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Building essential BPM capabilities to assist successful ICT deployment in the developing context: Observations and recommendations from Sri Lanka

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INTRODUCTION

The role of Information and Communications Technology (ICT) has been identified as an important factor by the United Nations in achieving the millennium development goals (UNAPCICT, 2012)¹. The potential for ICT has been identified as a means to reducing poverty, creating global communities by providing access to the internet and mobile networks to rural communities, improving education services, medical services, and information availability. As of today, significant amounts of funds have been invested by the governments and donor organizations in ‘Information and Communication Technologies for Development (ICT4D)’ projects by establishing telecenters, e-villages, e-health, electronic and mobile banking, and e-government systems for citizens in general, and more specifically, rural communities to bridge the digital divide (Heeks & Molla, 2009).

However, the effectiveness and impact of these initiatives are still questionable. In a report published by (IEG - Independent Evaluation Group, 2011) it was identified that projects focusing on global accessibility have achieved only a 30 percent success rate in developing countries. The key issues identified by the literature on ICT4D success and failure include inadequate understanding and consideration of local culture (Simpson & Hunter, 2001), lack of political support, infrastructure issues, community acceptance, and sustainability of these projects post-funding stages (Heeks & Molla, 2009; Kasigwa, Williams, & Baryamureeba, 2006). The inability to see the whole system was identified as one of the 7 reasons of ICT4D project failure (Rogers, 2011). Lack of understanding of a holistic picture, community involvement and need for training and capacity building before implementing an ICT solution for sustainability projects were further emphasized as critical factors by Pade *et al.*, (2009).

Based on prior literature on ICT deployments in general and ICT for development (ICT4Dev) (where many limitations in the current practices are observed), along with our strong process centric background, we argue that ICT for Development (ICT4Dev) should focus (more) strongly around enhancing ‘processes’ than mere systems implementations.

A ‘process’ is a set of activities that one engages in, to achieve a target goal; it is a set of tasks that is triggered by some state that is executed with the intention to result with some target

¹ United Nations-Asian and Pacific Training Centre for Information and Communication Technology for Development.

outcome. All things that organizations (in developed and developing contexts) do are ‘processes’. A process view of the world is holistic; it considers the tasks, the states, the primary and secondary stakeholders involved together with their goals, the related inputs and outputs and its recipients and suppliers, the regulatory, legal and other organizational contexts surrounding a situation, and related systems in place. Information systems– especially in the developing context should consider and support this holistic framework, without which success is less likely to occur. *“The first rule of any technology used in a business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency”*(Bill Gates). Automation is a significant cost and does not add value, unless and until it has enabled the underlying processes. Thus, we urge all to view ICT4Dev as a means to enhance the processes – the goal being ICT enabled process improvements in the developing context.

A national level analysis commenced in Sri Lanka in August 2012, where an investigation into the status of ICT enabled process improvements began to take place. This paper reports on some of the summary results to date of this continuing effort. One of the largest challenges the country is facing is the lack of human capital with the appropriate skills throughout the nation. This paper will first provide further background details; introducing Business Process Management and its critical role for successful ICT implementations and an introduction to the country context. It will then provide an overview of the overall design of the investigation and the summary results of this. The final part of the paper will present some of the up-skilling efforts that have started to address the skills gap, in the short term and long term. The paper concludes with further remarks on the lessons learnt, a status update and overview of future plans and a call for action – to collaborate at national and international levels to contribute towards addressing the critical skills gaps that inhibit the essential progress of ICT enhanced process change in the developing world.

BACKGROUND- AN OVERVIEW TO BUSINESS PROCESS MANAGEMENT

An entire discipline called “Business Process Management” has evolved to support process improvements, which is rapidly proliferating. Business Process Management (BPM) is a set of structured methods and technologies for managing organizational processes (ABPMP, 2009). *“The goal of BPM is to create a process-centric, customer-focused organization that integrates management, people, process and technology for both operational and strategic improvement”*

(Goeke & Antonucci, 2011). BPM is not a ‘new’ area but a domain that has systematically borrowed and synthesized from other prior movements that have tried to look at operational efficiencies within organizations. BPM, as we see it in modern practice, encompasses methodologies for process change, overall management approaches (for building and managing process-related organizational capabilities, standards and notations), and tools and technologies (Antonucci & Goeke, 2010a; Bandara et al., 2010a). BPM has emerged in recent years, as a powerful competitive tool for organizations (Harmon & Wolf, 2012). The impact of properly deployed BPM efforts, are many. High quality services and products, reduced costs, transparency, improved customer experiences (with efficient and economical services), ability to swiftly respond to changes, better integration with critical stakeholders, etc., are a few BPM impacts often mentioned. Contemporary BPM practices can even change the individual/corporate or societal culture, values and activities, for the betterment of society.

