. More prominently, the often over-inclusive agenda prevent the more tactile yet essentially mercantilist market mechanisms to work properly and generate the right price signals.

Several prominent theoretical angles become prominent in the discourses which can be applied for bridging the epistemological vacuums which are not only obvious but also eminent, the first and foremost amongst them, institutional voids (Mair and Marty, 2009[8]). Mamun (2021[9]) concatenated a few attributes of the BOP markets in one place by using a PESTEL analytics. Entrenched interests, shortage of well-defined institutions, inequitable rules, rent-seeking behaviour of political-economic actors, poor systemic oversight and poor accountability, amongst others, contribute to structural vulnerabilities in the political subsystem of the Bottom of Pyramid markets. For the economic frailties experienced by BOP markets, domineering factors include, eschewed pricing, dominance of invisible and informal networks, rising inequalities, ill framed capital markets, deficiencies in the storage and

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[7] UN Office for South-South Cooperation. 2022. About South-South and Triangular Cooperation. Retrieved from: https://unsouthsouth.org/about/about-sstc/ on 14 December 2022

[8] Mair, J. and Marti, I., 2009. Entrepreneurship in and around institutional voids: A case study from Bangladesh. *Journal of business venturing*, *24*(5), pp.419-435.

[9] Mamun, SM. 2021. Blockchains: Gaming and Collusion – A Reading in Political Economy. Amazon Inc. London.

transmutation of value, deficiencies in administrative mechanisms, and deficiencies incubation for entrepreneurship, disconnects with financial markets, net foreign exodus of investible capital and wealth to foreign markets, and failure of the state mechanism to contain unregulated migration both internally and externally. Feudal mindsets amongst administrative departments, distrust and mistrust of the governed, shifting and evolving boundaries, poor sanitation and hygiene, poor medical treatment facilities and the tendency of capital and political elite to migrate to advanced countries underwrite the quicksand like behaviours of the social polity in the BOPs. The same BOPs usually demonstrate unavailability of the latest and legal technologies, inequalities in access to technology, skill-deficient education systems, deficient mentoring and incubation, disconnect between innovations and markets, non-documentation of indigenous technology and innovation and deficiencies in the Intellectual Property Rights (IPR) in the greater domain of technology. Such conditions, together, lead to the observance of imperfect judicial and juridical processes, non-existent or unenforceable insurance mechanisms, uncertainties in risk assessments, poor enforcements and lack of due diligence in the legal sphere.

A third perspective is that of the evolution of the state. The propositions of this paper revolve around a somewhat loosely constructed hypothesis that organized political actors, more precisely, the actors in the political economy spaces (Atzori, 2015[10]; Davidson et al, 2016[11]) – which include but is not limited to the state, the state organs (De Filippi & Loveluck, 2016[12]), the political parties, ideologies and ideologues, trading and business houses, production facilities for both products and services, corporates, legal institutions, individuals with and without political motivation (Wright & De Filippi, 2015[13]), could be connected through the dispensation of business education for a better part of the next century – if not beyond.

Ideationally, the state is a political organization that retains the sovereign power to control the people of a geographical area and its adjoining areas. Legally, the state is a concept that essentially grew out of the 1648 Treaty of Westphalia – giving the 'state' autonomy over and beyond that of the suzerain, the people, or even a monarch (Croxton and Tischer,2002[14]). The 'state' acquired acquires both meaning, context, relevance, and primacy as the principal actor in matters related to the conduct of international affairs and, more generally, as the final arbiter of power and authority.

From a definitional perspective, the state usually consists of a group of institutions that give a more concrete appearance to the otherwise ethereal ambitions and aspirations of the

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[10] Atzori, M., 2015. Blockchain technology and decentralized governance: Is the state still necessary?. Available at SSRN 2709713.

[11] Davidson, S., De Filippi, P. and Potts, J., 2016. Economics of blockchain. Available at SSRN 2744751.

[12] De Filippi, P. and Loveluck, B., 2016. The invisible politics of bitcoin: governance crisis of a decentralized infrastructure. Internet Policy Review, 5(4).

[13] Wright, A. and De Filippi, P., 2015. Decentralized blockchain technology and the rise of lex cryptographia. Available at SSRN 2580664.

[14] Croxton, D. and Tischer, A., 2002. *The peace of Westphalia: A historical dictionary*. Greenwood.

respective peoples (Chang, 1994[15]). States are a clear case of historic institutionalism wherein the history of events and consequences act the principal denominator of a learning societal organism capable of conducting the affairs of organized human beings above and beyond the individual's percepts (Bordignon and Ceccarini, 2015[16]). These institutions, as authorities, have the sole prerogative to both make and enforce the necessary rules and regulations for the governance of the inhabitants and actors within the respective geographical boundaries. A state can distinguish itself from other states by having its own independent political structure and supplement to own physical territories. A state is neither a nation nor a population, but it can consist of a single nation, parts of different nations, or a large number of nations as a whole. The existence of something as a state can be explained in practical or legal terms or both. In practical terms, Max Weber's influential definition is that of an organization that has absolute dominance over the use of legal force within certain areas (Redner, 1990[17]). From a legal point of view, an authority can be a state under international law if other states recognize it as a state. Along with the power of coercion and the recognition of other nations, the issue of good governance for a successful state is also closely linked. And the state becomes successful and prosperous only when good governance and the rights of the common man are ensured.

Since the end of the 19th century, the whole length and breadth of the habitable areas of the world was more or less divided by defined boundaries and marked by different states. At present, the international community consists of more than 200 countries, most of which are members of the United Nations. According to international relations theorists, these states are within a system where the state itself considers the reaction of other states before making any decision. From this point of view, the state is in crisis both in terms of internal and external security and in terms of the use of force (Schmidhauser, 1957[18]). In recent times, the international community refers to a group of states that have established rules, procedures, and institutions to govern their relations. Similarly, international law, diplomacy, formal regimes and the foundations of organizations have been laid down. Since the end of the twentieth century, the combined influence of globalization on the world economy, the flow of labor and capital, and the emergence of numerous international organizations have constrained the opportunity for states to make independent decisions and shifted the onus to more interdependencies and interoperabilities (Gøtze et al, 2009[19]). The best example of this limitation in independent decision-making is Western Europe, where the European Union was

[15] Chang, H.J., 1994. State, institutions and structural change. *Structural Change and Economic Dynamics*, *5*(2), pp.293-313.

[16] Bordignon, F. and Ceccarini, L., 2015. The Five-Star Movement: A hybrid actor in the net of state institutions. *Journal of Modern Italian Studies*, *20*(4), pp.454-473.

[17] Redner, H., 1990. Beyond Marx-Weber: A Diversified and International Approach to the State. *Political Studies*, *38*(4), pp.638-653.

[18] Schmidhauser, J.R., 1957. States Rights and the Origin of the Supreme Court's Power as Arbiter in Federal-State Relations. *Wayne L. Rev.*, *4*, p.101.

[19] Gøtze, J., Christiansen, P.E., Mortensen, R.K. and Paszkowski, S., 2009. Cross-national interoperability and enterprise architecture. *Informatica*, *20*(3), pp.369-396.

established for international unity (Coen, 1998[20]). But the most significant characteristic of the state is what makes it a unique and new form of political coalition, and its most abstract nature – a very corporate – yet inclusively egalitarian entity (Weber, 1919[21]).

The state could be an incorporation in a way that is not how a people or a group of people can be (Bener, 2012[22]). State can act as a legal person that takes part of its identity as a corporation. The corporation has a legal identity which ==makes it liable== and, at the same time, gives it the power to act. Also, the corporation has the right to own property. But only in part. This is obvious for incorporated commercial enterprises and for the state. A single individual cannot be a corporation, there must be more than one, and the corporation cannot exist without the people who comprise it. As a legal entity, the state has the rights and duties, powers and liabilities, and holds property. Modern-day states always work for the economic development of the state, and for that, state maintains effective state-business relations. But States, by their very definition, are both the matrix and the arbiter of authority in the milieu of business (Guehenno, 1995[23]) which makes it a unique formation. The state is much more than an incorporation, and as such, it creates the necessary conditions for the formulation concerning life, livelihoods, and interactions between the two sets of conceptualisations.

After many centuries of experiments and adventures, the state has finally been accepted as an institution capable of learning and hence, growth, leading to the possibility of its survival as a concept (Von Mises, 2012[24]), and therein lies the interdictions for interventions and relevance of public policymaking for emerging nation states even inside an existing world order.

The three perspectives contribute to a re-reading of the prominent approaches towards economic reasoning. From the Physiocrats (Bertholet, 2021[25]) to the Mercantilists and then from the Marxists to the Austrians (Multiple Citations[26]), or for that matter, the Schools of Chicago and Keynes, all have lenses which become important triangulators for charting the appropriate intervention mechanisms for both states and multi-state or interstate and global

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[20] Coen, D., 1998. The European business interest and the nation state: large-firm lobbying in the European Union and member states. *Journal of Public Policy*, *18*(1), pp.75-100.

[21] Weber, M., 1919. The State. *War, Revenue, and State Building*, p.23.

[22] Benner, E., 2012. The nation-state. *Cambridge History of Philosophy in the Nineteenth Century (1790–1870)*, pp.699-730.

[23] Guéhenno, J.M., 1995. *The end of the nation-state*. U of Minnesota Press.

[24] Von Mises, L., 2012. *Nation, state, and economy*. Liberty Fund.

[25] Bertholet, Auguste (2021). "Constant, Sismondi et la Pologne". Annales Benjamin Constant. 46: 78–81. Archived from the original on 12 May 2022.

[26] (a) Roemer, J. E. (1987). "Marxian value analysis". In Eatwell, John; Milgate, Murray; Newman, Peter (eds.). The New Palgrave Dictionary of Economics (1 ed.). Palgrave Macmillan. p. 383. doi:10.1057/9780230226203.3052. ISBN 978-0-333-78676-5.
(b) Mandel, Ernest (1987). "Marx, Karl Heinrich (1818–1883)". In Eatwell, John; Milgate, Murray; Newman, Peter (eds.). The New Palgrave Dictionary of Economics (1 ed.). Palgrave Macmillan. pp. 372, 376. doi:10.1057/9780230226203.3051. ISBN 978-0-333-78676-5.

platforms to delivering on the promise of deeper and wider human development in the targeted regions. The Austrian School with its time-bound rationality and emphasis on the actual actions of people with limited knowability and adaptive, evolutionary and complicated/multi-layered process of reasoning becomes especially mentionable for creating the frames of references needed for both short term and longer-term intervention mechanisms, and consequently, the collaborations required.

5. The Problem Matrix

There are many layers, some interconnected and some unique, and many verticals through which the problem of resource mobilisation can be seen. Before moving forward with an ideational projection, we need to see what the dominant portions of the epistemology is.

Problems of Food, Fuel and Finance (Addis Ababa Declaration) sit at the core of the problems that regions in the global south generically face (Mitlin and Satterthwaite, 2013[27]; Prashad, 2014[28]).

Deficiencies, inadequacies and imperfections, if not perversions of information asymmetries, of policies and measures further accentuate the wickedness of the problem matrix. The problem is further aggravated with the introduction of a perverse gaming mindset by the North in matter related to setting the terms of trade and duty structures (Cassagnard and Cardebat, 2011[29]).

Essentially the whole of the Global South has inherited the legacy problems of colonialisation and also of fragile governance architectures underwritten by a marked absence of rule of law (as opposed to the rule of men). Institutional voids permeate across the length and the breadth of the societies and the state-systems which populate the Global South (Waheed, 2020[30]; Chipp et al, 2019[31]).

Problems are also associated with the barriers to market entry and the efficient functioning of the markets where the factors of production are engaged and deployed in an optimal manner. Funding and financing remain core elements in this nexus of stoppers preventing an ejection from the claustrophobic mycelium of non-developmental paradoxes permeating

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[27] Mitlin, D. and Satterthwaite, D., 2013. *Urban poverty in the global south: scale and nature*. Routledge.

[28] Prashad, V., 2014. *The poorer nations: A possible history of the global south*. Verso Books.

[29] Cassagnard, P. and Cardebat, J.M., North-South trade, Antidumping and Information Asymmetry. 2011. *52th Italian Economic Association Annual Conference.* Rome, Italy. (hal-01879861)

[30] Waheed, Z., 2020. Linking Ambitions, Transparency and Institutional Voids to South–South Funded CPEC Project Performance. *China's Belt and Road Initiative in a Global Context: Volume II: The China Pakistan Economic Corridor and its Implications for Business*, pp.89-116.

[31] Chipp, K., Wocke, A., Strandberg, C. and Chiba, M., 2019. Overcoming African institutional voids: market entry with networks. *European Business Review*, *31*(3), pp.304-316.

through the whole of the developmental agenda pursued especially by the NGOs and often, willingly or unwittingly, by the national governments (Lewis and Sobhan, 1999[32]).

An excellent dissertation from the Economic Relations Division of the Government of Bangladesh, titled, 'South-South Cooperation for Financing SDGs' (ERD/K4DMMomen, 2017[33]) requires special mention. At Page 32, the report mentions the 4Ps for attaining SDGs/financing, which included, "Protect and Promote National Interest; Provide Global Leadership and achieve Global Peace". Later, the United Nations adopted a 5P agenda, with People, Planet, Prosperity, Peace and Partnership (ibid) for its post-2015 agenda for development. As the ERD report suggests, there are serious deficiencies in the funding requirements and the commitments accrued. IN 2017, 48 LDCs received a total of US$ 38 to US$ 42 billion per year while the SDGs require somewhere at the range of US$ 5 to US$ 11 trillion. Poverty eradication required, in 2017 terms, US$134 billion, hunger US$ 169 billion, healthcare, US$ 248 billion, quality education. US$205 billion (page 39 – 40, ibid). Bangladesh alone needed US$ 445 billion per year. Definitely, there is a serious gap somewhere and legacy problems can not be expected to be resolved by charity from donations.

