

Educate to Innovate – Fast Tracking ICT Management Capabilities Amongst the Key Government Officials for eGovernment Implementation in Bangladesh

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Abstract

This paper describes a key strategy formulated for a least developed country, Bangladesh, as a part of an eGovernment capacity building project under the auspices of the Australian Government's Public Sector Linkages Program (PSLP). The project was initiated based on the findings of an ongoing PhD, which identified lack of knowledge and attitudes as the major stumbling blocks preventing ICT adoption in Bangladesh's public sector. A five year strategic pathway addresses this critical issue by fast tracking ICT management capability of the government officials and decision makers to fill the 'knowledge gap' and by empowering them on eGovernment processes for its successful implementation. Accordingly, an education

program—Educate to Innovate—was undertaken to build the capacity of government officials through a comprehensive, concise training program, supported by a ready reckoner handbook specially prepared to suit the context.

Keywords: capacity building, eGovernment, public sector, ICT management

INTRODUCTION

Finding the right strategy to address the complex issues in implementing e-government in least-developed countries (LDCs) is a daunting task. Identifying the most important issue amongst the range of common barriers to adoption—such as socio-economic condition, poor infrastructure, political instability, and the leadership problem—is very difficult, yet critical to success for a long-term solution.

Relying on established success stories can also be problematic. The majority of information systems (IS) theory is drawn from research conducted in organizations in industrialized countries. This limits the application of many theories because the prevailing context of the organisations and countries studied is fundamentally different. Different perceptions of ICT by people in LDCs or developed countries are caused by variety of ‘forces’ present in the local environment in which technologies are introduced. So called socio-cultural aspects like cultural values, regional priorities, institutional relations, political dynamics and educational background influence the perception of potential user groups and therefore have an impact on the adoption and use of technology. Furthermore, the management structure and rationality assumed by most IS literature—employing professional practices for the increase of efficiency in a business environment—is very different to the way organizations in many LDCs are run. Moreover, the ‘unique environment of each LDC’ (Montealegre, 1999) only reinforces the fact that ‘there is no one size fits all approach’ (UNDP, 2001) to tackle such issues. Researchers in this area are struggling to find a workable solution and practitioners largely rely on tailoring best practices around the world for a quick fix. There are unique factors to developing countries that must be addressed in planning information technology applications. Ignoring these guidelines may result in failed systems and continued technological disadvantage (Azad et al., 1998).

On the other hand, adoption of e-government has become crucial for many developing countries to face the challenges of the 21st century's knowledge economy and to address many typical deep-rooted LDC problems like a lack of transparency in administration, a lack of efficiency, and corruption. The productivity potential of ICT is recognized now by many leaders of developing countries, largely through the constant pressure from developed countries and donor agencies including World Bank, United Nations, etc. So, in spite of the difficulties, and the lack of directly applicable solutions, the demand for e-government in LDCs continues to grow.

In response to this demand, and recognizing the limitations, this paper reports an important strategy component of a five year e-government strategy for Bangladesh, prepared by a project conducted by the Australian National University under the auspices of the AusAID Public Service Linkages Program (PSLP) called 'eGovernment capacity building through knowledge transfer and best practice development in Bangladesh'. The project is based on an in-depth study conducted in Bangladesh over 2005 and 2006 to identify the barriers to e-government adoption, ranking them in terms of gravity and importance (Imran, 2006). That research resulted in a strategic pathway to promote further e-government adoption. The strategy and accompanying research report form the basis of this paper and are available at: <http://www.ictforldc.com/PSLP/strategy.htm> or (Imran et al., 2008). According to this study, the most significant barrier to adoption was a lack of knowledge about e-government and the potential of ICTs generally, especially among government decision makers.

BACKGROUND

We present here a very brief summary of the complete research for the project to lend context to our explanations of the project and the primary strategic element that resulted. Interested readers are directed to the strategy proper for a more complete and academically-rigorous exposition.