However, BPM is still in its genesis in developing nations. It is to some extent ironic that process improvement has not been widely practiced in developing nations, considering the many needs for process improvement and the impact process improvement can bring to these nations. The internal and external environments of ICT4D projects are far complex and wider as these projects include a variety of stakeholders, objectives, restrictions and rules and regulations. The recursive relationship between IT and BPM has been widely discussed by the literature (Hammer & Champy, 1993). However, there is limited evidence of a systematic BPM approach used for ICT4D, pre and post implementation stages.

BACKGROUND – OVERVIEW OF THE SRI LANKAN CONTEXT

Sri Lanka is a fast developing nation in South East Asia, with a population of 20 million. The country has changed dramatically since the end of the civil war in 2009 and has undergone significant changes. The nation has now become a middle-income country at peace, with a GDP of US\$ 64.914 billion recorded in 2011. Improvements in security and infrastructure projects like ports, highways, and airports are all leading to a gradual return of foreign investment. Sri Lanka has made a firm commitment to create a solid base to achieve a high and sustainable economic growth in the years to come (World Bank Group, 2012).

A new “Economic War” has been declared by the national leaders with the vision and attempt to make Sri Lanka the “Wonder of Asia” (Presidential Secretariat Sri Lanka, 2010). His Excellency

President Mahinda Rajapaksha's vision; popularly known as the 'Mahinda Chintana', sets out a broad macroeconomic framework for the nation. A 10-year multi-sector policy framework is designed and widely communicated, aiming for an ambitious acceleration of growth (Ministry of Finance and Planning Sri Lanka, 2006).

A range of national level initiatives have been put in place to support Sri Lanka's development goals. A special Ministry for economic development (<http://med.gov.lk>) was set up in the country, with a varied purview including regional and rural development, poverty alleviation and empowerment of the poor, promoting investments to Sri Lanka, travel and tourism industry development, and nature and wildlife conservation. Both government and private sector corporate personalities and trade representatives are expected to deploy the best practices and corporate approach in management and programs are in place under the Ministry for economic development to support that.

The Information and Communication Technology Agency (ICTA) (www.icta.lk) of Sri Lanka was set up as the single apex body involved in ICT policy and direction for the nation. There have been a number of ICT enabled process improvement initiatives undertaken by the Information & Communication Technology Agency (ICTA) of Sri Lanka to improve the economic and social livelihood of rural masses. 'Nanasala (Wisdom Outlets)²', 'eSociety³', and 'Re Gov⁴' projects are a few example key initiatives. Rural Sri Lanka has seen an increasing involvement of both private and public-private partnership projects to increase ICT literacy and reduce the digital divide because of consistent efforts by ICTA.

Under the patronage of the ministry of Science and Technology, "Vidatha" telecentres have been launched. It is an initiative to create small and medium scale entrepreneurs, upgrade technologies of existing enterprises, and ultimately improve the standard of living of the rural community. It

² A project to empower the rural communities all across Sri-Lanka with affordable access to ICT based services (see <http://www.icta.lk/en/programmes/i-infrastructure/113-telecentre-nenasala/576-nenasala-wisdom-outlet.html>, last accessed Oct 2nd 2012)

³ e-Society Programme is to promote the innovative use of ICT to meet the social and economic needs of the most vulnerable communities in Sri Lanka (see <http://www.icta.lk/en/programmes/e-society.html>, last accessed Oct 2nd 2012)

⁴ This programme pursues major and sustainable improvements in the Government of Sri Lanka's (GOSL) efficiency, transparency, effectiveness, and quality of services (see <http://www.icta.lk/en/programmes/re-engineering-government.html>, last accessed Oct 2nd 2012)

also aims to improve the ICT penetration and provide access to ICT in the rural areas. Although there are very few successful projects of the likes of the Sahana⁵ project, which focuses on natural disaster management, it is evident that a number of projects under the categories mentioned above either have failed or have been only partially successful in achieving their aims and objectives (ICTA, 2008; Wattedgama, 2008b).