From yet another angle, while the case box is full of African examples, possibly because of the gory nature of the conflicts that many of the states had to suffer, it is not uniqiue to Africa alone and the same could be observed elsewhere in Asia and in South America as well. Case for social entrepreneurship in the building of the institutional narrative is prominent in the recent days (Stephan et al, 2015[34]), while the case for both family and non-family technological firms in the filling up of the institutional voids, especially in India and in South Korea, has been highlighted at other places (Miller et al, 2013[35]). The extremely broad and wide range of the institutional voids prevent a specific and concise set of policies and other instruments from being fully conceptualised and deployed. More often than not, a wholesome 'theatre approach' remains missing even in the resource mobilisation conundrum associated with the global south.

Apart from the inherent and constituent flaws imbibed by the global south, it is also very pertinent to note the critical absence of support from the erstwhile colonial masters and the in general the global north for remedying the crisis and shortages in funding (Holmarsdottir et al, 2013[36]). Also important is the approaches undertaken by the North (if there is any such

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[32] Lewis, D. and Sobhan, B., 1999. Routes of funding, roots of trust? Northern NGOs, Southern NGOs, donors, and the rise of direct funding. *Development in Practice*, *9*(1-2), pp.117-129.

[33] Momen, Dr. A K Abdul. 2017. South South Cooperation for Financing SDGs, Economic Relations Division. Ministry of Finance. Government of the People's Republic of Bangladesh. Dhaka.

[34] Stephan, U., Uhlaner, L.M. and Stride, C., 2015. Institutions and social entrepreneurship: The role of institutional voids, institutional support, and institutional configurations. *Journal of International Business Studies*, *46*, pp.308-331.

[35] Miller, D., Lee, J., Chang, S. and Le Breton-Miller, I., 2013. Filling the institutional void: The social behavior and performance of family versus non-family technology firms in emerging markets. In *Handbook of Research on Family Business, Second Edition* (pp. 40-61). Edward Elgar Publishing.

[36] Holmarsdottir, H.B., Desai, Z., Botha, L.R., Breidlid, A., Bastien, S., Mukoma, W., Ezekiel, M.J., Helleve, A., Farag, A.I. and Nomlomo, V., 2013. COMPARE forum: the idea of North-South and South-South collaboration. *Compare: A Journal of Comparative and International Education*, *43*(2), pp.265-286.

configuration) towards development of the global south – which are often many and more than often politically incongruent with the developmental aspirations of the south (Rosseel, et al, 2009[37]).

Cultural differences and social distances often aggravate the situation further even under the best of circumstances (Posti-Ahokas, et al, 2020[38]). Bridging the gaps remain a major obstacle.

Two recent phenomena, COVID19 (Altig et al, 2020[39]; Baker et al, 2020[40]; Choi, 2020[41]) and the crisis of Ukraine (Kammer, 2022[42]; Shen and Hong, 2023[43]), have created a unique time-space conundrum for some, if not the majority, of the countries in the South. Fragilities in the economic and socio-political mechanisms underwriting the development agenda of the countries already infested with institutional voids have aggravated the depth of the challenge spectrum. For the first time in at least one century, the dominance hierarchy of the West or the North established by the industrial revolution has been challenged into some form of systemic uncertainty. The whole of the global supply chains has been affected badly because of the War in Ukraine (Caldara, et al, 2022[44]).

Considerations for 'Executive Decision', since the more temporally dispersed dispensations of the legislative and academic processes, have started revolving around themes, such as, but not limited to: maintaining liquidity and convertibility of the economic actors in the international trading ecosystem; sustaining resilience and maintain competitive momentum; emphasizing and leveraging the more non-conventional items such as gender mainstreaming give context and meaning to the overall matrix of cooperation; understanding the profound nature of the 4IR and 5IR technology on the evolution of the dialogues and the discourses

[37] Rosseel, P., De Corte, E., Blommaert, J. and Verniers, E., 2009. Approaches to North-South, South-South and North-South-South collaboration. A policy document.

[38] Posti-Ahokas, H., Janhonen-Abruquah, H. and Adu-Yeboah, C., 2020. From cultural visits to intercultural learning: Experiences of North–South–South collaboration. In *Intercultural Competence in the Work of Teachers* (pp. 75-90). Routledge.

[39] Altig, D., Baker, S., Barrero, J.M., Bloom, N., Bunn, P., Chen, S., Davis, S.J., Leather, J., Meyer, B., Mihaylov, E. and Mizen, P., 2020. Economic uncertainty before and during the COVID-19 pandemic. *Journal of Public Economics*, *191*, p.104274.

[40] Baker, S., Bloom, N., Davis, S. and Terry, S., 2020. COVID-induced economic uncertainty and its consequences. *VoxEU. org*, *13*.

[41] Choi, S.Y., 2020. Industry volatility and economic uncertainty due to the COVID-19 pandemic: Evidence from wavelet coherence analysis. *Finance Research Letters*, *37*, p.101783.

[42] Kammer, A., 2022. War in Ukraine is Serious Setback to Europe's Economic Recovery. *IMF Blog*.

[43] Shen, L. and Hong, Y., 2023. Can geopolitical risks excite Germany economic policy uncertainty: Rethinking in the context of the Russia-Ukraine conflict. *Finance Research Letters*, *51*, p.103420.

[44] Caldara, D., Conlisk, S., Iacoviello, M. and Penn, M., 2022. The effect of the war in Ukraine on global activity and inflation.

(Duan et al, 2019[45]; Mamun, 2021[46]). The emergence of such foundational technologies have grossly undermined the previously conceived timelines for scourging for resources and iterative experimentations with ideas and projects for finding a better universal fit for the model (Makridakis, 2017[47]).

In next 3, 5, and 7 years of time - as Artificial General Intelligence takes over irrevocably, irreplaceably and immutably, there is a need for a serious revision of the development thoughts going into the South-South and Triangular Frameworks. It would be wise to have a look at the developmental ambitions of various countries – including but not limited to Japan – such as the New Development and Japan Revitalisation Strategy – which speak of a completely AI-enabled society and a state system fully mechanised with robots. What implications would such predicaments have on the nature of development in the developing south would be valid points for discussions. Whether or not neo-colonisation could be equated with data colonisation and whether the noir dystopia of the Cyberpunk 2076 be reality a time too soon are also important points for consideration and warrant a detailed analytics for connecting the state level development agenda with those of the global south and vice versa (ibid).

6. A Plausible Solution

Being Anti-Fragile is the key to preventing an adverse Black Swan impact from taking shape. For bridging the digital divide in a digital world and for reducing the sharpness of the edges of wealth inequality, it is imminent that Growth (g) > inequality (r) stands as the single most prominent welfare target.

The panacea of trade is losing sheen too. Trade is no more a very reliable indicator of wealth of nations. Wealthy nations trade more. But trading nations are not necessarily wealthy.

What if knowledge, skills and know-hows are the keys really necessary for the emergence of a durable solution to the problems of the south? Riitaoja, et al (2019[48]) and Van der Veken et al (2017[49]) give details of how research and collaboration in the sciences could lead to better

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[45] Duan, Y., Edwards, J.S. and Dwivedi, Y.K., 2019. Artificial intelligence for decision making in the era of Big Data–evolution, challenges and research agenda. *International journal of information management*, *48*, pp.63-71.

[46] Mamun, Syed M. 2021. Blockchains: Gaming and Collusion. Amazon Inc. London

[47] Makridakis, S., 2017. The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures*, *90*, pp.46-60.

[48] Riitaoja, A., Posti-Ahokas, H. and Janhonen-Abruquah, H., 2019. North–South–South collaboration as a context for collaborative learning and thinking with alternative knowledges. *International journal of development education and global learning*, *11*(2), pp.189-203.

[49] Van der Veken, K., Belaid, L., Delvaux, T. and De Brouwere, V., 2017. Research capacity building through North–South–South networking: towards true partnership? An exploratory study of a network for scientific support in the field of sexual and reproductive health. *Health research policy and systems*, *15*(1), pp.1-11.

awakenings in the South. A new narrative becomes both imminent and incumbent (Quadir, 2013[50])

Wealth is a function of intellectual capital. Wealth is a function of knowledge brokering as well. Income is a function of skills brokering. Leveraging on the potencies of the BOPs requires the adoption of a 'Strategic Theatre' approach towards business and marketing. The 'Strategic Theatre' approach assumes that an enterprise needs to deploy a thematic mix of insights and foresights (Zenger, 2013[51]) to create an attack vector of cross-sights to formulate its operational priorities. The 'Strategic Theatre' approach assumes that an enterprise needs to deploy a mix of adaptation, aggregation and arbitrage for international expansion (Ghemawat, 2011[52]). Creating a Strategic Business Framework concentric to objectivism in economy, ecology and security is crucial for creating the momentum needed for wealth accretion.

The experience of Bangladesh – a country of more than a hundred and sixty million individuals concentrated into a landmass of approximately one hundred and forty four thousand square kilometres – which has elevated itself from one of the most vulnerable LDCs to a middle-income developing country in a span of twelve years under the auspices of a 'Vision 2021' and the measures it has taken for sustaining two very unconventional existential threats of the COVID19 and the Ukraine crisis and how they interact with the future of development warrant deeper analysis both for possible replication and for assessing their contribution in the sphere of development intelligence and ideation.

The paper proposes a thesis on the narrative required for activating an intellectual discourse on the processes. The epistemology is built on a composite mix of demonstration, impact and dialogues. Figure # 1 proposes an alternative to the discourse which are flowing at the conventional spaces. This alternative is concentric to a 'Strategic Business Framework' (SBF) which sits at the core of the development narrative. This Strategic Business Framework is mounted on top of the spaces created by 'Unsettled Vectors' – leading to 'Unsettled Spaces' – characterised by institutional voids, and inchoate demands – demands which are 'felt' but can not be articulated. The driving engine behind this SBF is innovation and entrepreneurship and is characterised by a rich milieu of economic diplomacy primarily dependent on the vortex of remittance, investment, philanthropy, expertise and networks to solve the existential problems of food, fuel and fetilisers and is managed by a minimum viable innovation engine (if not, a range of minimum viable products). The whole ecosystem and its underlying forces and gravitas are drawn on a plethora of ICT and IT enabled services and their ancillaries such as data security and the individual's freedom/franchise to operate autonomously.
Visible success of the model could be demonstrated by the impacts and the dialogues that it creates.

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[50] Quadir, F., 2013. Rising Donors and the New Narrative of 'South–South'Cooperation: what prospects for changing the landscape of development assistance programmes?. *Third World Quarterly*, *34*(2), pp.321-338.

[51] Zenger, T., 2013. The Disney Recipe. *Harvard Business Review. Recuperado de www. hbr. org/2013/05/what-makes-a-good-corporate-st (Consultado 02/12/2016).*

[52] Ghemawat, P., 2011. The cosmopolitan corporation. *Harvard Business Review*, *89*(5), pp.92-99.
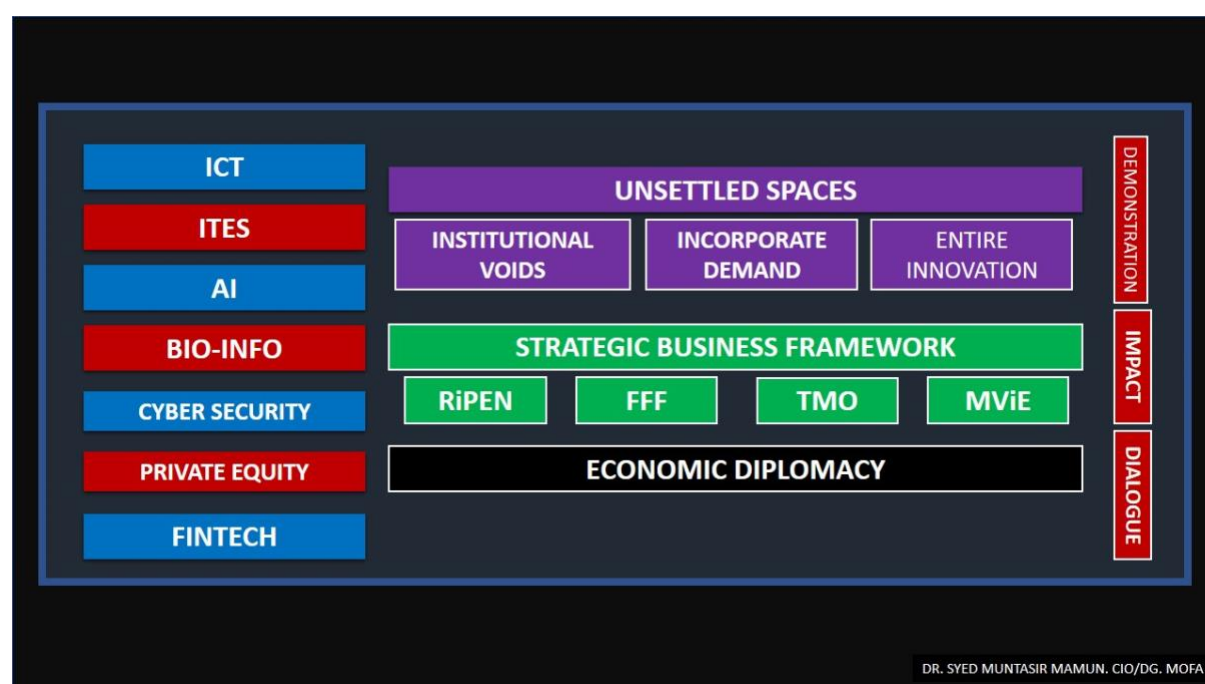
Figure 1: Dialogues for a New Development Agenda

It is prudent to be cautious about attributing reasons for success or failure to certain modes of operations or even ambitions. Just like any human being, a state system also comprises of a myriad ecosystem of layers and players in the spectrum of political, economic, socio-cultural, legal and environmental elements.