Bangladesh is falling behind the rest of the world in ICT adoption in the public sector. Despite some initiatives, only a few ministries and government agencies have attained even limited e-government capability and adopted ICT in their work processes. A study of 45 government ministries, divisions and departments by the Bangladesh Enterprise Institute (BEI) revealed a lack of serious resolve and drive in the implementation of ICTs in Bangladesh (Sobhan et al., 2004). In this 2004 report, Sobhan and colleagues reported that most of the ministries hardly use IT to facilitate work or to serve the citizens. Long queues in front of government offices are a

regular picture in Bangladesh (Sobhan et al., 2004). The UN *Global eGovernment Readiness Report* (UN, 2004, 2005, 2008), which gives data on 192 member states, shows a bleak picture of progress within the region. In this report, each member state is given an e-government readiness index based on a weighted average composite figure calculated from an assessment of websites, telecommunications infrastructure, and human resource endowment. In the two years 2004 and 2005, Bangladesh was shown as significantly falling behind, even within the neighbouring South Asian Association of Regional Cooperation (SAARC) member countries, with an index much below the SAARC average (UN, 2004, 2005). By 2008, Bangladesh had improved its position (from 162 to 142) on web measurement in the enhanced and interactive stages (UN, 2008). This index is not a complete measure but it does indicate the relative position of Bangladesh compared with the region and the world.

RESEARCH FINDINGS

An effective ICT strategy-making process is unique for each country and hence needs extensive local knowledge as well as expertise in the area. A series of focus group discussions conducted to inform this strategy provided a ranked list of barriers to the adoption of ICT in the public sector of Bangladesh (Figure 1), that clustered into three groups:

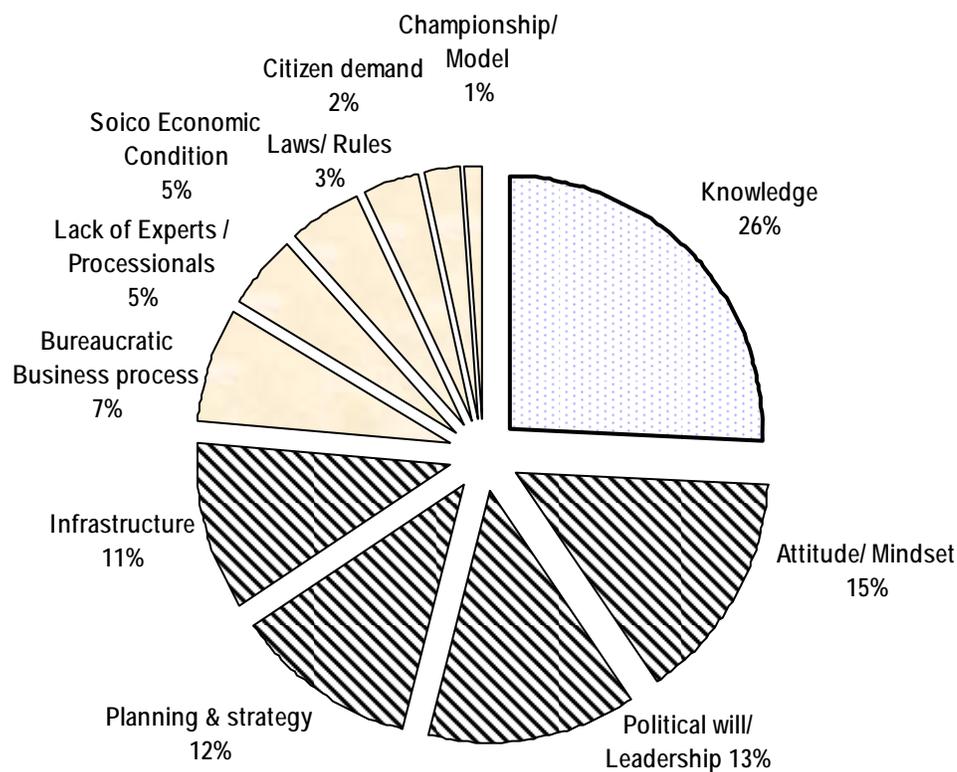


Figure 1: Barriers to e-Government Adoption

Cluster 1

1. Lack of knowledge

Cluster 2

2. Attitude and mindset of decision makers
3. Lack of political will and leadership
4. Lack of planning and strategy

5. Infrastructure

Cluster 3

6. Bureaucratic business processes
7. Lack of expertise and professionals and socio-economic conditions

8. Lack of laws and rules
9. Lack of citizen demand
10. Lack of championship

The principal barrier, 'Lack of knowledge' entails not only a lack of basic knowledge and education about ICT but also a lack of perception and awareness amongst the leaders, stakeholders, government officials, and the general public about ICT use and implications. Importantly, most of the discussions about other common barriers ultimately came back to this lack of awareness and correct knowledge about ICT and its use, especially during the process of prioritization and evaluation. A telling example of this problem from the focus groups was that Bangladesh declined the offer of free access to the rest of the world through a submarine cable offered by AT&T in 1992. The government officials considering the proposal were not sufficiently knowledgeable about the technology or the implications of the offer and declined it because of a perceived security risk. Now, more than a decade later and after spending about 800 crore Taka (approx. \$US 117M), that same connection has finally been made. The earlier ill-advised decision has cost Bangladesh money, time and development opportunity and impetus.

ICT is not only a technical artefact; it is embedded in a much wider societal context (Wilson, 2004). But in Bangladesh, ICT is still seen as a hardware and software industry. Its wider application and implication within the national economy in terms of information processing and information management is not appreciated. In ICT-related developmental programs to date, emphasis has been given to the production of hardware, software and universal access (telecentres and information kiosks), while the human capabilities needed to transform data and information into useful knowledge are often missing. Too often impact assessment frameworks focus on the efficiency and availability of computer hardware and software, disregarding the need to change the human and social systems in which the technology is hoped to make a difference.

ICT is not seen as a strategic resource or an important tool for government business, thus its application lacks direction, policy and guidelines. In addition, things such as the notion of stakeholders, traditional beliefs, and a tendency to maintain the status quo, inhibit ICT being widely accepted. A weak and inadequate education system, especially in information system is failing to produce the required and suitable workforce for the country. Also the public sector

environment and institutional resource are not promoting such knowledge, as one of the respondents wrote “there’s no knowledge base for supporting the eGovernment concept within the government” (Imran, 2006). Research suggests that Bangladesh public sector management is overly bureaucratic and that little reform has occurred since the British colonial period (Jamil, 2007).

Presently in Bangladesh, there is no integration of, or collaboration in, work processes between the various government agencies. This lack of collaboration between departments impedes networking procedures and efficiencies. One example is land administration. For any piece of land, registration is handled by one department, it is surveyed by another, and it is maintained and taxed by a third agency. Inevitably, lack of collaboration between agencies results in different information from different agencies regarding the same piece of land. Ideally, all land data would be housed in a single database allowing collaboration amongst these agencies and the opportunity for a ‘one-stop shop’ that would allow the retrieval of all the information regarding a piece of land with a single mouse button click. This simple innovation would improve efficiency, accountability, transparency and service to the citizens. It would also be useful for policy makers by providing consolidated land-use data to assist with future planning and strategies. Similarly, ICT itself needs extensive collaboration and integration particular when implemented across government. But what we see in the ICT policy area is that infrastructure is with one ministry, policy is with another, and training with a third ministry. A lack of coordination and integration often creates bottlenecks, as one agency is closely dependent on the other. The successful implementation of e-government requires extensive collaboration between ministries (Imran et al., 2008).

To achieve this, government employees must understand what ICT can and cannot do, where efficiencies may be found, and how to successfully design, manage, and complete projects to implement ICT throughout the Bangladesh government. This is the central focus of the strategy arising from the project.

THE PSLP EGOV PROJECT

Against this backdrop and based on the research findings, the PSLP eGov project was initiated by the National Centre for Information Systems Research (NCISR) at the Australian National University (ANU) in 2008 through a competitive AusAID Public Service Linkage Program

(PSLP) grant to implement this applied research project in Bangladesh. PSLP is a special scheme of AusAID that aims to improve public sector capacity in selected Asian countries for governance and management for nationally-determined development outcomes and support the strengthening of sustainable development-focused public sector bilateral and regional linkages. The counterpart public service agency of this project was the Ministry of Science and ICT (MOSICT) of Bangladesh, and the Bangladesh Institute of Peace and Security Studies (BIPSS) provided support as a third party organization.

