

Need for a national research council

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As an overpopulated country with negligible natural resources, prone to frequent natural disasters, and as one of the most vulnerable countries to the adverse effects of climate change, Bangladesh needs to rely more than other developing countries on the resilience and intellectual capacity of its own people.

While the innate intellectual capability of our people is not in doubt, it is pertinent to question whether it has been properly nurtured and appropriately used in order to elevate us from our so-called status as a least developed country (LDC) into a technologically competent middle-income country (Vision 2021).

The magnitude and range of our inherent problems is large but none of them is unique. So what sets us apart from many other developing countries that, at the time of our independence, were economically in the same boat or even worse off than us but have now emerged as rapidly advancing economies?

The most striking difference is the amount of resources their governments have deliberately poured into higher education and research and into science and technology capacity development, and also the importance they have placed on the views of scientists in formulating development policies.

Scientific and technological competence in Bangladesh, approaching anywhere near that of neighbouring countries such as India and Malaysia, is not possible without excellence in higher education. The base for this has already been laid through the excellent Education Policy that has been recently announced. A similar thrust is also needed in the higher education sector beyond what is currently available to and through the University Grants Commission (UGC) that already has the immense job of overseeing the operations of over seventy universities in Bangladesh.

There is a need for quality rather than mere quantity in higher education as Bangladesh does not have a single world-class university. Moreover, Bangladesh's research

productivity and international competitiveness are embarrassingly low. Much of this can be attributed to lack of advanced research equipment and some contemporary technologies, and inadequate numbers of full time researchers such as PhD students and postdoctoral fellows.

Improving research capacity at universities in isolation will not be enough without focus and coordination at the national level to develop appropriate technology and trained manpower for meeting national development objectives. Unfortunately, there is very little allocation of public funds for basic and long-term strategic research and for building the research and technological capacity (Digital Bangladesh) needed to attain the objectives of Vision 2021.

Besides excellence in higher education this also requires internationally competitive research underpinned by a strong science and technology base, which can be greatly aided by the proper utilisation of full-time scientists in government research laboratories. An enabling research culture of multidisciplinary collaboration and commercialisation of research also needs to be developed. All this can be best achieved through adequate funding and a high level of coordination between relevant ministries and partnerships between academia, research organisations and local industry.

The magnitude of changes and resources required to achieve the above objectives are beyond what is available through the UGC or any single government department. Considering the technology and expertise available within Bangladesh, research efforts in long-term technology-driven development activities need to be selectively focused on a small number of adequately funded projects in areas of highest national priority -- such as (i) development of superior varieties of food and cash crops resistant to adverse effects of climate change and to biological infections; (ii) development of green technologies for the cheap and efficient production of solar energy, biogas, bio-fertilisers, bio-fuels, bio-pesticides etc.; (iii) development and utilisation of environment

friendly "clean coal" technologies such as "gasification" and "liquefaction" of underground coal reserves; and (iv) discovery and development of new medicines and vaccines to take advantage of the international competitiveness of the local pharmaceutical industry.

Meaningful innovative changes and technological development can greatly benefit from a strong working relationship between the ministry of education and ministry of science and technology. Higher

operates as an independent commission in strong partnership with the parent ministries, and with representation on the steering committee from ministries of education, science, UGC and also from other relevant ministries such as agriculture, health, environment, energy, industry etc.

Considering its critical and strategic role in the future development of Bangladesh, the NRC could operate out of the Prime Minister's Office under the direct patronage of the

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projects, and in teaching and training programmes; (ii) increase numbers of PhD scholarships and introduce postdoctoral fellowships to overcome lack of full time researchers in academic research institutions and to strengthen innovative research in government research centres; (iii) provide incentives to highly productive researchers and research groups based on research productivity (number and quality of internationally recognised publications), ability to obtain research funding, and successful training of PhD students and postgraduate researchers; (iv) develop intellectual property (IP) processes in

research universities within a network of "centres of excellence" made up of advanced research centres in universities, government laboratories and industry.

If the plan to develop Digital Bangladesh for achieving Vision 2021 is serious then, at the very least, strategic and adequate funding for technology capacity development and focused research in areas of highest national priority must be provided by the government and the private sector through the NRC and NCRP as described above. A part of the very substantial funding received for climate change initiatives, and also agricultural research funds, needs to be earmarked for strategic and long-term environmental, agricultural and green energy research. The NRC could also obtain external funding from the ADB and IDB for collaborative research projects in areas of common interest with neighbouring and OIC member countries.

Specific funding for developing a model world-class research institute could be requested from the Millennium Research Foundation that has provided soft loans to some developing countries for the establishment of "Millennium Institutes." The private sector, and some specific technology-dependent industries such as the pharmaceutical industry, would be encouraged to contribute if they were provided tax concessions for investing in their own R&D and in publicly-funded research institutions.

