E-Government Adoption and Business Process Re-Engineering in Developing Countries: Sri Lankan and South African Case Studies

Abraham van der Vyver and Jayantha Rajapakse

Abstract—**In 1995 the commercial legalization of the Internet immediately triggered e-Government initiatives all over the developed world. After more than e decade, e-Government initiatives in developing countries are still rendering poor results while they are struggling to catch up with similar applications in the developed world. Despite the strong base that BPR offered for the phasing in of new e-Government initiatives, most of them failed dismally in the developing world. A few spectacular successes were however recorded. In this paper the authors offer a balanced look at two cases studies in which BPR formed an integral part of their respective implementation strategies. A number of important implementation lessons regarding e-government initiatives are embedded these two case studies from Sri Lanka and South Africa. They also offer important pointers on how to make these initiatives work.**

Index Terms—**Business Process Re-engineering (BPR), developing countries, e-Government, ICT, public sector.**

I. INTRODUCTION

With the commercial legalization of the Internet in 1995 e-government initiatives were triggered all over the developed world. Whilst e-Government is a reality in most of the developed countries today, many developing countries have failed the implementation test.

Once the newly discovered governmental Holy Grail namely e-government and its myriad of satellite products like non-interactive websites and portals lost its glamour, the emphasis shifted towards the business side of governance. Davenport pointed out in 1992 that "customers are the impetus for radical process change" [1]. This statement proved to be prophetically true. The customers of government (corporations and voters) insisted on higher levels of service delivery and the only way the officials could meet these demands was by working more effectively. They were forced by the politicians to take a critical look at their governmental processes. With Business Process Re-engineering (hereafter referred to as BPR) being the flavor of the month in the business domain and the Internet offering quick fix solutions to nearly every conceivable business problem, it did not take long before government

officials approached the high power BPR-consultants who featured prominently in the business as well as the popular media. The BPR-route towards e-governance was there for the taking.

II. RELATED WORK

The introduction and implementation of any e-initiatives, whether in the public or private sector, happen within a context of business re-engineering or business innovation. The concept of business process re-engineering (BPR) featured prominently on the research agendas of the nineties."Re-engineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed" [2]. Davenport prefers the term business process innovation to BPR because it "encompasses the envisioning of new work strategies, the actual process design activity, and the implementation of the change in all its complex technological, human, and organizational dimensions" [1].

MacIntosh suggested that attention should be paid whether the BPR took the form of radical or incremental change [3]. He postulated that change to a business process might be described as radical when there is evidence of significant improvements in performance (on one or more dimensions), changes to the organizational structure supporting the process(es) or changes to the roles and responsibilities of those performing the processes. If, however, the dimensions of change identified above were implemented in a piecemeal fashion over an extended period, the overall effect would be more akin to an incremental process [3].

Thong, Yap and Seah [4] pointed out that BPR entails the redesign of business processes using enabling IT to bring about a quantum leap in performance. They added that "(w)hile public organizations have adopted IT to improve their operational efficiency, the changing environment calls for more radical changes to improve the quality of public service."

A prominent website depicting important milestones in the development of BPR pointed out that disruptive technologies like shared databases, expert systems, telecommunication networks and decision support tools all facilitated the utilization of BPR methods in the public as well as the private domain [5]. Hammer in White [6] issued the following warning: "I was reflecting my engineering background and was insufficient appreciative of the human dimension. I've learned that's critical."

Whilst BPR almost became a trend amongst private enterprises at the turn of the century, the public sector tried their hand it for totally different reasons. It was for instance social and political pressures that led to the implementation of a BPR process at the Housing Development Board of Singapore [4]. This was also the case in South Africa and Sr-Lanka where backlogs in tax and pensions administration respectively called for drastic solutions.

III. METHODOLOGY

The goal of this research study is to investigate how BPR processes impacted on e-Government implementations in developing countries. The study uses the case study research m ethod for data collection and analysis. The case-study method is an empirical mode of inquiry that investigates a contemporary phenomenon within its real-life context. According to Yin [7] the case study method is most appropriate for explorative research studies such as this study which explores new insights regarding the implementation of e-government initiatives

Case studies from Sri Lanka and South Africa have been selected for the purpose of this study. Both countries can be categorized as being in a stage of development i.e. as developing countries. Sri Lanka was selected because one of the authors has comprehensive access to information on the project. Similarly, South Africa was selected because the other author is from South Africa and has an on-going relationship with the case organisation. Both cases offer an excellent example of the successful implementation of an e-initiative by way of extensive BPR.

The authors applied an interpretive methodology when they analysed the data that they collected. Walsham [8] quoted Geertz who "summarized an interpretive view of the data we collect in such studies in the following memorable sentence: What we call our data are really our own constructions of other people's constructions of what they and their compatriots are up to (p. 9)."