A country's economic development is closely related to the levels of achievement in education, technology and skills (Sanderatne, 2011). Sri Lanka has boasted of having one of the highest literacy rates in South Asia at [92.3 per cent for males and 90 percent for females] (UNICEF, 2012). While the attainment of a high level of basic literacy does make a contribution to economic development (as a literate labour force is more productive), literacy alone is inadequate for economic development. The modern global knowledge-based economy calls for 'Knowledge societies', where a country's development is determined by its state of knowledge, scientific learning, skills and innovativeness. While national strategy envisions re-positioning Sri Lanka in the global arena as a strong knowledge-based middle income country (Presidential Secretariat Sri Lanka, 2010), Sri Lanka has been somewhat complacent regarding the development of education appropriate for such a knowledge economy. Lack of understanding on the changing education needs and outdated success matrixes (such as the mere national literacy rate) are some underlying reasons for this (Sanderatne, 2011).

Lack of a "knowledge society" in Sri Lanka has become a constraint to higher levels of economic development. While this inadequacy has been recognized now and some steps to enhance education and technical skills are in place, they are (to date) inadequate. Further, many of the best trained and educated personnel leave the country. Private sector firms complain of the inadequacy of trained personnel. In the economic path to a prosperous middle-income Sri Lanka, emphasis will be based on knowledge-intensive activities such as information technology and software development, engineering, industrial processing, banking, finance and insurance. At present, the country's capacity and position in these areas are well below the average for comparable development and exemplar middle-income countries. The recognition of these needs have not been backed by adequate funds, needed reforms and implementation of policies and

⁵ See <http://sahanafoundation.org/>, for further details, last accessed Oct 2nd 2012.

education programs. The difficulties to change outmoded priorities, institutional rigidities and politicization of higher education institutions have impeded progress (Sanderatne, 2011).

Even though there has been a range of ICT investments to enable societal improvement in Sri Lanka, the fact that most of the projects did not achieve the intended goal is a concern. This is attributed to a lack of a holistic understanding on the contexts; hence we propose to have a detailed process centric approach that can address this issue. The fact that ICT deployment, without a deeper look at the holistic context (people and culture, processes, policies etc.) in which the systems will function in, will lead to failure, is not a *new* lesson to learn, but a repeated mistake observed. We propose process management to be applied at national levels (to operationalise, manage and achieve national visions and policies set), and at project/program levels (a process centric approach is critical before, during and after any systems implementation and/or organizational change).

The importance and impacts of Process Management is acknowledged by high- level ICT leaders of Sri Lanka, where they clearly state that implementing government sector automation prior to completing a proper process review and reform is a failure factor. Hence they propagate that process management (before and after) is essential to make the government agencies more efficient as well as making them suitable and ready for automated processes (Deshapriya, 2010).

OVERALL STUDY DESIGN

While this paper reports about the capability and up-skilling efforts experienced, the overall research that this study is a part of, has a boarder primary goal. We were keen to investigate; *If and how can ICT enabled process improvement be deployed in Sri Lanka (as an example of a developing nation), to effectively address critical concerns of the nation?* The study commenced with an issues study, where we looked at contextual aspects influencing ICT enabled process improvement adoption and success in Sri Lanka. This pointed to the critical gap of BPM skilled people in the nation, which then was the basis for a pilot up-skilling effort, which ran as a voluntary effort over twelve weeks. The outcomes of this pilot led to national level programs that are now in development in Sri Lanka. Further details about activities, challenges and outcomes of each of these phases are presented below.