The success of Bangladesh over the last fourteen years can be credited to strong agricultural output (as a result of prudent agricultural support – including but not limited to inputs, innovation and extension work; Asadullah, 2012[53]; Kamal, 2014[54]; Miah et al, 2020[55]); rising income from Readymade Garments and the allied fields (Bhattacharya, 2002[56]; Rahman and Siddiqui, 2015[57]Islam, 2021[58]; Farhana et al, 2022[59]); unencumbered cash flow in foreign

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[53] Asadullah, M.N., 2012. Intergenerational wealth mobility in rural Bangladesh. *Journal of Development Studies*, *48*(9), pp.1193-1208.

[54] Kamal, J.B., 2014. Asset based poverty and wealth accumulation in low income households in Bangladesh. *The Bangladesh Development Studies*, *37*(4), pp.35-51.

[55] Miah, M.D., Hasan, R. and Uddin, H., 2020. Agricultural development and the rural economy: The case of Bangladesh. *Bangladesh's Economic and Social Progress: From a Basket Case to a Development Model*, pp.237-266.

[56] Bhattacharya, D., Rahman, M. and Raihan, A., 2002. Contribution of the RMG Sector to the Bangladesh Economy. *CPD Occasional Paper Series*, *50*(6), pp.1-26.

[57] Rahman, M.H. and Siddiqui, S.A., 2015. RMG: prospect of contribution in economy of Bangladesh. *International Journal of Scientific and Research Publications*, *5*(9), pp.1-8.

[58] Islam, M.S., 2021. Ready-made garments exports earning and its contribution to economic growth in Bangladesh. *GeoJournal*, *86*(3), pp.1301-1309.

currency from expatriate remittances – primarily concentric to the Gulf as destination and the bottom half of the income demographics (Sikdar and Higgins, 2015[60]; Akhter, 2016[61]; and for diversification of the rural household income, Ahmed et al, 2015[62]); and an unprecedented outlay of infrastructure in communication (Ashraf et al, 2017[63]), transport – especially geared towards connecting the rural growth centres with urban market systems (Ahmed and Eklund, 2019[64]), ICT connectivity (Sahid Ullah, 2016[65]; Muzareba, 2021[66]) and trade, particularly aiming at the re-establishing the regional economic architectures which were severed in the aftermath of the Partition of India in 1947 (Rahman, 2010[67]).

Over the past fourteen years, starting 2009, Bangladesh economy has literally imploded into a rainbow of numbers. Thanks to prudent political decisions which often contravened the Friedman model of monetary economics, Bangladesh evolved from an agrarian economy a ==service sector-dominated== complex polity of economic forces. It was an astute political decision taken by the newly elected government in 2009 to make a clean break from the past and start afresh with an ambitious aspiration to turn Bangladesh into a Digital Bangladesh (Karim, 2010[68]). The concept grew in both depth and in dimensions as time elapsed (Mazumdar & Alharahsheh, 2020[69]) and one component started spawning into another – giving both a

[59] Farhana, K., Sneha, Z.Z., Mondol, S., Farin, F. and Mahamude, A.S.F., 2022. Business Trend Analysis of RMG Industry in Context of Bangladesh-A Case Study. *International Journal of Industrial Management*, *14*(1), pp.515-528.

[60] Sikder, M.J.U. and Higgins, V., 2017. Remittances and social resilience of migrant households in rural Bangladesh. *Migration and Development*, *6*(2), pp.253-275.

[61] Akter, S., 2016. Remittance inflows and its contribution to the economic growth of Bangladesh. *J Modern Soc. Cult. Res., Niigata University Graduate School of Contemporary Social Culture*, *62*(3), pp.215-245.

[62] Ahmed, M.T., Bhandari, H., Gordoncillo, P.U., Quicoy, C.B. and Carnaje, G.P., 2015. Diversification of rural livelihoods in Bangladesh. *Journal of Agricultural Economics and Rural Development*, *2*(2), pp.32-38.

[63] Ashraf, M., Grunfeld, H., Hoque, M.R. and Alam, K., 2017. An extended conceptual framework to understand information and communication technology-enabled socio-economic development at community level in Bangladesh. *Information Technology & People*, *30*(4), pp.736-752.

[64] Ahmed, S. and Eklund, E., 2019. Rural accessibility, rural development, and natural disasters in Bangladesh. *Journal of Developing Societies*, *35*(3), pp.391-411.

[65] Sahid Ullah, M., 2016. Empowering rural communities through telecentre connectivity: experience of the Union Information and Service Centres in Bangladesh. *Media Asia*, *43*(2), pp.112-125.

[66] Muzareba, A.M., 2021. Disconnected connectivity and the information and communication technology for development (ICT4D) initiatives in Bangladesh. *International Journal of Technology Enhanced Learning*, *13*(3), pp.266-283.

[67] Rahman, Z., 2010. *Bangladesh and Regional Connectivity: Best Practices from Global Experiences* (No. 89). Centre for Policy Dialogue (CPD).
[68] Karim, M.A., 2010, February. Digital Bangladesh for good governance. In *Bangladesh Development Forum* (pp. 15-16).
[69] Mazumdar, A. and Alharahsheh, H.H., 2020. Digital Bangladesh–vision 2021: what is the digital Bangladesh concept?. *South Asian Research Journal of Engineering and Technology*, *2*(1), pp.6-9.

positive domino and a layer of complementarity (IBA, 2022)[70]. Now, this can definitely be seen from the perspective of politics alone. But this could also be seen through the textured lenses of the political economy and institution building, i.e., the narrative epistemology of the institutional evolution.

As the table below project, the share of the agriculture sector as a percentage of the economic output, GDP, has consistently been reduced vis-à-vis the service sector. Manufacturing growth was not very prominent but tertiary sectors grew exponentially.

Table 1: Sectoral Share of GDP (Source: BBS)

Sector	1999-00	2002-03	2005-06	2008-09	2011-12	2014-15	2017-18	2020-21
Agriculture and forestry	19.49	18.22	16.98	15.91	13.7	12.32	10.67	9.9
Fishing	6.09	5.52	4.86	4.58	3.68	3.69	3.56	3.57
Manufacturing	15.4	15.97	17.08	17.9	18.28	20.16	22.85	23.66
Construction	7.84	8.63	9.14	9.12	6.78	7.16	7.5	8.22
Wholesale And Retail Trade	13.35	13.87	14.08	14.41	14.02	14.08	13.95	14.08
Transport, Storage & Communication	9.2	9.76	10.07	10.65	11.49	11.43	11.13	11.04
Financial Intermediations	1.57	1.63	1.72	1.86	3.21	3.38	3.45	3.36
Real Estate, Renting and Business Activities	8.88	8.48	7.87	7.34	7.22	6.81	6.31	6.15
Community, Social and Personal Services	8.13	7.72	7.25	6.93	10.38	9.52	8.52	7.9

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[70] IBA. 2022. "Interfacing the State Apparatus: IBA in Public Policy Development and Administration" (Chapter 4). Book: PIONEERING BUSINESS EDUCATION INBANGLADESH: IBA IN NATION BUILDING Institute of Business Administration (IBA), University of Dhaka; October 2022. https://www.academia.edu/91512891/Interfacing_the_State_Apparatus_IBA_in_the_Public_Policy_Development_and_Administration
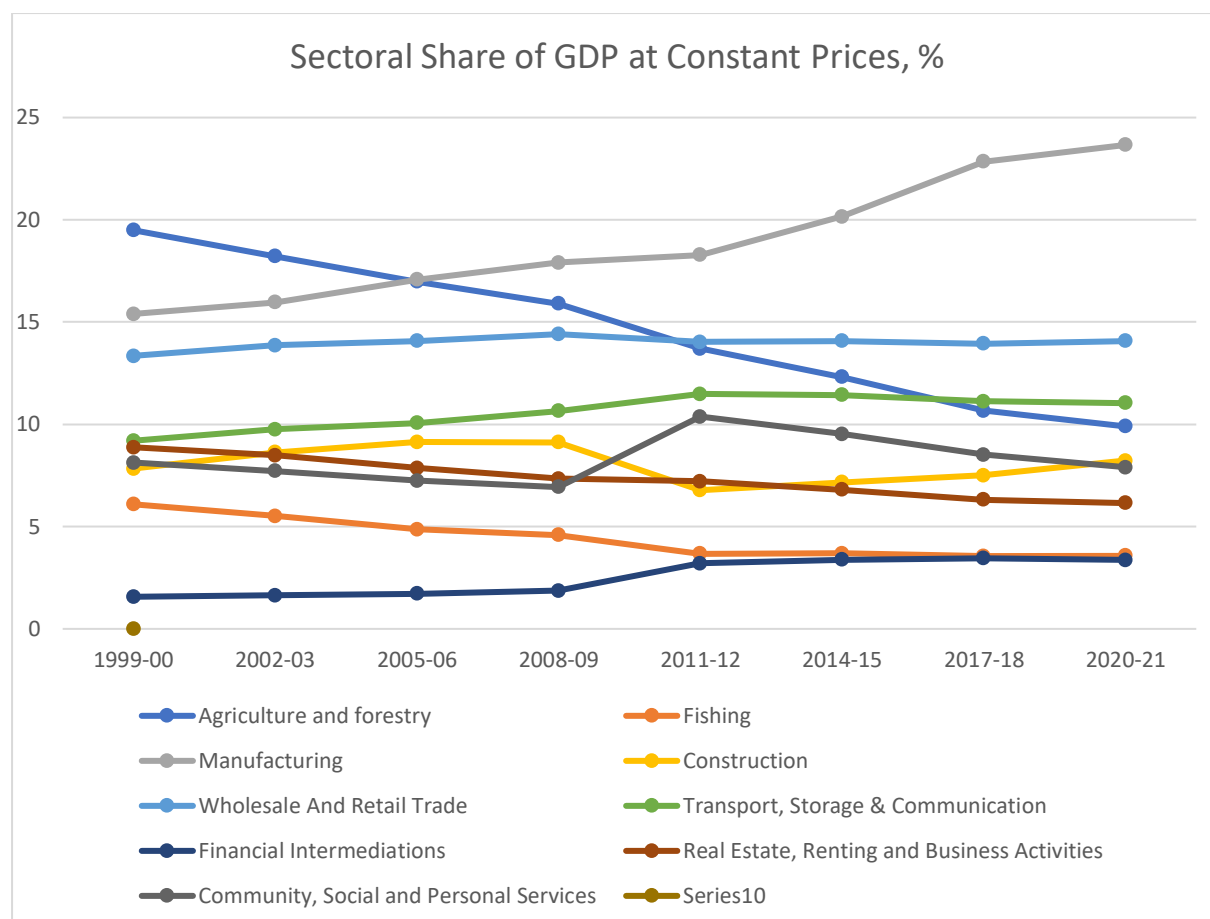
Figure 2: Sectoral Share of GDP (Source: BBS)

Sectoral shares of employment has also evolved.