Klein & Myers [9] stated that "IS research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools, and other artifacts." The following brief case descriptions will illustrate that this study is in line with the abovementioned guidelines.

The e-Pensions project can be considered as the largest and the most complex project of the e-government initiative in Sri Lanka. Hence, the e-Pensions project was selected as the case study representing e-government in Sri Lanka. Since the e-Filing initiative of the South African Revenue Services (hereafter referred to as SARS) is one of the largest as well as the most successful project of the South African e-Government initiative, it is included in the study.

A series of unstructured interviews were conducted by the authors between June 2010 and November 2011. The duration of the interviews varied between 30 minutes and 2 hours each. A total of 16 interviews were recorded. In addition, several follow up telephone interviews were conducted. Interviewees included a Director General, project champions, process owners, project team members and operational staff members. Respondents were given a guarantee of anonymity unless otherwise agreed. One South African respondent waived that guarantee and were named in the reference list. All the other respondents in South Africa preferred not to be named or quoted. They cited the emotive nature of taxation as well as a fear for victimization as reasons for their refusal. Selected statements from these interviews are presented in the case analysis section as quotes or near quotes. Some of the quotes had to be translated into English. Sri Lankan respondents and stakeholders mentioned in their quotations were only identified by titles.

Annual reports form SARS dating back as far as 1998 were used to compile the interviewing protocols (discussion lists). The documented responses of the interviewees were analyzed in order to construe the case studies. In cases where anomalies were detected the researchers went back to the respondents for clarification. Additional interviews were set up to deal with new and/or unresolved issues.

IV. CASE DESCRIPTION – SRI LANKA

Currently The Government of Sri Lanka is in the process of implementing an e-Government initiative called "e-SriLanka". The Information and Communication Technology Agency (ICTA) of Sri Lanka is the implementing organization of the e-Sri Lanka Initiative. The e-Pensions project can be considered as the largest and the most complex project of the e-government initiative in Sri Lanka.

The pensions department was established in 1970 by combining a number of provident-related operations that were handled by different government organizations at that time. Such operations initially included the processing of Pensions and Widows & Orphans Pension Fund (W&OP), which were handled by the Treasury. Subsequently, the Public Servants Provident Fund (PSPF) and the Local Government operations were also transferred to the pensions department.

The Pensions Department is responsible for granting pension payments to retired public servants as well as the monthly disbursement of these pensions. The Pensions department was one of the most traditional departments in the country. Its work processes were totally manual and complex, and scattered among several other government organisations. The department has several stakeholder categories including Pensioner, Widow/Widower, Minor/Unmarried Children, Contributor to Pension Schemes, Government Organizations/ Ministries, Armed Forces & Police, and Divisional Secretariats.

The department was well known among the public for huge delays in processing the applications. According to the Director General (DG), the application processing time for a widow pension-application varied from 10 weeks to 555 weeks before the implementation of the re-engineering processes. Since the objective of the e-Pension system was to convert the labour-intensive and problem-stricken current system into an IT-driven paperless system it was decided that prior to designing the ICT based system a re-engineering of the operations of the pensions department is required. This was done to lay the foundations for such a major change.

Before the Pensions Department was tackled, the projected

time span for this re-engineering project was 15 weeks however the project took a mammoth 111 weeks to complete. According to the BPR report (Corporate IT Resource Ltd 2007) there were several reasons for this delay. The large number of persons that had to be interviewed for the vacant positions, the different processes that were being followed for each type of application and the non-availability of staff on Public days (2 days a week to meet pensioners) were listed as the major reasons for the delay. The number of workshops to set the stage for the implementation of the e-Pension initiative was also increased from 2 to 6. In addition, the staff members allocated to the project was not released from their normal duties.

The major outcome of the re-engineering process was conversion of the old function based operation into a process based operation. With the objective of standardizing the operations within the various funds/projects (W&OP, PSPF, Local Government and Pensions) with relation to the payment of pensions, gratuity, refunds, arrears, etc., BPR consultants paid special emphasis to identify the areas common to these funds/projects during the study of the processes (Corporate IT Resource Ltd 2007). Due to the high degree of change that was envisaged in the re-engineered processes – it was decided to conduct the re-engineering workshops at a dual level - Policy Level Re-engineering and Operational Level Re-engineering (Corporate IT Resource Ltd 2007). The re-engineered processes have taken the ICT infrastructure that would be introduced to the Government Organizations as well as the Divisional Secretariat offices into consideration.

After a delay of almost two years, the BPR report came out. It recommended that the following six major processes be recognized: Registration of Applications, Collection & Management of Contributor funds, Processing of Once-And-For-All (OAFA) Payments, Processing of Regular Payments & Revisions, Handling of Queries, Managing Records. The Core Processes identified above were common to Pensions, W&OP, PSPF and Local Government.