In most cases PhD training in the developed countries is unrelated and irrelevant to national needs, and government-funded scholarships such as the Bangabandhu Fellowships, could be much better utilised by providing PhD scholarships and postdoctoral fellowships to boost the levels of full time researchers in government research centres (BCSIR, BAEC, NIB, BARI, BRRI, JRI) into projects of highest national priority; (iii) establish and/or strengthen "centres of excellence" (within universities, government and industry) in different parts of the country to house expensive equipment and core facilities that would serve as regional technology hubs; and (iv) help establish a small number of "virtual" postgraduate

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education, research and innovation together form a separate integrated ministry in many countries. In Pakistan, this is achieved through a Higher Education Commission (HEC). Since Bangladesh does not have a separate ministry of higher education it is imperative that a National Research Council (NRC) be set up to financially support and coordinate innovative priority research in Bangladesh.

The NRC could initially be established with the know-how, expertise and resources contributed by the ministries of education, and science and technology, but in the long run

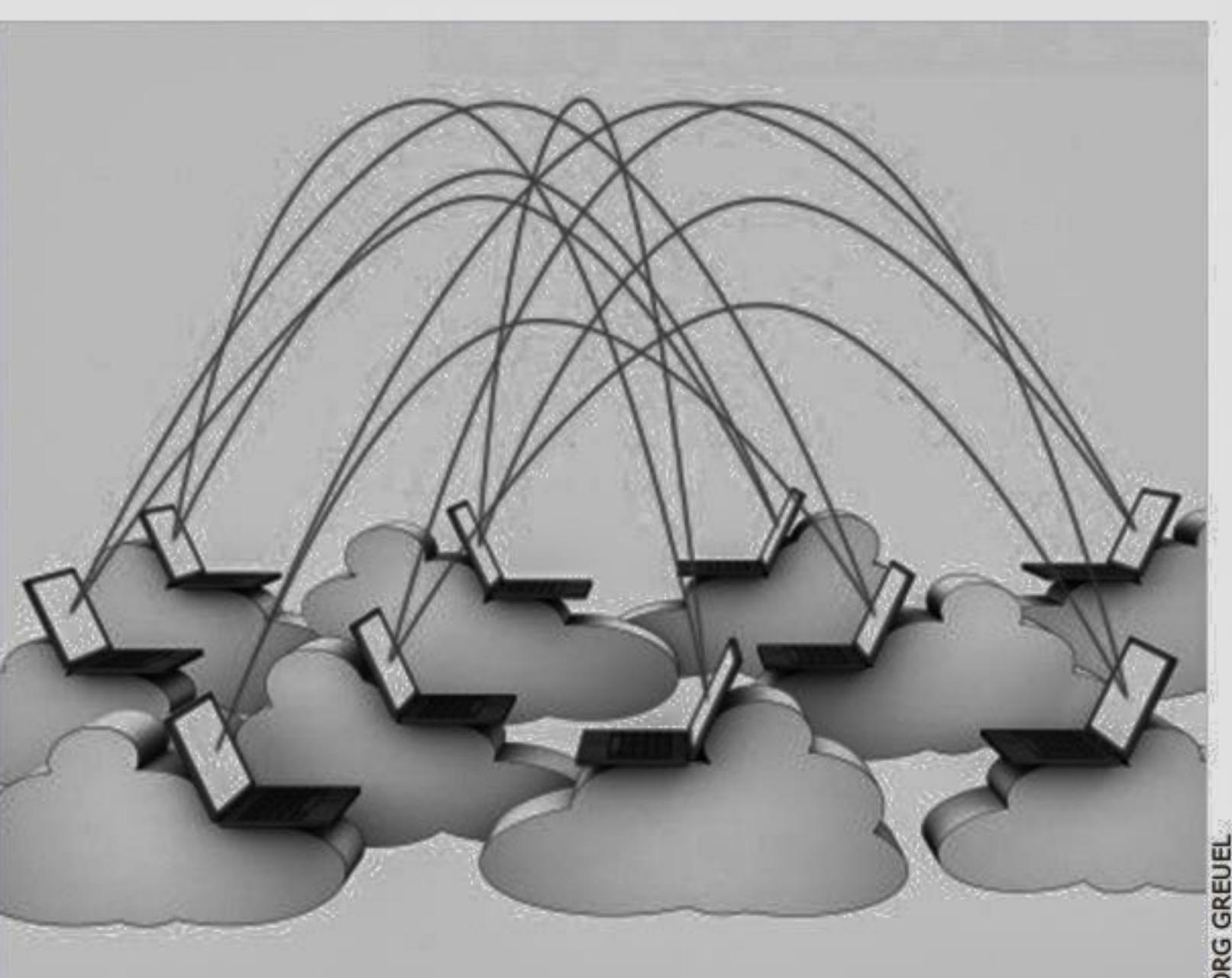
Hon. PM and be accountable to a parliamentary standing committee for higher education, research and innovation. The NRC could be assisted by an international scientific advisory committee (ISAC), consisting of eminent resident and NRB scientists and technology experts.