Issues Study

The goal of this issues study was to derive a sound contextual understanding on the status of ICT enabled BPM practices across Sri Lanka. While the ultimate goal of the study was to look at ICT enabled BPM for developmental purposes, this initial exploratory investigation looked at (current, past and potential) ICT enabled BPM practices in Sri Lanka across all contexts – the goal being to get a more holistic understanding on the topic as a whole. A detailed semi structured interviewing approach was applied to investigate;

- How ICT enabled Business Process Management is viewed and understood by critical decision makers in the Sri Lankan context?
- What issues can hinder ICT enabled process improvement within the Sri Lankan context?
- What are the achieved and/ or anticipated benefits of ICT enabled process improvement initiatives in the Sri Lankan context?
- What are potential success factors that can support process improvement initiatives in developing nations– as observed within the Sri Lankan context?

Senior executives with an accountability to the organisational processes and/or have the decision making power on core organizational processes of selected organizational settings were sought as interview participants. 50+ Members from multiple organizational contexts were interviewed. Those from the public sector (in particular health, education, community service and agriculture due to their alignment with developmental goals), Senior management of multinational companies functioning in Sri Lanka, top management of Small and Medium Enterprises (SMEs), BPM solution providers and consultants, and leaders of NGOs (to represent the Social sector) were targeted in the sampling frame. Stakeholders not directly from a developing context (i.e. members from multinational private companies), were included to derive a balanced perspective on the status of BPM across different contexts.

A detailed protocol was designed and implemented to support all procedures relating to the data collection and analysis. The interviews were semi-structured; often completed within 50-70

minutes, conducted in English and at times in Sinhala⁶ (if deemed more suited/ comfortable for the respondent). Most interviews were recorded when permission was granted (later transcribed and translated to English, as needed). All interviews followed the same structure and format (as pre-specified by the protocol), commencing with an open discussion on understanding and perception of ICT related process management, followed by their perceptions of issues, benefits and success/failure factors for process improvement initiatives.

The lack of process centric capabilities was a highlighted aspect continuously observed from this analysis. Observations related to the capabilities and skills issues are summarized below.

Contextual overview

1. Disparity between the (large) private and public sector

Large scale multi-national companies (MNC) in Sri Lanka (especially in the apparel and IT outsourcing industry) were well advanced (to international standards) on ICT enabled process improvements. These organisations had ICT enabled process improvement projects running, with dedicated roles (at senior executive and operational levels) and at times centres of excellence for the design, development and continuous enhancements of ICT enabled process changes. This was not the case in smaller scale national organisations or in the public sector. Public sector reforms had started in some areas (such as under the Sri Lanka e-government initiatives).

However, resistance to ICT enabled process change was very high, with only a few successful implementations and many others significantly lagging (~ 3-5 years delayed from original plans of completion) or discontinued (within <1 year) after implementation (Deshapriya, 2012; Wategama, 2008a, 2008b, 2009).

Private sector MNCs had the external pressures that the other institutions did not necessarily 'feel'; to function in a competitive global environment. This drove the top management towards recognising the need and potential for ICT enabled process improvement. Private sector top management was aware and fully supportive of ICT enabled processes, and set the procedures in place within their organisations to recruit and up skill all staff as needed. Roles and departments

⁶ Sinhala is the mother tongue of Sri Lankans and the most popularly spoken language in the country.

were created, staff development took place and procedures (i.e. induction programs, ‘revise and revitalise’ meet-ups, buddy schemes etc.) put in place to make every employer aware of the processes and supporting systems in place.

Outside MNCs, senior executives (who are subject matter experts in their own domain) were very much unaware of ICT in general, or the notion of ICT enabled process improvement, resulting with minimal top-down momentum and support. While agencies like ICTA of Sri Lanka, has a strong vision for ICT enabled process improvement in the public sector, they too have only a limited number of experts in the process domain that could be deployed to national ICT reform projects. External consultants (often from India) were bought in, at lucrative costs (considering local standards) which were short term deployments. No sustainable knowledge transformation procedures were put in place and hence BPM expertise and skills the consultants bought left as their contracts ended.

2. Overall lack of understanding on ICT and BPM

The long-term education system and continuous professional development strategies in Sri Lanka have not catered for up-skilling the workforce on ICT (or BPM). While ICT has become an integrated subject in the current Secondary and Higher education curricula, means of up-skilling the current work-force (who might not have experienced the revised curricula) are minimal. As a result, there are many current and potential ‘users’ of Information Systems in the country who have minimalistic exposure, understanding and appreciation for IT. One of the critical observations made is, these operational staffs’ inability to communicate systems requirements when the ICT4D occurs or to understand what else can be done to the current work practices to make things better – which should be a fundamental goal of implementing Information Systems.