Table 2: Sectoral Share of Employed Labour Force

	1995-96	1999-00	2002-03	2005-06	2010	2013	2015-16	2016-17
Agriculture, forestry and fishery	48.85	50.77	51.69	48.1	47.33	45.1	42.7	40.62
Manufacturing	10.06	9.49	9.71	10.97	12.34	16.4	14.4	14.43
Construction	2.87	2.82	3.39	3.16	4.79	3.7	5.6	5.58
Trade, hotel and restaurant	17.24	15.64	15.34	16.45	15.47	14.5	13.4	14.34
Transport, maintenance & communication	6.32	6.41	6.77	8.44	7.37	6.4	9.4	10.5
Finance, business and services	0.57	1.03	0.68	1.48	1.84	1.3	1.6	1.97
Commodities and personal services	13.8	13.07	5.64	5.49	6.26	6.2	6.2	6.08

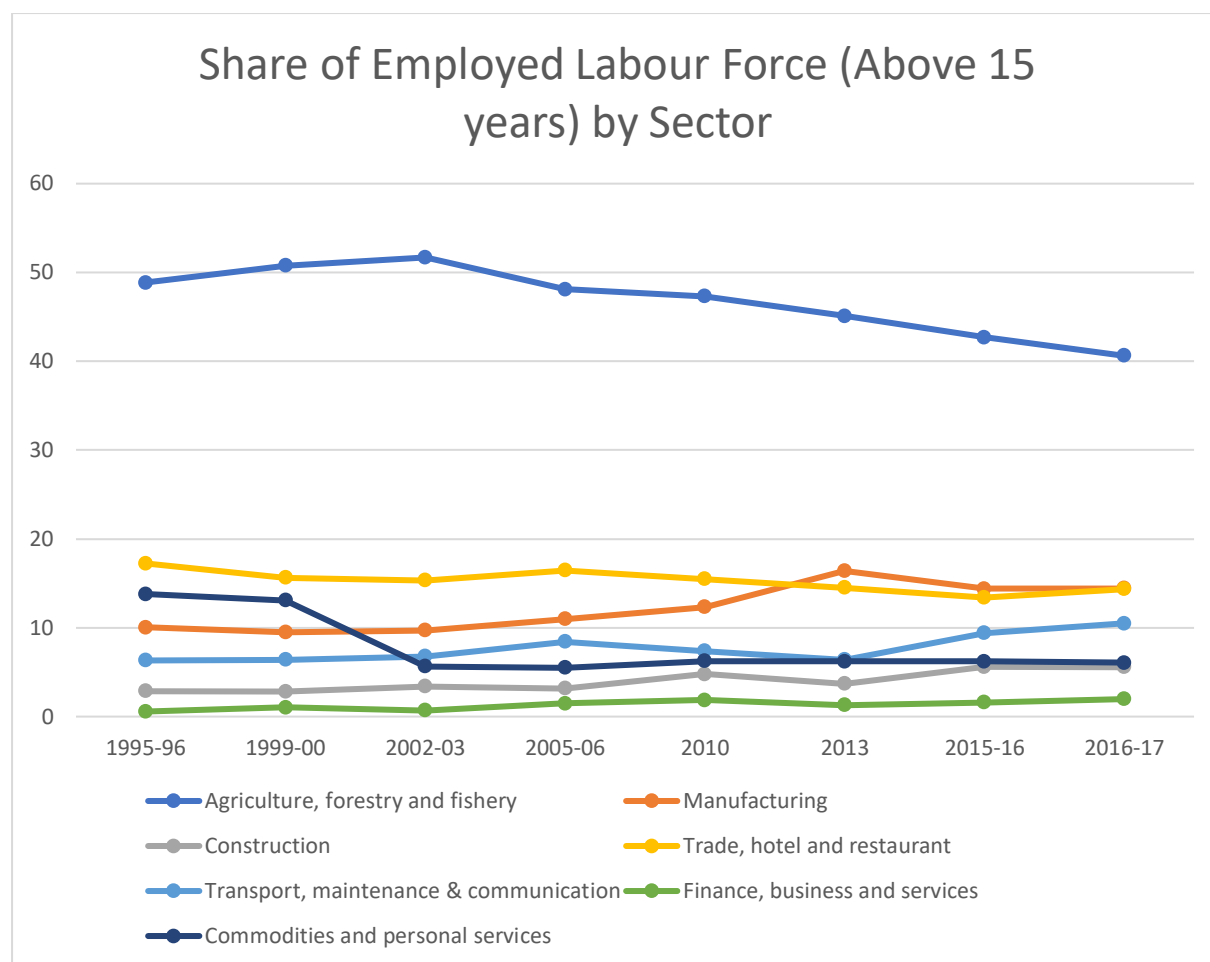## Share of Employed Labour Force (Above 15 years) by Sector

Figure 3: Sectoral Share of Employment

The proportion of investment has, consequently, evolved too.

Table 3: Investment and Employment

	Local (Million US$)	Employment Opportunity by Local Investment	Foreign (Million US$)	Employment Opportunity by Foreign Investment
2009-10	3931	291418	890	39245
2010-11	7748	432372	5104	71290
2011-12	5599	268871	2733	40838
2013-14	6392.3	199500	2383.212	25443
2012-13	6392.3	199500	2383.212	25443
2014-15	11683.191	209106	1032.43	17305
2015-16	12008.288	232614	1961.571	33878
2016-17	12494.269	220962	10756.055	57119
2017-18	15333.745	260555	10316.254	26991
2018-19	8409.273	132938	5253.238	33219
2019-20	8803.587	82931	4984.908	55246
2020-21	6669.025	160100	1058.472	20686

Investment in Bangladesh

	2009-10	2010-11	2011-12	2013-14	2012-13	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Local (Million US$)	3931	7748	5599	6392.3	6392.3	11683.2	12008.3	12494.3	15333.7	8409.27	8803.59	6669.03
Foreign (Million US$)	890	5104	2733	2383.21	2383.21	1032.43	1961.57	10756.1	10316.3	5253.24	4984.91	1058.47

Local (Million US$)   Foreign (Million US$)

Figure 4: Investment by Value

Employment created by investment

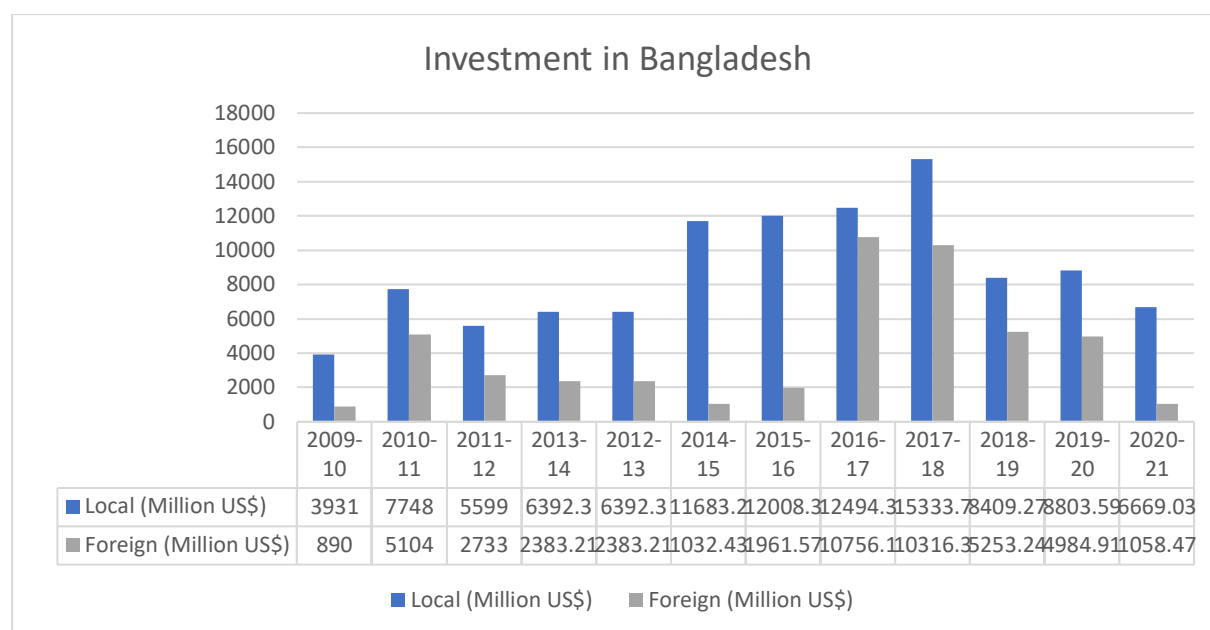Employment Opportunity by Local Investment   Employment Opportunity by Foreign Investment
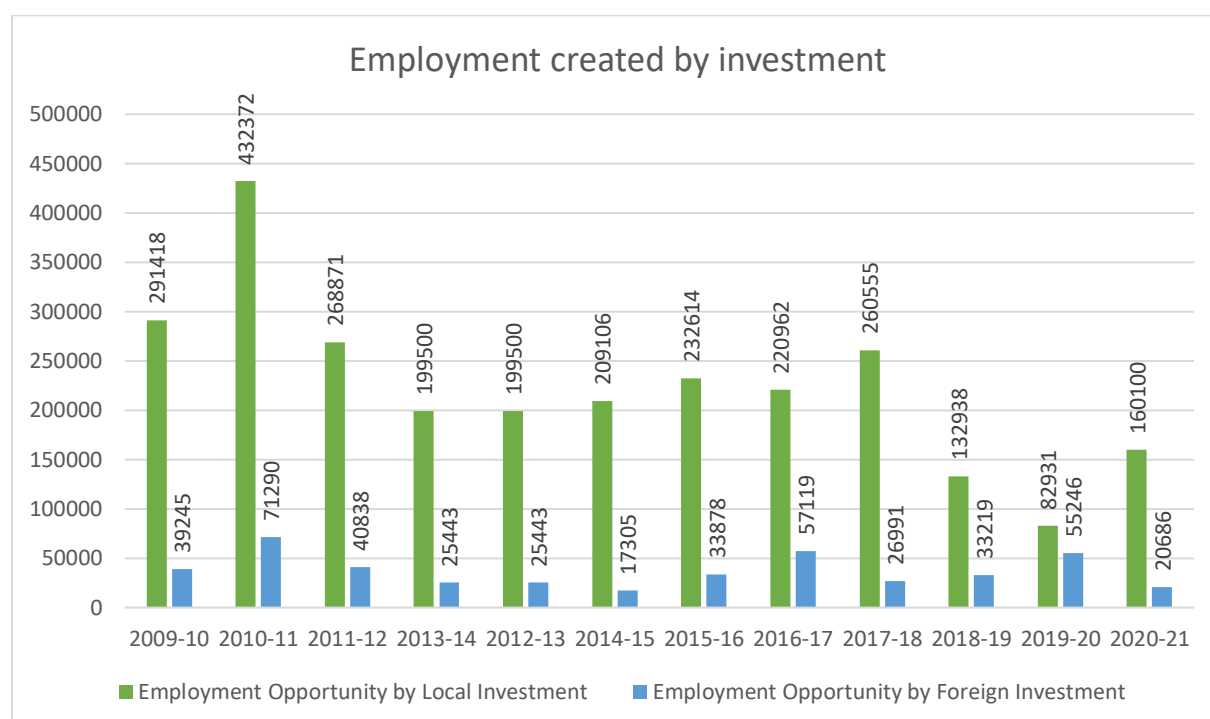
Figure 5: Employment as Consequence of Investment

What is clearly seen is that a near-dramatic shift in the modus operandi of the economy has taken shape. Here, in the broader rubrique of events and happenstances, more important than the actual investment in different sectors is the introduction of a new system of dialogues and enterprise formation.

7. Case Study ICT-D and a2i: A Uniquely Bangladesh Journey

7.1   Background

Digital Bangladesh first came up as an election manifesto in 2008 under the patronage of the Hon Prime Minister Sheikh Hasina – as she was campaigning for restoring democracy from a military backed caretaker government. Corruption was a major issue – slow and arachis service delivery were some others. Prime Minister Sheikh Hasina promised in her manifesto a solution to the latent troubles, problems and flaws in the rubrique of the 'Digital Bangladesh' (Karimm, 2010[71]; Islam and Grönlund, 2011[72]).

Since the beginning of the Digital Bangladesh journey, the service access infrastructure was designed with a bottom-up approach and thus employed models that are self-accessed by citizens but also featured assisted access models to ensure that no one is left behind. Offering citizens greater convenience and control through the development of physical and online one-stop shops (Digital Centres and National Portal, respectively); MyGov -a single smartphone application for accessing all government services - targeting more urban, peri-urban, literate and tech-savvy groups; and voice-enabled assisted National Service Access Hotline (accessible through short code 333) for citizens with low literacy and familiarity with technology. The service access infrastructure was supplemented by the development of a citizen-centered, secure and interoperable digital government payments architecture with business processes in place. These are now being packaged as Digital Public Goods to benefit other developing nations in the Global South.

The Prime Minister's Office, Cabinet Division, ICT Division, Local Government Division and relevant line ministries form the support ecosystem. The backbone infrastructure is supported by 4 public and private telecommunications companies. The government has also been aggressively working with the private sector to lay fiber-optic connection to all rural areas throughout the country.

Combined, they contributed immensely to making digital transformation work for the poor and thereby, the successful realization of Digital Bangladesh Vision 2021. Going forward, they will continue to support the remarkable socio-eco development of Bangladesh and play a major role in the country's journey towards LDC graduation and achievement of the Sustainable Development Goals by 2030.

7.2   Context and Challenges

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[71] Karim, M.A., 2010, February. Digital Bangladesh for good governance. In *Bangladesh Development Forum* (pp. 15-16).

[72] Islam, M.S. and Grönlund, Å., 2011. Digital Bangladesh–a change we can believe in?. In *Electronic Government and the Information Systems Perspective: Second International Conference, EGOVIS 2011, Toulouse, France, August 29–September 2, 2011. Proceedings 2* (pp. 107-121). Springer Berlin Heidelberg.

In 2009, when the Honourable Prime Minister Sheikh Hasina's cabinet took charge of the government, there was an urgent need for more efficient and inclusive public service delivery institutions that would deliver the level and quality of services necessary to support the massive population of a land-scarce, resource-constrained country like Bangladesh. Factors contributing to the key problem of weak performance of government services in addressing the needs of underserved communities in Bangladesh included an archaic public service delivery model that posed fundamental challenges to promoting access for financially and socially disadvantaged groups. Their illiteracy rate was quite high, and additionally they often lacked power and self-confidence, and suffered physical, institutional and social constraints.

In this day and in an age of alternative service delivery options and the nearly ubiquitous presence of digital technologies, Bangladeshi citizens were no longer complacent about government services which have traditionally been slow and unresponsive. The conventional process required the citizen to appear before one or more public officials' multiple times during office hours, fill in complicated forms, obtain authentication from government agents, and often wait in long lines. Moreover, the same information had to be provided to the government office again and again for each service request. This face-to-face delivery model and submission of information and documents multiple times made services less accessible to a large segment of the population who were either unable or faced substantial difficulties to undertake travel to government offices.

Complicated administrative processes also gave rise to the need for intermediaries to steer the recipient through a difficult and often non-transparent series of hurdles. These intermediaries not only increased the cost of service for the recipient but also further incentivized vested interests to maintain the status-quo.