This one year project was implemented in three phases: development of know-how among key decision makers and government officials for effective use of ICT; development and delivery of training packages to bridge the knowledge gap on e-government processes; and the development of strategies for the effective uptake of ICT. Ongoing projects and championship in this area will also be encouraged and supported. Through strategic direction and capacity building on e-government, this project has the potential to be of considerable benefit to Bangladesh by improving transparency and efficiency in the public sector, improving services and reform in the public sector as well as increasing productivity and reducing poverty. Lessons learned in this project could also have broader applications in other least-developed countries.

To address this general problem area detailed scrutiny identified the target group and an effective scheme to be undertaken within the scope of the project that would have the maximum impact. The analysis of the findings clearly suggest the senior and mid-level decision makers are crucial for the initial ‘ice-breaking’; those who are actually going to drive and implement e-government initiatives. The justification for this top-down approach can be argued with practical reasons. In a least developed country like Bangladesh, educating 150 million people is not possible overnight whereas empowering one decision maker with proper knowledge, sometimes equivalent to educating millions, as his one decision may eventually impact millions of people.

So, under the broad objective of this project towards adoption of effective e-government in Bangladesh, capacity building of government officials was identified as the primary and key step, where the following questions were particularly dealt with in this project:

- How to develop “know-how” among key decision makers and government officials in Bangladesh concerning the effective use of ICT in public sector organizations?
- What would be the most effective tool for initial ice breaking?

- How this knowledge can be disseminated later to a wider community?

MAJOR DELIVERABLES

This two major deliverables that were planned after careful consideration for this one year project are:

- A report describing the research conducted and the recommendations for the Bangladesh Government to promote e-government; and
- A training package and management handbook to reinforce skills transfer to the Bangladesh Government.

eGovernment for Bangladesh: A Strategic Pathway to Success

This deliverable is a comprehensive project report that recommends a strategic direction for long term e-government adoption and implementation for Bangladesh. The report is based on the findings of ongoing research and detailed review and recommendations by the project task force. This report represents a significant deliverable of the project and will have long-term implications. Over the last few years, Bangladesh has been trying to find a workable strategy to adopt e-government processes in its public sector organizations. But despite many initiatives, it has not shown any satisfactory progress in this area. As such, this strategic direction will be an important starting point towards attaining e-government capacity in the public sector administration of Bangladesh.

The report will serve as a constant reference and guideline for future e-government initiatives in Bangladesh, the knowledge of which will be extremely valuable to the solution providers as well as users. Government and other agencies can extend and explore further knowledge building upon this strategic direction. The report is available at: <http://www.ictforldc.com/PSLP/strategy.htm>

Training Package and ICT Management Handbook: A Guide for Government Officers of Bangladesh

During January–July 2008, a review of existing e-government training needs in Bangladesh was carried out. Input was sought from current collaborators in AGIMO and other organizations. Two mini-workshops were arranged with stakeholders; one in Dhaka, Bangladesh and the other

in Canberra, Australia. The aim of the workshops was to build a common understanding through the exchange of views on strategies and training needs to initiate the project and also to share best practice and develop strategies for continued effective utilization of ICT in e-government in Bangladesh. The day-long workshop in Dhaka, Bangladesh was attended by eminent ICT stakeholders in the area including officials from MOSICT, the EGov cell in the Prime Minister's Office, the Support to the ICT Task Force project, The Bangladesh Association for Software and Information Systems (BASIS), ICT journalists, and academics and researchers from various organizations. The participants shared their views on e-government strategies (short and long term) in the context of Bangladesh, existing strategies and policies, and local priorities with possible suggestions, training needs for public sector officials, curriculum, design and subjects, knowledge and capacity building of public sector officials. Similar workshops in Canberra were attended by local specialists, ANU and external consultants, and counterpart organizations, represented by the Secretary, MOSICT and the President, BIPSS.