IT development in Sri Lanka is often done by private sector vendors. Even when projects occur via government agencies like ICTA, due to resources constraints within ICTA the actual systems development is outsourced. Systems developers liaise with the (inexperienced) users to obtain the specifications to build the systems. This can lead to inefficient systems that merely automate current practices and/ or have incomplete systems functionality. It is not unusual in Sri Lankan public sector to observe the prior manual systems still being run in parallel, years (sometimes after 5 years) after an ICT implementation, thus, creating an inefficiency (due to the duplication

of efforts) that is larger than the non- ICT era. This is due to many reasons including weak systems functionality, resistance to change, and lack of trust and appreciation for the potential of the system – all influenced by not having the right ICT and BPM capabilities in place.

Another challenge for skills and capability development and retention in the Sri Lankan public sector are the national policies in place, warranting that public officers are rotated in set short term periods. While such national policy would be essential to maintain rural services in an equitable manner (which is understandably very important) - no staff up-skilling programs are in place to support the knowledge drain that occurs internally within organisations with these transfers. National ICT skills development and sustaining programs should take place to enable and empower the workforce to use the deployed ICT systems. In addition dedicated Business/ Systems Analysts roles with process expertise should be created (and means set forth to sustain these roles within the public sector of Sri Lanka), to be the leaders of ICT enabled process improvements and the liaisons between the process/ system users, ICT developers and the decision makers. Such roles are nearly non-existent in the public sector of Sri Lanka.

While the above observations were primarily around ICT skills in general, all these and more also pertain to BPM capabilities and skills. There has been no training or trained thinking in Sri Lanka on looking at work performed as a means of a process. As a result, people have a very poor understanding of why they do what they do (the impact is not known) and how what they do influence an entire chain of events that can contribute to regional/national development. Decision makers in the public and private sector (outside the MNC context) are having a lack of vision towards the close interrelatedness between ICT and BPM. Most of the organisations do not take action to manage their process workflows before implementing ICT systems. Their viewpoint on ICT is not as an “enabler” but as “*The Solution*”. This misconception needs to be addressed with proper awareness building on the cohesiveness of these two areas (BPM and large scale ICT implementations).

3. Limited means to build essential skills for ICT enabled process reforms in the country

While up-to-date and timely ICT training for the workforce exists in Sri Lanka, training and up-skilling in the form of process improvement expertise are nearly nil in the nation. As BPM has evolved and organizations are becoming more business process oriented, the need for BPM expertise and experience has increased globally (Antonucci & Goeke, 2010b; Hill, Sinur, Flint,

& Melenovsky, 2006). People skills are considered a key factor of ICT enabled outcome generations and performance improvements, prior studies specifically stating the role of people for the success and failure of organisational reforms (e.g. Amoroso, 1998; Grover, Teng, Segars, & Fiedler, 1998; Raymond, Jr. Coleman, & Creed, 1995).

There is already a global shortage of skilled people to fill these roles and complete these tasks, and developed nations have commenced a range of programs to address this skills gap. For examples, global communities of practice have been put in place (Bandara, et al., 2010a; Bandara, Harmon, & Rosemann, 2010b; Marjanovic & Bandara, 2010), and curricula reviews, university-industry collaborations and international knowledge exchange programs have commenced as a means of addressing this skills gap. International employer representatives and professional associations (i.e. such as Business Council of Australia, Australian Chamber of Commerce, Australian Computer Society, Australian Management Institute etc.), have advocated incorporating ‘employability’ skills which include business process orientation and related generic graduate attributes, such as communication, leadership, and group work into the curricula (Curtis & McKenzie, 2001). The Federal government and other government bodies of the developed world are also encouraging the progression of a higher education strategy to embed such employability skills in universities (Seethamraju, 2007, p 7). However, no education program for BPM exists to date in Sri Lanka in any of the Universities’ current curricula or professional training programs. National leaders and institutional leaders are not familiar or aware of BPM and its impacts as an essential discipline, which has led to BPM skills development not being integrated into any existing national up-skilling efforts. At a national level, this scarcity of BPM education creates a gap that hinders the nation from achieving its maximum potential. At an individual level, graduates produced by Sri Lanka’s education system especially those who work in multidisciplinary contexts – such as the Arts, Social Sciences and Business students will be more employable if they had BPM skills. *“Developing process orientation skills is now essential for the effective workplace performance of Graduates”* (Seethamraju, 2007). Thus, integrating such essential skills to the curricula can also address a different national challenge that Sri Lanka is facing, such as the employability of graduates.