As in many developing countries, public sector services in Bangladesh were siloed. Inside the government machinery, the effects of these silos were difficult to perceive, but the impacts became clearer when they were analyzed from the perspective of citizens, the end users. With public services layered on top of each other, and designed and delivered in a fragmented fashion, value for citizens fell through the cracks. Yet, the sole reason that public services exist is to benefit citizens at different stages of their lives in a meaningful way (a2i, 2022[73]). Those in the most vulnerable positions, particularly poor rural women, children and the elderly are usually the ones who suffer most from fragmentation, and are usually some of the biggest service recipients. Consequently, public services added complexity to already difficult lives (for example, through opaque and convoluted application procedures, lack of information, etc.), rather than helping people to find sustainable solutions.

Even though the government offices had published the Citizens' Charter, there was no systematic mechanism to submit grievances against the Charters and receive redress. Moreover, the implementation of the National Integrity Strategy, warranted renewed impetus to ensure transparency and accountability in public and private spheres of society in general.

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[73] a2i Programme. (n.d.). (publication). *Strategic Priorities of Digital Bangladesh*. Dhaka: Prime Minister's Office, Government of the People's Republic of Bangladesh.

Incentives to innovate were also lacking in the public sector. The pervasive, rule-based and hierarchical culture discouraged innovators and potential change makers from within the government from breaking the established order. Thus, most civil servants felt that maintaining the status quo was the safest mode of operation.

Lack of a data-enabled policy environment was leading to prevalence of resource allocation decisions and policy making based on gut instinct or intuition. Lack of standard approaches and protocols, territoriality and inconsistency in format lead to duplication and inadequate use of data by other agencies. The data that ultimately landed on the tables of decision makers carried little meaning or value in terms of decision support or evidence.

A significant aspect of the movement towards citizen-centric, digitized service delivery includes digitization of payments from the government to citizens and vice versa. The digitization that had taken place in the country so far was mostly in terms of Person to Person (P2P), and not Government to Person (G2P) or Person to Government (P2G). The poor and unbanked were unable to access mainstream financial services due to a weak business case from the perspective of traditional banks. There was also a lack of skills to innovate pro-poor financial services resulting in inadequate digital financial services products and services due to lack of uptake and usage. Moreover, policy reform was top-down, regulation-oriented and supply-centric and efforts at digital finance ecosystem building remained fragmented and siloed.

Bangladesh's emergence as a rapidly developing country was shadowed by evolving and increasingly complex socio-economic, environmental and demographic challenges. Although the country was renowned globally as a development laboratory boasting a thriving social innovation scene, it lacked the platforms and channels necessary for grassroots innovators to link up effectively with private sector, academia and leverage the whole-of-government apparatus to solve public service delivery problems. And the handful of aspiring social entrepreneurs that existed found it incredibly difficult to find mentors, secure investment and in many cases, to even start businesses that addressed unmet social challenges and public service delivery needs.

7.3   ICT Progress in Bangladesh

Information and communication technologies (ICTs) allow unprecedented leapfrogging – something that can disproportionately fast-track the rate of development of countries. This realization prompted the administration of Honourable Prime Minister Sheikh Hasina to establish the Access to Information (a2i) Program, with technical support from UNDP, USAID, FCDO, Bill and Melinda Gates Foundation, to directly spearhead the digital transformation. a2i was incubated at the Prime Minister's Office for a long 11 years and earned its wide whole-of-government approach by working with all ministries, districts, sub-districts and 5,000+ urban and rural local government institutions around the country. After the incubation, a2i was shifted to ICT Division and Cabinet Division to ensure a deep administrative change management using technology.

The Prime Minister's Office, overseen by the Hon ICT Adviser to the Prime Minister Mr. Sajeeb Wazen Joy, continued to provide policy guidance for long-term ICT development in the country; the Cabinet Division coordinated all line ministries and field administration for widespread administrative buy-in; the Local Government Division hosted one-stop shops for digital government services in all the thousands of local government institutions across the country for deeper citizens' access; the ICT Division and Posts and Telecommunications Division aggressively laid connectivity to all nooks and corners of the country; all line ministries signed Annual Performance Agreements that incorporate simplification of service delivery along with digitization.

Bangladesh moved up about thirty-five ranks among 193 countries since 2012 on the e-Governance Development index, published by the United Nations. The spread of ICT revolution has received particular emphasis based on the personal attention provided by the Honourable Prime Minister under her Digital Bangladesh Initiative. Digital Bangladesh remains an integral part of the government's Vision 2041 for a prosperous, poverty-free, Innovative Bangladesh.

To ensure that the dividends of Digital Bangladesh's progress were shared equitably by all, especially the most vulnerable of citizens, the government formulated a four-pronged strategy: i) developing human resource that can take a Digital Bangladesh forward; ii) ensuring high-speed internet connectivity to extend access to Digital Bangladesh for all citizens; iii) establishing a Digital Government to improve and increase pro-poor services; and iv) leveraging ICTs to promote access to markets by disadvantaged producers and businesses (GED, 2022[74]).

Bangladesh made important strides during the Sixth and the Seventh Five Year Plans in utilizing technology to bring in tangible transformation in all four areas. Progress made in bringing government services to the doorsteps of citizens is probably the area where Bangladesh registered most significant progress.

The Information and Communication Technology Division (ICTD) has taken initiatives to encourage and provide support for ICT related activities, formulate national ICT strategy and policies, create standards and specifications of ICT tools for government organizations, and work for human resource development in the IT sector.

7.3.1 Nurturing our Biggest Asset: Human Resources

Digital Bangladesh needed people who could take it forward and propel the agenda to its intended destination. Without enabling conditions, knowledge, skill and capacity, the government would not be able to go far in achieving its Digital Bangladesh Vision 2021. Its objective was to make the best use of new technologies to build world-class skills in all areas. Taking advantage of modern and cost-effective delivery tools and digital learning contents, the aim was to build the competencies needed to compete in the globalized 21st century world.

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[74] General Economics Division (GED). (n.d.). (rep.). *8th Five Year Plan (July 2020 – June 2025)* (1st ed.). Dhaka: Planning Commission, Government of the People's Republic of Bangladesh.

The 'National ICT in Education Roadmap' was able to take the government and non-government educational service providers towards unprecedented adoption of ICTs in both public and private classrooms.

ICTs can empower teachers and learners, promote change and foster the development of 21st century skills. In fact, it was not 'ICT Education' but rather 'ICT for Education' that was the principle that underpinned the government's initiatives embodied by 'Multimedia Classrooms' and teacher-led digital content development. The Ministry of Primary and Mass Education and the Ministry of Education, with technical support from a2i have established Multimedia Classrooms in over 80,000 primary and secondary schools. The initiatives have led to the enhancement of learning and played a role in reforming traditional education systems, increasing access to pedagogical resources and enhancing pedagogical techniques.

The Department of ICT's (DoICT) milestone project named Sheikh Russel Digital Labs has been implemented all over the country along with 15 in Saudi Arabia. Under this project some 4,176 labs (ibid) have been established nationally involving secondary schools, colleges, madrasas, technical institutions, and primary schools.

Socio economic development with the use of ICTs is visible in many respects. Many have developed ICT skills and expertise and improved their lives with better employment and self-employment based on ICT services and ICT skills.

Bangladesh Computer Council through Leveraging ICT for Growth, Employment and Governance Project has developed 234,000 skilled manpower for IT and ITES sector in the last five years. 3,500 women had Office Applications training under the WID Project. To integrate persons with disabilities in the mainstream of development BCC has initiated Empowerment of persons with disabilities including NDD through ICT Project. Through this project, over 5,000 persons with disabilities received ICT training (ibid). BCC has established 3,544 computer labs and 100 smart classrooms in different educational institutions throughout the country (ibid).

The World Report on Disability jointly published by World Bank and WHO estimates that Global disability prevalence is 15% (WHO, 2021[75]). It may vary from region to region or country to country. The UN-ESCAP in a recent publication estimates the prevalence as 9.10% in Bangladesh (UNESCAP, 2015[76]).

To develop the persons with disabilities as skilled human resources on ICT, promote their employment, and make them contributing citizens to build Digital Bangladesh and achieve the Goals of vision 2021 and Sustainable Development Goals (SDG), BCC developed EMPORIA. This eLearning platform is specially designed to ensure the empowerment and inclusion of persons with disabilities. The registration process of this app is completely free. This eLearning

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[75] World Health Organization [and] The World Bank. *World Report on Disability*. Geneva, Switzerland: World Health Organization, 2021.

[76] United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). *Disability at a Glance - Strengthening Employment Prospects for Persons with Disabilities in Asia and the Pacific*. Bangkok, Thailand: UNESCAP, 2015

platform envisions a technology for people with disabilities that can improve learning, making it faster, productive, cost-effective, importantly, and more trackable. Being an authenticated eLearning course, EMPORIA has the potential to provide certification by completing the course with proper guidance for persons with disabilities.

The Bangladesh Hi-Tech Park Authority has taken initiatives to establish Hi-Tech Park, Software Technology Park and IT Training and Incubation Centres throughout the country to promote the IT/ITES sector and to attract local and foreign investment. The initiatives will create massive employment opportunities for the country's youth and help meet the demand for skilled human resources. In doing so, it will also expedite the development of knowledge-based industries in the country.

7.3.2 Connecting the Unconnected

The government reduced the price of international internet bandwidth by over 90% over the last 12 years making internet affordable to the marginalized. The recent 'Ek Desh, Ek Rate' (one country, one rate) scheme by the Bangladesh Telecommunication Regulatory Commission (BTRC) leveled the playing field. Before the introduction of this, the prices of broadband in rural areas was much higher exacerbating the digital divide.

4G services are being provided in telecom and internet services while an initial 5G network has also been launched by the state-owned mobile operator Teletalk.

As part of the continuous advancement of the Digital Bangladesh agenda, another milestone was added when the first communications satellite of the country called Bangabandhu Satellite-1 was launched, hoisting the national flag into space. The satellite will provide broadband connectivity to rural areas throughout Bangladesh as well as video and communications coverage over Bangladesh and the territorial waters in the Bay of Bengal. It has also created the scope for revenue generation by renting out broadcasting capacity to neighboring countries.

Connectivity and infrastructure are the key components of the Digital Bangladesh vision. To ensure connectivity across the country, the Bangladesh Computer Council (BCC) under the ICT Division has been working diligently. The Bangla-GovNet project has been implemented by BCC to build the ICT Backbone Network up to 240 Ministries, Divisions and associated Departments, 64 Districts. Info-Sarker-II extends this network up to the Upazila (sub-district) level, connects the government offices at district and Upazila level. The Info-Sarker Phase 3 project has established broadband internet infrastructure in 2600 unions (rural local government institution) across the country through the optical fiber cable. 60 per cent of the people of the country got access to the internet through this. In addition, the establishment of Virtual Private Network 1000 police offices of Bangladesh has been done. Establishment of Information and Communication Technology Network in remote areas ("Connected Bangladesh") Project has established Information and Communication Technology Network to 600+ remote unions of the country. BCC has established National Data Centre (Tier-3) where more than 25,000 government domains, 260 applications, establishing Virtual Private Network (VPN) connection in 1000 offices of Bangladesh Police, 16 collocation services, and

18,059 Network Services have been hosted. Also, IV Tier Data Centre has been established recently which is 7th largest of its kind in the world.

The Bangladesh High-Tech Park Authority (BHTPA) has established 4 Parks: (i) Bangabandhu Hi-Tech City, Kaliakoir, (ii) Sheikh Hasina Software Technology Park, Jashore, (iii) Software Technology Park, Janata Tower, (iv) Sheikh Kamal IT Training and Incubation Centre, Natore. 7.41 lakh square feet space (ibiid) for IT/ITEs companies have been allocated. Basic infrastructure like fibre optic cable line, various utility lines, and internal and external road, link road, solar streetlight have already been developed in those parks.

Government has declared attractive incentives for the promotion of IT/ITEs sector. The incentives that the BHTPA provides to IT companies in the IT/Hi-Tech parks include: 12 years exemption of Income Tax for park developers; 10 years exemption of Income Tax for investors; Exemption of Import Duty, Regularity Duty and Supplementary Duty for local production of ATM machine and CC camera; Exemption of Duties on importing Capital Equipment and Construction Materials by the Investors; Hi-Tech Parks are declared as Bonded Warehousing Station; Exemption of Income Tax on Dividend, Share Transfer, Royalty, Technical Fees for investors; Exemptions of Income Tax for Foreign Employees; Exemption of Income Tax on declared Dividend by Park Developers; Exemption of VAT during production level of goods by the Investors; Exemption of Duties on importing Goods/Materials to be used for the development of Hi-Tech Parks by the Park Developers; Exemption of Duties on importing Transport by the investor.

To simplify and expedite service delivery, the BHTPA has launched online One Stop Service system under the One Stop Service law. As a result, an investor can easily get all kinds of information and service related to the investment. Already 7 kinds of services have been delivered through these windows. The total investment is about US$38 million and proposed investment is about US$281 million by the close of Eighth Five Year Plan (8FYP). In the Hi-Tech Park, mobile phone assembling company, fiber optic cable production company, biotech company, software developer company and BPO, and call center related companies are already in operation.

7.3.3 Bringing Higher Accountability, Transparency and Efficiency to Government

The key objective of pursuing the establishment of a 'Digital Government' was to leverage technology in all spheres of government with a sharp focus on ensuring delivery of much needed services to those who were the least served in an easy to access and affordable manner.

Aggregated, citizens of Bangladesh have saved over $22 billion, nearly 12 billion workdays, and 7.5 billion visits in the last decade due to the more efficient delivery of public services alone. Thanks to an array of last mile service delivery innovations that were designed to be citizen-centric and developed with a bottom-up approach (Wikipedia, 2022[77]).