The handbook has been developed to assist senior officials in the Bangladesh government in the management of ICT projects. The concise handbook includes four modules. Each module has been developed by expert consultants in the respective areas based on research findings, close consultation and extensive local involvement to suit local conditions.

This handbook is not intended to cover everything about ICT management or as a substitute for project management training or experience, but can serve as a solid starting point for new project manager or a quick reference for more experienced managers. The document templates referred to throughout the handbook are contained in a companion workbook and checklists, also provided to assist the IT project manager.

EDUCATING TO INNOVATE

The training package includes Teaching Material with PowerPoint slides, Exercises and/or Quizzes with suggested answers, and Videos, all of which is designed to take two days to deliver. The Teaching Package is self-contained, can be re-used over multiple offerings, and can be delivered by people other than the original developers. The package is planned to be made available through the Internet in the future. It comprises four modules that consist of 4 hours of delivery for each, including a 30 minute break; i.e. 3.5 hours lesson time. The training

curriculum fills the gap of practical knowledge that government officials have when attempting to deal with future e-government projects.

The four modules are:

- Introduction to the eGovernment framework;
- Making an ICT Business Case;
- Project Management; and
- Managing Outcomes.

Module 1: Introduction to eGovernment

First, this module introduces the training program and gives the underlying foundations on which the other modules build. Basic concepts underlying the use of information and communication technologies (ICT) in the modern world are examined. Data is provided that shows that ICT can be used to give productivity gains across countries. The value of ICT in the public sector is described, with an explanation of the different forms of e-government. The current situation in Bangladesh is noted along with the justification and purpose of the training program.

Second, the importance of good management of ICT is stressed, with an illustration of failures that stem from a lack of sound management of ICT. The eGovernment Management Lifecycle, with its phases of (1) Governance; (2) The ICT business case; (3) Project Management; and (4) Outcome Management are outlined. The first phase of Governance is then described in more detail. The ongoing case study of a District Water Board that is used to give practical examples is introduced.

Module 2: The ICT Business Case

First, this module explains the importance of making an informed decision about how and when to invest ICT. It describes ICT investment demand sources and triggers and the need for identifying and analysing the business benefits required from an ICT solution. It explains the process for justifying the investment and documenting the facts in a business case and details the steps needed to develop a business case: (1) Reviewing environment and identifying a need; (2) High-level option analysis; (3) Detailed option analysis of costs, benefits and risks; (4)

Documenting the business case; and (5) Undertaking quality assurance and developing an executive summary.

Second, the module looks at the acquisition or sourcing of ICT that follows when a business case has been accepted. It identifies sourcing options, the key procurement process steps, types of acquirer/supplier relationships, and the activities necessary for successful transition to using an ICT solution or set of services.

Module 3: Project Management

This module provides an overview of project management, including a definition of a project, the project lifecycle and why project management is important. It also outlines the PSLP eGov Project Management Methodology (PMM) and provides guidance on its application. The PSLP eGov PMM is a standard process for managing projects and was developed specifically for the PSLP eGov program based on recognised project management best-practice. It provides instructions for undertaking each of the phases in the project lifecycle – Scoping, Planning, Implementation and Completion – including the activities and documentation involved. An accompanying workbook also provides templates for the standard project management documentation, with detailed completion instructions for each document.

Module 4: Outcome Management

This module considers the matters that IT Managers in Government must address that are outside the parameters of a project; that is, the management of the broader IT environment in day-to-day operations. The module introduces the concepts and approaches of Performance Management and Benefits Realisation Management to provide insights into how to understand what the IT environment is contributing to the overall business and how well it is doing that. The module then introduces a major framework for managing the operations of an IT environment, the Information Technology Infrastructure Library (ITIL), a world's better practice approach that is now reflected in several national and international standards.

WHY EDUCATE TO INNOVATE?