SUMMARY RECOMMENDATIONS FOR ESSENTIAL ICT/ BPM SKILLS DEVELOPMENT

Based on the above observations, a set of recommendations are made and presented below.

Leadership training

Increase awareness of ICT enabled process improvement amongst the executives of the country (especially in the public sector). This can be done via short seminars targeting the leadership groups, and sharing case studies of ICT enabled process improvement success within the country. Such can assist in removing the misconception that '*this is foreign, and not possible in this country*', and entice and encourage the leadership to adopt the concepts and create a success story themselves.

Operational staff training

Develop and deliver trainings at national level to increase awareness of ICT enabled process improvement amongst current operational staff. Such trainings should up-skill the present workforce on the basic skills for ICT and BPM and encourage and challenge the workforce to continuously identify opportunities for improvement and champion such initiatives. Policies and procedures should be in place at institutional and national level to facilitate this.

Development of specialised process expertise within the country

At present process expertise is currently limited to a few individuals and consultants in Sri Lanka. It is recommended to carefully select individuals within government departments who can take the role of process management experts and others who can take the role of process management trainers and to up-skill them to perform these tasks. For example, selected individuals of middle and top executive levels of ministries can be trained on BPM and be allocated to champion the ICT enabled process reforms at ministerial levels. Selected higher education and professional training institutions can up-skill faculty members to become BPM trainers in the future.

Furthermore, ICT enabled process management should be embedded as a core subject in the Higher Education and professional training curricula, not only under Business/ Management and

ICT courses, but also in other multidisciplinary domains to ensure that the future workforce will be more ICT and process aware and ready.

Approach National Leaders to provide support for staff development on ICT enabled process reform and review related national policy

National political leaders and policy makers, who understand the value of and potential for ICT enabled process change, can lead the way in developing the essential skills and capabilities. They will be the catalyst in enabling and directing the above mentioned recommendations across the nation. Programs can be set and implemented to develop specialised process expertise within the country and to integrate ICT enabled process management education and training to the existing and future workforce. In addition, national level policy can be reviewed and/ or created to facilitate this effort (i.e. review compulsory re-location and incentives policies of public sector employees, funding and support for national level up skilling efforts, consider national level policy to improve the quality and management of the ICT products and services deployed- so that processes are reviewed/reformed and strategically aligned with the long term goals prior to systems design and implementation).

THE PILOT UP-SKILLING EFFORT

Upon the observations made from the initial context study (described above). A program of work was designed and partially executed as a first attempt towards addressing the recommendations. This section describes this effort, its outcomes to date, challenges/ limitations and future steps planned.

Narrative of the field work

The work commenced as part of the principal author's sabbatical program. She is of Sri Lankan origin and a Senior Lecturer at a Queensland University of Technology specializing in the area of Business Process Management (BPM). Her research group shares the vision to '*change the world by connecting processes, information, services and people and to set the template for the future of this field through excellent teaching, research and provision of services to the profession*'. It is one of the strongest and fastest growing BPM research groups in the world with impressive academic achievements, significant third-party funded research projects and major industry linkages. The principal author has over a decade of experience in BPM and an inherent interest

(both personal and academic) on socio-economic developmental matters. She has a strong track record on BPM research and education.

In July 2012, a new research initiative led by the principal author has taken place on Process Management for Development (BPM4Dev⁷)—with the belief that Process Management and its potential (if applied properly) to be a vehicle to make significant societal changes, especially in the developing context. She selected Sri Lanka (her country of origin) as the first pilot context for this investigation. As described above, the study prefaced with an issues study to observe the current process management practices in Sri Lanka and to also see if process improvement can be deployed to effectively address critical national concerns and to assist the nation move towards its goals.