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[77] https://en.wikipedia.org/wiki/Digital_transformation

Over 8,500 ICT-empowered one-stop service delivery outlets popularly known as 'Digital Centres' are operating in rural areas with financing from the government, private sector and local entrepreneurs. A partnership initiative among the Prime Minister's Office, Cabinet Division, ICT Division, Local Government Division, and a2i, every month, these centers serve over 5 to 6 million hard-to-reach citizens who digitally access diverse critical services including over 340 public services such as birth registration, land records, exam results, registration for work permits abroad, telemedicine, and timely information on agriculture through these Digital Centres conveniently located within walking distance.

Box 1. Digital Centres - Empowering a massive population in a thumbprint of a country

Char Kukri Mukri is located in Bhola, the southernmost district of Bangladesh. 'Char' means 'riverine island' in Bengali and several rivers flow through this beautiful but poverty-stricken sub-district which is the poorest in Bangladesh. Its 150,000 plus inhabitants live on just 25 square kilometers of low-lying land and at high tide, extensive portions are under water. Much of the shore is mud flats. Born in a thumbprint of a country with a population of over 160 million, they have settled there because they have nowhere else to go.

As a result, the chronically poor people of Char Kukri Mukri find themselves on the frontlines of the struggle against climate change battling river erosion on a daily basis and living constantly under the threat of losing their homes and crops. Disconnected from the mainland, they also find themselves excluded from basic public services, banking and commerce. Specially during the monsoon season, it is often not safe for people to travel to the mainland to avail essential services, besides it being a journey that takes several hours.

a2i, the flagship digital transformation program of the Bangladesh Government with support from UNDP, set out to transform the way public services are delivered to these communities. Housed within the Prime Minister's Office, and in collaboration with the Cabinet Office and all line ministries, they've set up one-stop shops popularly known as Digital Centers in all 4,500+ union councils – the lowest administrative tier in Bangladesh – including, Char Kukri Mukri. In fact, the Digital Centres were jointly launched by Prime Minister Sheikh Hasina, and former Prime Minister of New Zealand Helen Clark, from Char Kukri Mukri itself.

There is now effectively a start-up in every village in Bangladesh. Micro-entrepreneurs, a woman and a man for each Digital Center, typically high-school graduates from the local community, assist citizens to access digital government services. Since they do not receive any salaries from the government, they charge a small fee for each service. The services themselves come from multiple ministries and agencies such as land, passports, education, social welfare, among several others. The Digital Centre Entrepreneurs also bring in private sector services such as mobile money and agent banking that have market demand in their location. As a result, citizens from even the remotest parts of the country can now avail their government allowances, access full-service banking facilities from a bank of their choosing and make payments for a wide array of government services, all digitally.

All this was not achieved in a single day. Neither was the road to success without any obstacles. The Digital Centers were launched two years before 3G was officially launched in the country. So, imagine thousands of centers with 2G modems, many of them hanging from treetops to get a signal from mobile phone towers far away. Also imagine, around a thousand of the 4,500+ Digital Centers not having any electricity because there were in off-grid areas like Char Kukri Mukri. So, solar panels had to be quickly procured to power them.

The concept of the Digital Centers and the scale up of the model across Bangladesh disrupted all the norms traditionally associated with government and bureaucracy. From decentralizing the work, to bypassing the established hierarchy, to empower local administrators, to convincing prime ministers to launch the initiative to garner the political capital and publicity crucial to success; it took a small but dedicated team that had the weight of the Prime Minister's Office behind it, and serendipity.

Whether it's providing assistance to secure social safety net payments, apply for passports, engage in e-commerce, or make the most of mobile money, the Digital Centres have transformed the way people, especially the poor living in remote, rural areas, look at and access services. And the numbers speak for themselves:

- 9,000+ micro-entrepreneurs have delivered over 700 million services to over 60 million Bangladeshis since 2010.
- Aggregated, citizens of Bangladesh have saved over $22 billion, nearly 12 billion workdays, and 7.5 billion visits in the last decade due to the more efficient delivery of public services alone.

All this means that the broader socio-economic condition of these remote communities is being developed. People can access vital services when they need them, quickly, reliably and sustainably, enhancing their resilience to shocks and enabling them to take advantage of opportunities to improve their lives.

It's hard to draw a picture that illustrates the daily impact of the Digital Centers in remote communities, but Ritu's (the young woman smiling in the photo above) story is one powerful example.

On her 16th birthday, Ritu got a sewing machine as a birthday gift from her aunt. She was filled with joy and excitement about the possibility of realizing her dream of becoming a fashion designer and supporting her family.

She worked day and night to create the perfect dress. Finally, when it was ready, Ritu and her mom undertook the long, perilous journey to the nearest *bazaar* on the mainland by boat. But alas, the customers there either did not appreciate the craftsmanship or couldn't afford to pay a fair price. The next weekend, they tried again traveling to popular marketplaces in other towns. While some traders saw how much the dress was worth, the prices they offered wouldn't even cover the cost of materials let alone the value of Ritu's skill and labor.

When Mita, the Digital Centre entrepreneur from Ritu's village in Char Kukri Mukri heard about it, she snapped a picture of the dress and uploaded an advertisement on ekShop – an online e-commerce aggregator that combines the physical network of the Digital Centers with all major e-commerce marketplaces in Bangladesh. So, the advert for Ritu's dress popped up on all popular sites and another young woman in the capital city Dhaka bought it.

This is not just the story of Ritu. This is the story of millions of marginalized rural youth, artisans and farmers in Bangladesh unable to secure a fair price for their products as they lack the means to reach new, urban customers directly, bypassing multiple layers of traditional, high-cost intermediaries. The advent of the Digital Centers has not only

improved equity in delivering public services, but also created a sustainable model for access to markets and, doubling as banking agents, it has also enabled access to affordable finance, which is one of the critical constraints to the growth of CMSMEs in Bangladesh. Furthermore, Digital Center Entrepreneurs like Mita also assist in opening virtual shops, connecting and negotiating cheaper prices with logistics partners, as well as receiving and making payments digitally.

All line ministries have redesigned their services to make them 'e-deliverable' through these Digital Centres. Innovations like 'Nothi' are replacing the two-hundred-year-old bureaucratic tradition that saw a service request or application by a citizen spend numerous months crisscrossing a myriad government officers' desks and departments – the whole process now takes place online. Operational in all the hubs of divisional and district administration, this indicates a marked shift in the mindset of government service providers who are revitalizing the civil administration through the adoption and application of ICTs to become more citizen-centric and responsive to citizens' needs by reducing time, cost and visits for citizens.

Financial inclusion has been expanded through digital social safety net payments, rural branchless banking (taking full-service retail banking to the doorsteps of all villagers), mobile banking (which reached a client base of over 100 million), and the payment of utility bills. A citizen from the remotest part of the country can now avail their government allowances, access full-service banking facilities from a bank of their choosing and make payments for a wide array of government services, all digitally.

Moreover, the government has created one single address, www.bangladesh.gov.bd, for all its information and services by virtually uniting all 52,000 of its offices, detailed information on nearly 657 services from forty ministries and agencies, and over 1,700 government forms in one virtual location.

'333' - the National Services Access Helpline that enabled all citizens to stay connected with their government during the strict COVID-19 lockdowns. Pioneered in 2018, it provides numerous types of assistance with nearly 73+ million calls received since its launch.

As part of the implementation of e-Government Master Plan, Hon'ble ICT Advisor to Hon'ble Prime Minister Mr. Sajeeb Wazed inaugurated the implementation of a pilot project called "Digital Municipality Services System Development" in 9 municipalities and 1 City Corporation on 20 October 2019. At present a total of 5 services such as certificate, trade license, holding tax, water bill, property management are being provided through the said pilot project. The Digital Sylhet City Project has been initiated to turn Sylhet into the country's first smart city. For automation of different government organizations, Bangladesh e-Government ERP Project has developed common ERP software (nine modules) primarily for use by nine organizations under the Planning Division and ICT Division. Digital Island Moheshkhali Project has improved the quality of public services in an isolated region through the utilization of ICT solutions.

To ascertain the proper applicability of the software and hardware produced, developed, purchased by different government departments and agencies and maintain its quality, BCC has established Software and Hardware Quality Testing and Certification Centre. Based on

leading standards, practices and frameworks, but aligned and tailored as per Bangladesh government's requirements and strategic objectives, Bangladesh National Digital Architecture (BNDA) project has created a digital architecture for all e-Governance projects in the country. Design, development and implementation of interoperability framework across the GoB have been developed through this project.

To establish Bangla in computing as a leading language at the global platform, Enhancement of Bangla Language in ICT through Research and Development project has been working to standardize various features of Bangla language and develop tools, technologies and contents for Bangla computing. Under this project 16 software / tools / resources for Bangla language will be developed including OCR, speech recognition, spell checker, among others. This will create opportunities for the use of Bangla at the international level.

BCC has developed a Computer Incidence Response Team (CIRT) to improve the cyber security defense capability of the Bangladesh Government. Six Certification Authority organizations are now providing digital signature certificates and related services to various government and private organizations and to interested individuals. Different governmental and non-governmental organizations and banks have already started using digital signatures in their own websites and individual level.

A Virtual Private Network (VPN) connection was established to link with NID database of the Election Commission to verify user information for issuing digital signature. e-Tender and e-file systems were launched at the Office of the Controller of Certifying Authorities. This office received membership of the OIC-CERT (Organization of the Islamic Cooperation-Computer Emergency Response Teams). Digital Forensic Lab was established to control and investigate cybercrimes under the project "Improvement of PKI (Public Key Infrastructure System) and Capacity Building of the CCA Office" and PKI systems was upgraded. By establishing a world-class" PKI system, cyber security would be ensured through the use of digital signature certificates for online transactions and information sharing.

Much progress has already been made on digital security awareness. Adolescent girls, students, teachers, journalists, and government officials have been imparted training on cybercrime, related laws, safety strategies on social network platforms, ways to get rid of crime, and specific procedures to register complaints, and so on. An online service called 'Digital Evidence Management & Reporting System (DEMRS)' was introduced in the CCA's office for the prevention of crime, investigation and immediate detection of offenders online. All these awareness raising and technical fortification measures caused rapid improvement Bangladesh's global ranking in cybersecurity in the last two years.

7.3.4 Driving Equitable Growth in the Private Sector

ICT is an emerging high-potential export sector for Bangladesh. In freelance outsourcing, Bangladesh has consistently held a position in the top 5 popular destinations regarding outsourcing from OECD countries. According to the Global Location Service Index, a market analysis tool offered by AT Kearney, Bangladesh ranks 21st in IT outsourcing, business process outsourcing and software development. The country also has the second-largest number of

freelancers worldwide, according to the Oxford Internet Institute, and more than 40,000 people work in the outsourcing industry, earning more than $300 million (267 million euros) every year, according to the Bangladesh Association of Call Centre and Outsourcing (BACCO).

The local IT market has seen significant growth in recent years because of massive digitization of major industries such as garments, textiles, leather, food processing and ports which now recognize IT not only as a tool for survival but also as a driver for growth. Bangladesh has earned approximately $1.3 billion (around 890 million euros) in the last year through its IT services, according to Bangladesh Association for Software and Information Services (BASIS). The government now wants to earn $5 billion (around 4.4 billion euros) within 2025.

The Bangladesh Government continues to make progress on rural e-Commerce. Traditionally considered an urban phenomenon, a2i has revolutionized the way e-Commerce is done by taking it to Bangladesh's villages. Rural women can now tailor clothes and produce other artifacts in their homes and sell them to urban clients thanks to the 'ekShop' aggregation platform which connects to all major online marketplaces and the 'e-Joyeeta' online platform recently launched by the Department of Women Affairs, where the Digital Centres are starting to act as the community hub for e-Commerce providing digital livelihoods for the youth.

7.3.5 Managing and Institutionalizing Public Service Innovation

7.3.5.1 Tool for Measuring Hassle: TCV

When a2i started talking to civil servants about innovation; they almost immediately got bogged down in debates around what did or did not constitute innovation. What exactly is 'innovation'? How do you identify it? How do you measure how 'innovative' something was? Opinions were sharply divided at the senior levels while frontline government employees – who were closer to citizens and thus potentially had more ideas to contribute – found it difficult to even conceptualize it. Since a2i initially put a big emphasis on leveraging ICT4D to fast track the rate of progress in public service innovation, to many, technology equaled innovation. So, any initiative, service or product with even an element of technology was deemed to be innovative.

Finally, a2i stumbled upon 'TCV' (Box 2). Both a definition everyone agreed on and a metric that everyone understood.

Box 2. Definition of 'TCV'
An acronym to capture 3 simple parameters from the
perspective of citizens:
- Time (T) to receive a service from application to final
  delivery.
- Cost (C) to receive a service including all cost components
  including real and opportunity costs from application to final
  delivery.
- Number of visits (V) to various government offices from
  application to final delivery.

It made sense to everyone that anything that reduced the time, cost and number of visits it took for citizens to access public information and services constituted the creation or enhancement of utility and positive change. Thus, 'reducing TCV' became government-speak for innovation. There was no ambiguity there, everyone understood it and agreed with it. The beauty lied in the fact that it put citizens right in the centre and was not about innovation per se; rather, it was about reducing TCV - for the benefit of the government and its citizens alike - that lead to innovation as a byproduct.