Prior studies indicate that correct use and management of ICT have the potential to improve efficiency and productivity in the public sector in LDCs, which also can have flow-on effects to

other sectors (World Bank, 2002, 2005). Government officials with a good understanding of the effective use of ICT and e-government and the strategies that are needed to ensure effective adoption and implementation of ICT can benefit the public sector in a LDC. As noted in the introduction, Bangladesh's public sector management carries limitations of bureaucracy linking back to the British colonial period. Although e-government is increasingly important, the government lacks the required knowledge, expertise and resources. Greater strategic direction and institutional help supported by strong political will is necessary to take it forward.

One of the most critical issues found in previous work that needs to be addressed is filling the 'knowledge gap' on e-government processes and process reengineering. The project activity focused on the use of ICT in the public sector in Bangladesh with the aim of advancing e-government capacity. This activity is expected to build the capacity of the officials who will deal with future e-government projects undertaken by the government. It will also equip the officials with sufficient knowledge to prepare requirement documents for software developers, pre- and post-evaluation procedures, ICT governance, ICT auditing and some project management skills specifically for e-government projects.

So to begin with, the objective of the activity was to develop "know-how" among key decision makers and government officials in Bangladesh for the effective use of information and communication technologies (ICT) in modern public organisations through a comprehensive, concise training program supported by a ready-reckoner handbook as a constant companion and guide for day-to-day IT management issues. The activity was not expected to attain an in-depth knowledge on IT management within this short-burst intensive two-day training module, but the program is designed so that the important officials who are sparing two whole working days could gain the most benefit. Often such courses are more effective in bringing participants up to speed with the contemporary and modern changes in public sector management.

The training is not designed to teach the senior officials how to do IT project management in detail *per se*. Rather, it is designed to raise awareness and show them why it is important and how to administer the whole process. The course is designed with sufficient indication and references to the resource materials and reading list if someone is interested to pursue further knowledge in those areas. An online resource (<http://www.ictforldc.com/PSLP/p1.htm>) is also

being established to facilitate discussion and consultation for regular update and further knowledge.

Road Test

The entire Program Package was piloted and refined. A preliminary road test was carried out with the team and some invited participants (Bangladeshi-born students studying at ANU). A further revision was carried out based on the feedback and evaluation of the road test to suit the local condition.

Participants

The three training programs had 107 participants, starting with 47 ‘eGovernment Focal Points’; Bangladesh Government appointees, one from each of the 47 ministries. The rest of the program was delivered to mid-level government officials who are expected to manage and promote e-government in their respective ministries. Each agency was asked to nominate three to four people to attend the training programs together based on the minimum criteria. These people will then return to their agency to act as a nucleus for further change. Prior experience and innovation literature suggests that having a group rather than a single ‘change’ agent in an organization will provide more credibility and lead to more effective uptake of ideas. We also arranged networking events and an email mailing list to keep these “eGovernment cells” communicating and sharing knowledge. Local educators will also be trained in program delivery.

SUSTAINABILITY

Sustainability is a prime objective of the project activity. As such, the activity was planned in several phases starting with assessment of the present status of the counterpart organization and continuing through to ongoing support. The training modules have been designed to meet the Bangladesh government’s priority learning needs, as identified by our research. Cultural sensitivity and appropriateness is ensured as the lead researcher is a Bangladeshi and the training program has been road-tested with Bangladeshi participants. The key stakeholders from the counterpart have been keen to monitor relevance and progress. The train-the-trainer scheme will continue and spread after the life of the activity. The mentoring and support from NCISR for the Key Development Projects will also continue after the life of the project. The initial three

offerings of the training program are mostly funded by the project. It is recognized that after the termination of activity MOSICT will be required to commit ongoing funding.

Based on the responses and popularity of the handbook, MOSICT has decided to re-publish the next edition of the book in coordination with NCISR using its own money. The additional copies will be distributed amongst the officers of Bangladesh Government. Negotiations are underway based on the interest, to introduce this curriculum into the Bangladesh Public Administration Training Academy (BPATC) and Bangladesh Civil Service Academy. Thus the knowledge has the potential to be disseminated amongst a wider community to have significant impact in future.

Ensuring this commitment is a challenge; however, the very positive responses from the initial offerings of the training provide great influence on MOSICT's planning.