She commenced her work in collaboration with two individual academics – from two separate institutions in Sri Lanka (both from the Information Systems domain); they provided her with the basic contacts and infrastructure support to commence the study. While the interviews of the issues study (which was discussed above) were in progress, a voluntary up-skilling effort for the academics of the two institutes commenced. The lead-researcher then also reached out to other academics in the region (institutions in the western province of Sri Lanka) and ended up training a total of 18 academics from the Business and Information Systems schools on the basics of ICT enabled BPM and BPM lifecycle management over a period of 12 weeks. The training was intense, ran full days 1-2 times a week. The strikes called by Federation of University Teachers' Association (FUTA) during that period in Sri Lanka turned out to be a blessing in disguise as it 'freed' up some staff for this voluntary training, which might have otherwise been difficult to achieve with workload and time constraints. At the end of the 12 weeks, a carder of BPM skilled ICT experts were formed, who were keen and committed to 'test' their knowledge in practice. Parallel to this, the lead researcher also contacted leaders in selected ministries of Sri Lanka that had a significant role to play towards the nation's development goals. The Ministry of Economic Development (<http://med.gov.lk/english/>), Ministry of Health (<http://www.health.gov.lk/>), and Ministry of Higher Education (<http://www.mohe.gov.lk/>) were the primary places targeted.

⁷ <http://www.bpm4dev.org> (web site will be running by Jan 20th 2013)

Introductory awareness seminars and/ or discussions to the leadership teams of these ministries were conducted, where significant interest towards the topic was formed. The research team asked for ‘burning issues’ currently experienced by the ministries, discussed how some of these can be addressed by a process centric approach and offered to collaboratively conduct voluntary services of process analysis and improvements as a means to address these, with the primary goal of that experience been a ‘proof the concept’ of ICT enabled BPM. The teams of trained academic members were deployed to selected projects, under the detailed guidance of the lead researcher. Tools and techniques (such as protocols for information elicitation and analysis, and report templates etc.) were derived and used to complete the analysis work promptly with high impact. Other strategies such as competency mapping and peer reviews were also embedded to enhance the outcomes of the teams. The overall learning process experienced by the new trainees was documented as an Action Research study that illustrated and evaluated the process of up-skilling these members (see Anonymous 2012b for further details).

The client-end stakeholders were very appreciative that their problems and issues are ‘finally heard and actioned’. The outcomes of each of the individual projects are documented as a report with detailed analysis and recommendations (for the client end), a case study (for the wider academic and practitioner audience) and as a teaching case (to support the education of future BPM experts emerging within the same context). Positive progressive outcomes of this effort have created more demand for the trained team to pursue with other projects and a request from within the ministries to also train their own staff for such work.

Different training models are now designed as follows:

- Short term trainings (1-5 day sessions) are to be provided by the primary researcher’s original (in Australia) and local research groups to senior leaders and operational staff in Sri Lanka. Both voluntary and priced models are in place, to be offered within differing contexts. Staff completing such training are encouraged to apply their learning in a selected area of their organization, with the collaboration and support of the trained local academics, as a means to gain immediate benefits of the trainings, and to increase the impact of the up-skilling effort
- Intermediate term (3- 6 months) trainings to develop specialized process expertise within the country are in place. Selected members from practice and academia will be trained at the principal researcher’s institution in Australia

with 3-6 month courses and sent back to Sri Lanka to perform designated leadership roles on ICT enabled BPM. Funding for such is sourced by institutional staff development schemes and national funding schemes such as Sri Lanka's National Science Foundation's Overseas Special Training Programme⁸).

- Collaborative Masters by Research and PhD programs on ICT enabled BPM, with the participating international university and local universities, where local members can complete a joint higher degree program (with theory and applied research) has been established as a means of developing long term enduring expertise in the country. Joint funding (such as fee waivers from the international collaborators and living/ study allowance from the local organizations) and supervision schemes are in place to facilitate this. Those who are trained in this manner, can lead the national ICT enabled BPM up-skilling efforts upon course completion and return to Sri Lanka, in 2-3 years' time.
- The research team has had the opportunity to present this vision to the Presidential Secretariat office of Sri Lanka (upon invitation). Discussions and negotiations on National level support for this initiative, best business models for implementing such and potential policy changes are currently been discussed. A proposal will also be made to the Ministry of Higher Education to consider including ICT and process improvement skills as a core competency for graduates and hence an embedded aspect of the curricula. Evidence based rationale for such is provided and curricula design support is offered to enable this.