7.3.5.2 Tool for Reducing Hassle: SPS

How do you actually reduce TCV? The series of workshops with government officials demonstrated to a2i the importance of the use of context-appropriate language. It thus replaced the term 'Business Process Re-engineering' with 'Service Process Simplification' (SPS). The latter term was more meaningful to policymakers and government service providers who did not consider themselves to be engaged in either 'business' or 'engineering'!

SPS helped government officials to analyze and redesign workflows within and between ministries in order to optimize end-to-end processes and automate non-value-added tasks. It empowered them to fundamentally rethink how they do their work in order to dramatically improve the quality of services, cut operational costs and reduce TCV for their citizen clients.

7.3.6 Progress in ICT Sector during Covid in Bangladesh

The COVID-19 pandemic was a new threat which demanded fast decision making, flexibility, and a new way of doing government. Above all else, it required, more than ever before, listening to the citizens, to understand what they required during this crisis for both life and livelihood; government and private sector working together in an unprecedented way; and repurposing 'Policy Legos' – the inclusive, citizen-centric building blocks of societal and policy innovation that enable the construction of new innovations – built over 12 years of Digital Bangladesh to create new solutions in a matter of days.

With the nation in the grips of its first countrywide lockdown, served by only a couple of RT-PCR labs, the National Service Access Helpline '333' was repurposed as a COVID-19 helpline

to enable millions of people without smart phones (smart phone use among poorer, more rural segments of society remains relatively low) to self-report symptoms. In an organic way, 333 evolved into a telemedicine line that enabled over half a million COVID patients and 2.4 million pregnant women to receive medical advice.

Moreover, the platform was repurposed several times more including as an emergency response to curb child marriage and to provide food support to families facing food insecurity during lockdowns. It also formed the basis for a national, collective data intelligence system that enabled secure sharing of anonymized data between telcos and government to launch syndromic surveillance to track disease progression 7-10 days before RT-PCR testing, helping save lives.

When the pandemic threatened to end all forms of education for 43 million students in the country, there was an immediate response from the government. While plenty of internet-based solutions existed, reliable internet for education purposes was only available to a fraction of the students in the country, which meant that the large majority would be deprived. Thus, the Parliament TV - once a TV station that was largely under-utilized by airing parliament sessions every few months - was repurposed to deliver thousands of daily lessons -- a transformation that took just 6 days.

Innovative procurement practices that allowed rapid procurement of digital content using teachers and start-up companies saw the number of contents dramatically increasing to well over half a million and users on Teacher's Portal jump to nearly 600,000. 'MuktoPaath' was inaugurated by Hon'ble Prime Minister Sheikh Hasina as an open e-learning platform in 2016, predominantly to enhance skills and professional development across multiple sectors (e.g. teachers, government . officials, doctors, nurses, migrant workers, tertiary graduates, youths, etc.) even amongst those underserved and low in literacy. In 2018, there were over 130,000 learners registered on MuktoPaath. That number has now exceeded 1.23 million including doctors, nurses and other frontliners and essential workers who received online training and capacity development through this platform.

All of these platforms were made possible thanks to joint efforts of the Ministry of Education, Ministry of Primary and Mass Education and a2i.

Within a month of the first person in the world receiving her COVID vaccine, the Government of Bangladesh had procured the first doses for its own citizens and put an ambitious vaccine distribution plan in place. Crucially, just when the government was looking internationally for an electronic vaccine registration and rollout management system, a team of Bangladeshi software engineers from the Department of Information and Communication Technology (DoICT) of the government's ICT Ministry, presented their proposal for Surokkha – Bangladesh's digital vaccine management system.

After being vetted by the National COVID-19 Vaccine Committee, they were given just three weeks to complete the development of the system. The Surokkha App was finally launched on January 25th, 2021, two days prior to the inauguration of the national COVID-19 vaccination drive by the Hon'ble Prime Minister.

Surokkha is a shining example of the capabilities of homegrown information technologists in Digital Bangladesh. User-friendly and with an access capacity of 50 million at a time, it takes only a few minutes for vaccine registration with the applicant needing a National ID and a few clicks on the website or the companion app. Once the registration is done, the user gets an SMS and the application is transferred to the appropriate vaccination center automatically. Surokkha has also proven itself to be secure by   withstanding a number of cyberattacks to interrupt the service boasting 183 million Registrations to date.

Covid-19 also made the government aware the need and the opportunity to create an education system that is adaptive, resilient, and anticipatory in response to this current pandemic and future crises. This resulted in the development of a National Blended Education Masterplan, so that students from all backgrounds have access to quality learning opportunities, either physically or virtually, whether they are at home, in their own communities or at schools. It will help ensure that all students have access to an inclusive learning system, irrespective of their access to technology at home.

The pandemic saw courts being shut, resulting in bail cases piling up, further crowding already overcrowded prisons, and lives endangered as a result. With the launching of Virtual Courts in a matter of 12 days to hold virtual bail hearings, overcrowding in prisons fell by 11% in 2 months. The pandemic also saw millions of people falling back into poverty and extreme poverty, as their livelihoods were taken away. This is where a previous technology infrastructure for citizens to receive social welfare payments electronically, was repurposed to a new, expanded, digital social safety net program to extend support to 5 million people of the 'new poor' using e-KYC tied to biometrically verified smart NID.

7.3.7 Key Areas for Future Development

Less than 1% of the population used the internet in 2008 giving Bangladesh one of the lowest usage percentages in the world, ahead of only North Korea, Myanmar, and Sierra Leone. On the road towards digital transformation, by the end of 2021, the number of internet subscribers had risen to 124 million (74.36% of total population). However, this still leaves out approximately 25.64% of the population of the country. Also, of the people who have access to the internet, only a small fraction have access to broadband, rendering rich content access such as for education and healthcare extremely difficult to impossible.

This divide is also further entrenched by imbalances in terms of income and other financial limitations, lower-quality or high-priced connections, low level of education, lack of digital literacy, poor technical assistance, and limited access to quality ICT content. Even for those who are able to access the internet, both the range and quality of the services they can access remain inadequate. Specifically, e-government service gaps exist due to the constraints on the public service delivery system.

In a time of such rapid change symbolized by the advent of the Fourth Industrial Revolution, inadequate skilled resources stand out as the single largest barrier to Bangladesh's graduation to a knowledge economy. Skill gaps exist at multiple levels in agencies and among citizens, including basic ICT and smartphone literacy of citizens, particularly among senior citizens;

digital service design and implementation; business process transformation; management of data centers and ICT systems in a secured manner; integration, interoperability and information exchange between internal and external systems; and strategic ICT management and foresight.

Few digital services have yet achieved high levels of take-up among the mass public, and typically run alongside the existing paper-based systems (adding cost and complexity to service delivery while benefiting only some users of the services).

Most of the information systems across government agencies are still running on disparate data centers, ICT architectures and software development platforms, with duplicated requirements and investments. Systems have largely been developed in isolation from each other and so are difficult to integrate. Awareness of the National Digital Architecture and the e-Government Interoperability Framework is low, and people who are aware of them are unsure about the practical implementations for their ministries.

Insufficient capacity with existing shared services poses another challenge. While BCC already offers shared ICT services (e.g. hosting on the national data center, computer emergency incident response), it lacks capacity to meet demand in full. Similarly, although government agencies increasingly appreciate the importance of improving the cyber security of their digital systems to protect the public administration from continual and evolving cyber threats, they lack skills, processes and the resources to address the need adequately.

4IR technologies such as artificial intelligence, big data analytics, blockchain, robotic automation, drones, among others, are hardly being leveraged in public service delivery today, whereas the potential to improve the lives of citizens using these technologies is immense. With this recognition, the Cabinet Secretary initiated a program in 2021 through a2i to engage all ministries and agencies of the government to utilize appropriate 4IR technologies to improve public service delivery, very similar to how the Prime Minister's Office pioneered the use of digital technologies in 2009 after the clarion call of Digital Bangladesh by Prime Minister Sheikh Hasina. As of the middle of 2022, over a thousand ideas have been generated across the entire government to modernize the government and make it more citizen-centric using these frontier technologies, and nearly fifty initiatives are already underway.

In parallel, Civil Service 2041 (CS2041) program was launched in 2022 by the Cabinet Division, with secretarial support from a2i, to re-imagine and re-design civil service to make it future-ready and fit-for-purpose for the rapidly changing world of today and tomorrow. The goal is to build a visionary civil service that is energized by a spirit of entrepreneurship with the public sphere – called Govpreneurship – capable of innovating and ingraining novel approaches and technologies to address public problems. The program helps civil servants grow in four areas: leadership, technological immersion, data skills, and human-centered design. CS2041 is engaging a network of collaborators across national and international institutions within the public-private-academic triple helix.

7.3.8 Smart Bangladesh Vision 2041

There was a time when farmers and fishermen used to rely on luck and experience to decide when to harvest their crops to avoid having them drowned by seasonal floods or, where to cast their fishing nets on the high seas. Now, a network of satellites 20,000 kilometers above the earth provides early, accurate flood forecasts and feeds data into the Global Positioning System (GPS) installed on boats telling fishermen where a good catch is likely to be found.

In an earlier age, farmers and fishermen would be unable to gauge where they could get the best price for their produce. Now, they simply call markets from Katakhali to Karwanbazaar, negotiating the best price for their harvests.

The changes brought about by mobile telephones on the business fortunes of millions of Bangladeshi farmers, fishermen and their ilk are remarkable. That the introduction of ICTs can have unexpected and beneficial consequences is a hallmark of a well-designed, inclusive digital economy. By throwing technology open to the public and bringing in players across the public-private spectrum, the Digital Bangladesh has spurred growth and development in myriad new ways.

Box 3. What is Smart Bangladesh really?

What was a dream on March 7, 1971—Independent Bangladesh—became a reality on December 16, 1971. What was a dream on December 12, 2008—Digital Bangladesh—became a reality on December 16, 2021.
The newly announced dream on December 12, 2022 – Smart Bangladesh – will also be a reality on December 16, 2041. So, officially, we are now in the era of Smart Bangladesh. But what does this term mean?
A "smart nation" is defined as "harnessing emerging technologies, networks, and data to create tech-enabled solutions that contribute to nation-building."
Too vague? Too techno-centric? Too detached from citizens' benefits? Yes!
The big picture answer is that Smart Bangladesh 2041 will be defined by a number of characteristics. These are:
1. High-income: GDP per capita of at least $12,500;
2. Poverty-free: 0% extreme poverty and under 3% poverty
3. Macroeconomically stable: Low inflation (4-5%), low deficits (5% of GDP), increased investment (40% of GDP), and increased tax revenue (20% of GDP)
4. High human development: 100% high-school education including digital literacy, and 100% health financing for everyone while making the best use of our demographic dividend
5. Sustainable urbanization: 80% urban nation with 100% electrification, majority from renewable sources
6. Service at fingertips: 100% public services paperless and cashless, and at the fingertips of 100% citizens in the way they desire
Most importantly, Smart Bangladesh is all about establishing an equitable nation—equal rights, equal opportunities, with no marginalized groups.
In order to explain the four core pillars of Smart Bangladesh – Smart Citizen, Smart Government, Smart Society, Smart Economy – let me try and tell you stories of 4 Bangladeshis from 2041.
1. Smart Citizen: I Am the Solution

Sharbani Dutta is an 18-year old high-school student from Barisal. On her way to school, she is picked up in an electric, self-driven school bus, which uses a route provided by the local Smart Centre (which are an amalgamated form of Post Office 4.0 along with Union Digital Centre 5.0, and Private Sector 6.0).

Due to the construction of a new flying car terminal along the route, that route has become very time consuming for the students.

Sharbani takes it upon herself to find a solution to this problem. She works with the school authority to modify the bus route by putting in different coordinates for student pickup locations, thereby shortening the bus route by an average of 12 minutes.

That is the smart youth of Smart Bangladesh. Each citizen is empowered to make positive changes and contribute to nation-building. They will no longer be looking for a solution from those in "power", be it in the government or the private sector. Instead, much like Sharbani, they are the first to be the solution.

2. Smart Government: The Govpreneur

Bangladesh successfully reached its goal of reducing its maternal mortality rate to 70 per 100,000 live births in 2030. But the target of reducing it to 50 per 100,000 continues to elude. Moreover, there is a strange illness that is sweeping through the country, specifically affecting pregnant women.

Sahera Banu, the DC of Tangail, does not panic. She has built up a career as someone not afraid to experiment and take bold steps with calculated risks—much like an entrepreneur. She reaches out to the top AI and IoT companies in the country, and connects them with the Upazila Health and Family Planning Officer (UHFPO). Through an appropriate design thinking approach, high-risk pregnancies are quickly identified with low-cost, low-power, 10G-enabled wearable health bands that transmit vital diagnostic information to the clinics real-time on a 3D dashboard. Within days, the selected companies integrate their solution into the government's Inclusive Digital Transformation Architecture, ensuring privacy protection for the pregnant women and re-prioritization of the UHFPO's interventions to the women with the highest health risk, saving precious lives.

Sahera Banu is what we call a govpreneur; while a government officer, she has entrepreneurial space and freedom to experiment, and being the facilitator for public-private partnerships that lead to not only solutions for citizens, but ultimately, trust in the government.

3. Smart Society: Leave No One Behind

Ruma Chakma is a middle-aged widow from Bandarban with visual impairments. Thanks to digital currency services, she receives allowances at home through the government's social safety net initiatives.

She also has an active social circle with whom she meets and discusses mutual interests. She goes shopping for groceries, and also orders them home, drone-delivered. She enjoys stories, and interacts with her favorite Humayun Ahmed characters in the Bdverse.