Besides supporting and coordinating high priority and innovative research, the NRC with the advice of the ISAC could help (i) prepare a database of NRB experts and specialists (with the help of Bangladeshi embassies) and involve them in different capacities and in different national priority

field due to lack of, or inadequate use of, appropriate technology.

In this context, I would like to draw on the use of web-based microfinance software. It is prescribed as the most desired solution for microfinance automation to solve the problem of data synchronisation by connecting branch offices to the head office. I am not against web-based solutions

Bangladesh has good internet coverage it does not have fast internet speed with good bandwidth and throughput that can balance loads of high volume transactional data generated from a large number of branches. As a result, a web-based application may crash because of load balancing problems that occur due to hits with millions of transactional data. Consequently, it



will obviously be located either in the software vendor's premises or outsourced (overseas) to hosting service providers. This means that the MFIs will not have any control over their confidential business data, and they could be lost, damaged, stolen etc. Mostly, hosting service providers are independent of the software vendors (except some very big companies), who do not have any control over the hosting service provider. If there is any problem in-between, imagine the ramifications on the MFI and industry as a whole.

The work of MFIs can be managed only if they are fully automated and use the most appropriate microfinance management software, which will be capable of synchronising thousands of branches with the head office and producing on demand MIS and customised reports based on key performance indicators (KPI). Before, obtaining any software, MFIs must assess its performance based on what they require, and thoroughly understand how it will benefit them and other stakeholders. Policy makers also need to make sure that the microfinance technology market is not restricted, and need to encourage new entrants who have the required skills, technological expertise and appropriate domain knowledge and experience to contribute to this industry. If the market becomes restricted it will stop innovation, reduce the pace of automation, and promote anti-competitive behaviour.

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Appropriate technology in microfinance

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ALTHOUGH the Bangladeshi microfinance sector is mature and its assets constitute approximately 2% of GDP, the sector is still unfortunately in its infancy when it comes to the use of technology. Two major problems, inter alia, arise due to this technological infancy -- it substantially reduces outreach capabilities of the MFIs, decelerates the pace of poverty alleviation, and creates a bubble of over-indebtedness or overlapping that posits a major threat for the whole industry. To explain this, we need to understand how MFIs operate in Bangladesh and what their fundamental requirements for automation are.

Typically, MFI programme operations management is based on four levels of monitoring hierarchy (there may be exceptions). They are:

- Head office;
- Zonal/regional office;
- Area/regional office; and
- Branch office.

Small MFIs are mostly structured within a head office-branch office relationship (except one-office based MFIs) and medium to very large MFIs have at least zonal or area offices, or both, and they are linked to branch offices and head office. The role of head office, zonal office and area offices is merely supervisory in nature, such as setting up business rules to manage operations and analysing

Management Information System (MIS) reports -- except head office accounts and finance department -- which are involved in day to day transactions such as receiving funds from donors/lenders, making payments, disbursing salary etc.

Microfinance-related transactional and non-transactional activities take place at the branches, which are dispersed over different locations. From business transaction point of view, what a branch does on a daily basis is enter benchmark data for new clients, manage clients, manage groups, manage delinquent loans, process loan applications, disburse loans, and collect payments including savings and micro-insurance premium. Banking and accounting are also part of a branch's day to day activities.

Managing microfinance operations is not only about data entry or generating reports, it also includes managing customer relationship, processing automated loan applications, analysing credit decisions, tracking clients' poverty level, managing various financial products such as loan, savings and micro-insurance, managing monitoring hierarchy, managing human resources, internal auditing and MIS, which depicts the overall financial and operational performance of the MFIs.

Apart from the business requirements, there is a need for comprehensive automation of MFIs, if not of other stakeholders, so that all business transactional data which are generated at branch level are also available at the head office and zonal and area offices by end of the business day, if not in real time, so that the management can get the required reports.

So, the fundamental questions are: How do branches send the data to the head office? Do they send data automatically, that is system to system, or manually? Are the branches connected to their respec-

tive head offices concurrently, and capable of synchronising (both upload and download) high volume transactional data on a daily basis so that the MFI management can get up-to-date data every day or on demand from the system?

Unfortunately, at present, branches are required to send data manually (papers or CD) to the head office for manual data entry as

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the system they use is not capable enough to synchronise data automatically from branch offices to the head office. That is, the majority of the MFIs do these tasks manually, which, according to Bagazonza, H.K. et.al (2010: 2), are paper-based and consume a significant amount of loan officers' time. There is no timely connection in most MFIs between the head office, the branch offices, and the loan officers in the

and I really commend the vendors who have taken the initiative to develop this application, but there are two very serious issues here. First, apart from issues of architectural design, choice of technologies for developing the software and appropriate domain knowledge, Bangladesh's internet infrastructure is not developed to such a level that it can handle a robust web-based microfinance application. Although

may also create huge problems in data synchronisation (both for uploading and downloading), and "data corruption" may occur in the process. As a result, software performance will be severely impacted and will not be able to meet MFI's fundamental requirements.

Second, where will the web-based application be hosted, overseas or in Bangladesh? If MFIs use a web-based application the servers