The research team has succeeded in developing a feasible and practical approach to address the national skills gap of ICT enabled Process management knowledge in Sri Lanka. What started with an individual's and two collaborators passion and vision has taken the initiative a very long way in a short time, addressing means for short, intermediate and long term up-skilling efforts for ICT enabled BPM in Sri Lanka. While successful to date (only 3 months), the initiative does have some high risks to mitigate and manage.

⁸ See <http://www.nsf.ac.lk/index.php/the-nsf-/scientific-divisions/international-liaison-division/178> for further details (last accessed Oct 4th 2012)

- A lot of work has been accomplished while the principal researcher has been in Sri Lanka driving the initiative. To date, she has been the primary contact at all levels of communication. A sustainable model where local members can take over this role in Sri Lanka needs to be designed and executed. Roles dedicated to program and project management is essential to sustain this.
- The interest and support from all levels has been significant and paramount to the success achieved to date. Means of retaining this interest and support needs to be thought through and executed.
- There is a very real risk of ‘losing’ the trained staff on ICT enabled BPM. Most foreign trained staff do not come back to the country to serve and those sponsored by government leave to private sector.
- The relationship between the research team and the ICTA (Information Communication Technology Agency) will be a key factor to the sustainability of this endeavour.
- The commitment and vision of the political and policy making bodies in the country is also another facet which can jeopardize the future of the initiative. A negative view (considering BPM as a tool for right sizing government organization) may develop “resistance to change” in the future.

DISCUSSIONS AND CONCLUSION

This paper presents detailed insights about the status of ICT enabled process improvement in Sri Lanka, in particular the predicament created by the national skills gap for process aware and process management enabled individuals. An issues study of ICT enabled improvement initiatives, resulted in the identification of lack of capability and skills related issues and their impacts to the country’s development goals. Detailed observations from the field study in Sri Lanka was provided, highlighting ICT and BPM related capability and skills gaps and their implications. The study team embarked on a nationwide BPM capability and skills development effort as an attempt to commence addressing these gaps, with the design and implementation of various different models, also shared in detail in this paper. The outcomes of the research is of interest and value to industry organizations, the education sector, and government organizations

seeking to implement strategies to enable rational, informed decisions regarding uptake of ICT enabled process improvements.

The study confirmed that the stakeholders, though aware of the issues and necessary support with regard to the adoption of BPM, find the required talent and means to up-skill unavailable. This message needs conveyance to the relevant government ministries and education sector and they need to take a coordinated approach to address the issues. Suitable policy interventions from government and active support from the education and private sector are needed to address this issue. At present, IT/IS curriculum offered at the universities and private sector higher education institutions does not include a formal training module on business process management, process improvement and hence, the graduate do not see the vital link between Information Technology and Business Processes. The government needs to take leadership to facilitate a regulatory environment, improve national infrastructure and continue to support with ICT and BPM education.

The industry, the education sector and the government could promote the use of ICT and BPM through awareness campaigns. There is a crucial need for action by the government to influence the provision of such services. It is encouraging to find the Sri Lankan government taking initial measures to broaden the use of ICT and help improve access to skills providing necessary expertise for full participation in the digital economy. The government body, Information and Communications Technologies Agency (ICTA) established for this purpose, shows further commitment providing legitimate and positive leadership in developing an infrastructure to digitize Sri Lanka's economy.

Government agencies also need to actively encourage the adoption and diffusion of ICT enabled process improvement as the way forward to improve efficiency and competitiveness. They can help by raising awareness, providing pilot project assistance, funding and training assistance. This study has several implications with regard to policy makers working towards policies on ICT enabled BPM adoption. They need to understand the value of government intervention as a regulatory body. The government must play a major role with a proactive approach to influence not only behavioral changes responsible for process and technological innovations but also with a provision of necessary pre-requisites and infrastructure. The government, as a regulatory body,

needs to act as a standard setting and knowledge dispensing body. Similar issues have been resolved with other nations through government interventions.

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