Digital Bangladesh was all about being citizen-centric. Smart Bangladesh goes further— the government is completely of, for, and by the people. All people. Citizens like Sheema are an active member of society, just like you and me. She leads an everyday life, and is able to do everything you and I could.

This change will be what we call an ultimate demand side response. The concept of "leave no one behind" is often misunderstood. It isn't providing relief to those in need—the disabled, the marginalized, the minority. It is empowering them with a life where they no

longer identify as such. It is a society that does not need tolerance, because everyone truly is equal.

4. Smart Economy: My Village My Town

Kajira Begum runs a small fabric shop in Moulvibazar, and employs four other women. Every day, she takes risks, makes decisions, fends off threats, monitors her business. She provides support to her children, her elderly parents, her employees, and her community. What she also does is use AI to write copies and post ads. She uses voice-assisted software to calculate her inventory and do her accounting—in her local dialect. She uses the 3D printing facility at her local Smart Centre to print accessories for her fabrics. Her website uses an AI supported voice-bot to answer customer questions, one shared by a million CMSMEs like herself, provided by Smart SME Foundation.

If a smart society is an inclusive society that leaves no one behind, then a smart economy does the same for businesses. Small business owners like Kajira Begum are no longer deprived of facilities associated with big cities. She has no reason to leave her village to seek greener pastures. Everything she requires to operate a business is within reach.

Smart Bangladesh: The Ultimate Goal

The four stories will happen in 2041. While 18 years seems far away now, much like 2021, 2041 will arrive in the blink of an eye—and we must be ready for it, all hands on deck. Achieving Smart Bangladesh will not be simple—but much like the birth of our nation and achievement of Digital Bangladesh, it must be done. And perhaps it must be done against ridicule of naysayers, negative forces of the vested interest groups who benefit from the status quo. This will not happen overnight—it is a step by step, daily process that will take us there, beyond having that singular goal and the will to achieve it.

4 Core Tenets:

1. Alignment (of aspirations and ambitions): Each and every Bangladeshi has aspirations and ambitions for the country. We must align all of that into a cohesive, national target for Smart Bangladesh.

2. Preparation (across all stakeholders): Each and every stakeholder–the government, private sector, civil society, academia, media, and most importantly, each and every individual–must have appropriate capacity development and be prepared to take our nation to the next level.

3. Coordination (to break silos): There can be no silos across stakeholder groups. Preparation must be seamlessly connected overcoming bottlenecks.

4. Execution (that is measured): We cannot stop at the planning stage. Measured, identifiable execution must happen at the end of every year.

Four pillars that form the foundation. Four tenets to support those pillars. Let's create Smart Bangladesh, our Shonar Bangla.

Today, the government's primary role is no longer of a service provider building telecom switches and handing out telephones to subscribers. Instead, the government has defined rules for telecom companies, and established regulators like the Bangladesh Telecommunication Regulatory Commission (BTRC), which ensure that laws are followed, and consumer interests are protected. By taking a minimalist approach, in which private sector participation competes in a regulated environment, the government has helped to make Bangladesh's mobile phone network among the largest and cheapest.

Our marketplaces are in the midst of a digital revolution. The falling prices of smartphones and data services have led to new business models which use the internet and information services to challenge existing players in fields ranging from retail to transportation. Increasingly, traditional government domains are now being served by the private sector helping to redesign services around the needs of citizens.

Bangladesh emerged as one of the leaders in e-government development among the LDCs, according to the UN E-Government Development Index (EGDI) 2020. Success in advancing the country's e-government development has largely derived from strengthening the online connectivity of the public sector, online services delivery, and investments in the digital literacy of public sector employees. Ranked 119th among 193 countries, however, Bangladesh needs to progress further to position herself among medium to high-ranking countries in digital service space and indexes. As shown in Annex Table I, there has been ample opportunity of progress in key areas starting from e-Participation to ICT business model creation to leverage ICT for growth, reaching a similar level of high performing countries so that ranking keeps improving.

On December 12th, 2021, the Digital Bangladesh Day, we stood together, the people, the government, private sector, civil society, academia, and celebrated with great pride our shared achievements of Digital Bangladesh in the golden jubilee of our nation's independence. However, the father of the nation Bangabandhu's philosophy and Prime Minister Sheikh Hasina's vision teaches us development means nothing if it's not equitable. Trickle-down economics doesn't always work. While more than five million people became millionaires by US standards across the world in 2020, many poor people became poorer during the Covid-19 pandemic.

Designed from the bottom-up, Digital Bangladesh has always been about delivering solutions that would help the masses, those without internet, those without smart devices, and help bridge that digital divide. However, our celebration   recognizes that the digital divide undoubtedly still exists and threatens to become worse in the new normal.

In order to successfully complete Bangladesh's LDC graduation by 2026, achieve the SDGs by 2030 and respond to Prime Minister Sheikh Hasina's clarion call of building an equitable, high-income, Innovative Bangladesh by 2041, the nation will require an uncompromising and relentless focus on ensuring digital equity enabled by an inclusive, digital ecosystem that is ubiquitous and prioritizes the needs of the marginalized above all else. And this can only be sustainably achieved by a concerted collaboration by the public-private-academia-citizens quadruple helix.

8. Establishing the Connect

What we have seen in the previous section is a snapshot of a fourteen year journey. By connecting the dots at the back, a beautiful picture has emerged which can transcend boundaries and create endless opportunities to render solutions. We believe that since there

is a very little time left in attaining the SDGs in a timely fashion, we focus on the model for ICT-D and a2i projects in Bangladesh and deploy them for a quick win across the global south.

There have been many attempts to acquire funding for the lofty ideas of the SDGs and also for channelling funds for the development of domestic priorities and deliverables. There are both national and regional priorities as well as international and global obligations. This is a continuous process of dialogues and narratives extending beyond their pre-designated ideas and ideations for reaching up to the expected level of outcomes and outputs – as in enhancement of national output and income – leading to accrual of wealth and manifested by continued and steady development in the human development. This three-part epistemology is located in the nexus connecting resource mobilisation needs for the global south and the digital ecosystem churning out ICT and ICT enabled services – ultimately leading to constituent components of Artificial General Intelligence. Essentially, the epistemology indicates the nature of the continuing evolution of the thoughts contributing to the formulations of the historicity of the institutional mechanism underwriting platforms for such resource mobilisation.

The primordial part in this whole scheme of events is a desired ecosystem of activated factors of production and their connection to a range of consumption and supply chain dynamics. The lofty ideals of contributing 0.7% of the GDP to ODA has questionable results, to be the least (Georgeson and Maslin, 2018[78]). The situation has aggravated further with the roll out of two global crises, i.e., the COVID19 (Ozili and Arun, 2023[79]) and the Ukraine-Russia crisis (Mbah and Wassum, 2022[80]). There is a marked discord in the timing of the desired end state of successful realisation of the SDGs and the commitment of funds for such an end. Couple that the adverse impacts of climate change and the carbon signature associated with the calculations necessary for assigning redressal (read, loss and damage) or redemption responsibilities are also dismal (Allan, 2019[81]). These are, again, contributing towards the fragmentation of global supply chains – leading to uncertainties and vulnerabilities (Mchopa et al, 2021[82]). What is missing is a comprehensive picturisation of the systemic fallibilities and inadequacies leading global systems to a dangerous precipice (Schor, 2015[83]). Yet, there is no

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[78] Georgeson, L. and Maslin, M., 2018. Putting the United Nations Sustainable Development Goals into practice: A review of implementation, monitoring, and finance. *Geo: Geography and Environment*, 5(1), p.e00049.

[79] Ozili, P.K. and Arun, T., 2023. Spillover of COVID-19: impact on the Global Economy. In *Managing Inflation and Supply Chain Disruptions in the Global Economy* (pp. 41-61). IGI Global.

[80] Mbah, R.E. and Wasum, D.F., 2022. Russian-Ukraine 2022 War: A review of the economic impact of Russian-Ukraine crisis on the USA, UK, Canada, and Europe. *Advances in Social Sciences Research Journal*, 9(3), pp.144-153.

[81] Allan, J.I., 2019. Dangerous incrementalism of the Paris Agreement. *Global Environmental Politics*, 19(1), pp.4-11.

[82] Mchopa, A., William, J. and Kimaro, J., 2021. Global supply chains vulnerability and distortions amidst covid19 pandemic: antecedents for building resilience in downstream logistics. *Journal of Co-operative and Business Studies (JCBS)*, 5(2).

[83] Schor, J., 2015. Climate, inequality, and the need for reframing climate policy. *Review of Radical Political Economics*, 47(4), pp.525-536.

global level dearth of resources – only fragmentations in ideas, ideologies and idiosyncrasies. There must be a measure for creating demonstrable and demand driven impact for incubating, nurturing and sustaining the dialogues necessary for the deployment of a common minimum humand development agenda. We believe that our case study on the measures undertaken by the Government of Bangladesh through the a2i and the ancillary enterprises hold one of the most plausible keys to solving the crises of stability and a manageable programme for reaching the SDGs.

It is important that the full range of productive resources have its desired end in spaces where they are consumed for an equitable compensation, or remuneration or rent (or price). What's is important is to find out what the gaps are and how to address the gaps in a responsible manner. Setting goals, apparently, has been an issue which is well resolved with the acceptance of the SDG 2030 – albeit the goals being more of a wish list than specific plans supported with solid financing and technical plans. This paper proposes a solution to the problem by citing the example of the experience of the A2I (aspire to innovate) as a frugal innovation model which can be used for solving the problems arising out of gaps in financial and technical deficiencies impregnating the cauldron of woes the global south remains imbued with. While the world as we know of will not have enough time to create solutions and test them with apriori algorithms for a fit before time runs out – in the milieu of an open and inclusive democratic polity – there remains literally one option – to test the hypothesis with workable solutions. We have reasons to believe that the a2i model solves at least two problems quite efficiently. The first being that of utilising pre-deployed public digital ecosphere for creating new solutions and the second being that of drawing on existing knowledge and skills to bypass an innovation and engineering cycle and creative an immersive environment where tangible solutions are achievable, reachable, observable and measurable (AROM). The toolbox deliberating a deliberate attempt for quantifying the a2i experience is that of the TCV – which can work as a proxy for creating tangible outcomes and also for maintain the correct course in time.

9. Conclusion

The experience of Bangladesh – especially in the ICT sector and that of the a2i and the ICT-Division – have been eye opening. For all practical purposes, the innovation models deployed under the Digital Bangladesh campaign has displayed tell-tale signatures of ICT based innovations where the path towards a certain goal keep spawning forever more refinement in goals and keep adding more dimensions and more problems as they keep solving the original or the first-intended ones. As Oinas and Malecki (2002[84]) had predicted, the innovation models slowly evolve from a purely enterprise level to that of the spacetime of both the state and the region, in that order, spatially. Bangladesh's ICT sector innovation bear the marks of frugal innovation (Niroumand, et al, 2020[85]) through, "*enablers of frugal innovation are world-class design, human aspect, marketing, support, knowledge, social aspect, prototyping,*

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[84] Oinas, P. and Malecki, E.J., 2002. The evolution of technologies in time and space: from national and regional to spatial innovation systems. *International regional science review*, *25*(1), pp.102-131.

[85] Niroumand, M., Shahin, A., Naghsh, A. and Peikari, H.R., 2020. Frugal innovation enablers: a comprehensive framework. *International Journal of Innovation Science*.

cultural aspect, environmental aspect, distinct brand creation, core functions focus, local R&D, cost-cutting business model and low-cost production" (ibid). More importantly, they also indicate a shift towards governance and state-building, institution-strengthening nature of the purely tech based innovations – fulfilling the self-fulfilling prophecies of open innovation mechanisms and platforms (Cavallo, et al, 2022[86]).

The ICT endeavours also predict an ease in collecting and collating financial resources from ancillary and complementary platforms and sources as each innovation stream slowly evolved through their natural S-curves.

The market-based free-market and liberal-enterprise nature of the innovations espoused by the endeavours in the ICT/ITES domains are also characteristic of the generic nature of these innovations for garnering a community wide acceptance, replicability, scalability and funding.

The possibilities of lateral transfers in the linearity of learnings associated with the innovations in the ICT domain signify the possibility of contextual adoption of the models across a host of regions globally – resolving the conundrum of expert-finance and expatriate-expert trade-offs.

The nature and culture of the innovations under the Digital Bangladesh campaigns also ensure that a more nuanced transfusion of cultures and sociological tenets – giving strong credence to the possibility of adoption throughout the length and the breadth of the society – in turn rendering stronger evidence for an ICT-led innovation model capable of harnessing the societal portfolio of funds for mobilising resources.

The innovation models pursued by Bangladesh under the Digital Bangladesh campaign made generous use of open source software and code blocks for creating solutions which were wholly generic and contextually localised in their application, adaptation and adoption. This is a case for greater involvement of the global north and also the countries in the south for creating sustainable solutions at affordable prices and also scalable solutions which could both create and sustain its own market capabilities.

Most importantly, as opposed to a purely product-centric and monochromatic development of solutions aimed at a particular problem alone, the innovations imbibe a whole-of-society approach in their design and in their execution – paving the way towards the building of national epistemologies for such intervention and ultimately creating a global supply chain solution capable of withstanding the shocks such as but not limited to either the COVID19 or the crises in Ukraine.

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[86] Cavallo, A., Burgers, H., Ghezzi, A. and Van de Vrande, V., 2022. The evolving nature of open innovation governance: A study of a digital platform development in collaboration with a big science centre. *Technovation, 116*, p.102370.