KEY LESSONS LEARNED SO FAR

The experience from this project suggests that a strong personal motivation can make a huge difference in the success of the project. Even in the 21st century's knowledge intensive economy and society, a lack of accurate knowledge is often the norm in LDCs. In a highly-populous country like Bangladesh, transfer of IT knowledge could make a huge difference to address some of the deep-rooted problems in this area. Often, this knowledge is thwarted and challenged by vested interests or political pressure. A backup and endorsement from influential and top management is thus a possible remedy for counter pressure to overcome these problems.

Dealing with bureaucracy and public sector officials in a developing country is always a challenging task, because of the hierarchy and complexities the procedure involves, especially in implementing an applied research project from overseas. However, this challenge has been met through prior connections established through the lead researcher's previous working experience in the Bangladesh Government and a continued relationship, persistence and, above all, strong motivation about the novelty and impact of the outcome of the project. A willing and committed champion within the counterpart organization is also found to be essential.

Over the last few years many other international aid agencies including UNDP and the World Bank have been taking initiatives in a similar area, some of which may often appear as duplications. However, after careful review it was determined that the approaches of those initiatives are different in nature. This project has a more focused approach through a prolonged

and empirically-tested research. However, all these initiatives are believed to be complementary to assist the government in achieving the greater goal of implementing successful e-governance in Bangladesh.

A working experience and immersion in the context of the public sector environment in an LDC was instrumental in addressing the challenges and also in capturing the underlying important issues that are often overlooked. The reputation, trust and working experience of the lead researcher in the context was instrumental in this project. Having the support of the NCISR at the ANU, which is designed to carry out such projects, and its experienced and capable researchers and members to work as a team provided the means to take this forward. The ANU's world class research capability and reputation is widely recognized. Furthermore, as the topic and project originated from PhD research, the rigor and relevancy required for such an important national level project was obtained through a strong and sound theoretical and academic foundation. Good access and personal liaison with the stakeholders of ICT in the country, some national policy makers, and Government agencies are important.

Using an initial execution of the training program as an 'ice breaker' for senior officials was found to be very effective. Many of them shared their experience about the training workshop with their colleagues in their department, which created a very positive impact. As a result several officers tried to join the next training session but could not be accommodated because the sessions were already full. Personal responses, both verbal and email, were very satisfying and evidence of the training's effectiveness. For example, one participant wrote:

“The management team and facilitators devised the programme in a manner where participants found rooms for proactive participations as well as given a scope to understand the status of governmental efforts in Bangladesh at the moment and the priority areas which needed to be addressed and visited to mitigate potential gaps and/or to combat the challenges of the day. In addition, the compilation of thematic proceeds was a unique effort too which, in fact, came out with a very handy booklet naming ‘eGovernment for Bangladesh: A Strategic Pathway to Success’. This handbook will help the participants and the ICT policy makers and process implementers in Bangladesh in performing their duties with confidence, I recon.” (Personal correspondence with the lead author)

It was quite evident from many of the evaluation responses collected after each workshop that training of this nature was an innovation and something new to the participants. The training was seen to have addressed practical issues and their needs rather than more conventional 'factory-made' training. However, a detailed evaluation of the training is beyond the scope of this paper and will be carried out based on the data already collected and planned to be collected in future.

CONCLUSION

This activity focused on an important underlying issue of bridging the knowledge gap which is likely to resolve a lot of other associated issues with ICT adoption in the public sector such as: attitude and typical mindset, lack of willingness to change the status quo, procrastination in decision making, and motivation for such innovation. It is expected to build the capacity of government officials who are expected to deal with future e-government projects undertaken by the government of Bangladesh. It is simply the first step towards adopting sustainable and workable e-government and clearing the obstacles within the bureaucracy in the context of Bangladesh.

Correct use and management of ICT have the potential to improve efficiency and productivity in the public sector in LDCs, which also can have flow on effects to other sectors (World Bank, 2005). Government officials with a good understanding of the effective use of ICT and e-government and the strategies that are needed to ensure effective adoption and implementation of ICT can benefit the public sector in an LDC.

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