From the beginning of the project the department provided various types of training for the staff members. Since computer literacy was low among the staff members, the department started in September 2006 with the provision of computer training (International Computer Driving License - ICDL) for the staff members. By the end of 2008 all the staff members completed their ICDL certification. In September 2008 before the software development was started, outbound training for the e-Pensions core implementation team was provided. The e-Pensions Emissaries consisting of a 50 member team, was taken to Ella Adventure Park in Sri Lanka. The objective was to motivate the "e-Pensions Emissaries" team members and also to provide them with an introduction to the vendor consortium. The vendors also participated in this training. Subsequently, the e-Pensions process owners and team were undergone "Energizing Workshop" to refresh their minds about the re-engineered processes in order to support the vendor consortium.

In November 2009 the change management task force (5 member team) was provided with formal change management training at University of Oxford, UK. This was a 5 day training programme, and the team was able to devise the 'Change Management Plan' for the e-Pensions project. The e-Pensions change management programme is called 'Delightful e-Pensions' which is an on-going project at the pensions department to help making a smooth transition from the old manual system to the new automated system.

V. CASE DESCRIPTION – SOUTH AFRICA

South Africa got its first democratic government after the fall of apartheid in 1994. The first e-Government initiatives started to surface in 1996. All government departments and agencies got websites but very few offered any interactivity. Bandwidth limitations prevented most of the potential users from accessing these sites. A huge digital divide as well as low literacy levels amongst the majority of the citizens rendered most of these initial e-Government initiatives redundant. Fortunately, a limited number of these initiatives succeeded. One of the most successful initiatives, the eFiling initiative of the South African Revenue Services (hereafter referred to as SARS), is discussed and analyzed in this paper.

Smith [11] explained that "(i)n 1995 the Directorates of Inland Revenue and Customs and Excise in the Department of Finance (now the National Treasury) were restructured as an autonomous revenue collection agency known as the South African Revenue Service (SARS)." Despite the restructuring it was business as usual.

The platform for transformation at SARS was laid in 1997 when SARS was granted administrative authority [12]. The process itself was launched in June 1998. It took the form of a live broadcast in which all 6,000 staff members could participate. The Minister of Finance, the SARS advisory board as well as the members of its Executive Committee attended. One of the first fundamental changes was that the Human Resources department was given the opportunity to recruit and retain skilled staff [12]. This opened the door for the restructuring of the remuneration system as well as a major recruitment drive. Market related salaries were offered to qualified lawyers and chartered accountants. During the same taxation period In order to increase performance, SARS introduced 23 performance indicators that focused on areas that produce income and enforce compliance [12]). A strategy to encourage compliance was also adopted [12]. This was an important first step towards an interactive communication process that would become a major driver in the taxation process in the years to come.

In 2001 SARS created a system that allowed companies to file their tax returns electronically [13]. According to Jonker this system was expanded in 2007 to make provision for all individual tax payers [14]. eFiling formed the backbone of this modernization program. It proved to be an instant success with 34% of returns processed within 48 hours compared to only1.6% a year earlier. It also saw a phenomenal increase in electronic filing as a preferred channel for submission of returns. More than one million electronic returns were submitted compared to only 35,000 in 2006/07 [15]. SARS declared 2007/8 as "Year of the People". SARS implemented this initiative by hosting 4,280 education workshops thereby surpassing the target with 1,250 workshops. These workshops that led to substantial

engagement with took place at demarcated halls, employer workplace as well as at SARS offices. A total of 292,611 taxpayers were trained in various aspects of the tax system [15].

The newly appointed head of SARS Communication was a seasoned journalist with an MBA degree. He initiated a major media campaign consisting of advertisements on television, radio and in the print media. An advertising agency was appointed through a conventional "pitching process". News releases were regularly sent out to the media by a team of journalists.

The program to educate tax payers about the new developments in the field of eFiling included the following:

- A national road show that incorporated industrial theatre
- A television program "My Tax"
- Information sessions on local and regional radio [15]

The creative new communication initiatives paid off when 30,000 new tax payers registered for eFiling in the 2008/9 tax year [15]. SARS added a new dimension to their strategy i.e. increased specialization whereby the focus on high revenue generating taxpayers/traders was narrowed [16]. In the 2009/10 tax year, the performance improvement trend continued. By the end of tax season 2009, SARS had received more than 3.1 million returns compared to 2.4 million a year earlier, reflecting a compliance ratio of almost 80% compared to 58% in 2008 [16]. The Commissioner of SARS, Mr. Pravin Gordhan, was appointed as Minister of Finance.

In order to enhance and sustain service levels, SARS invested 2.84 training days per employee in 2008 (SARS 2009/10:50).

In the 2010/2011-tax year SARS succeeded to further improve their performance levels. The number of registered eFiling users increased from about half a million at the end of 2006 to just over six million at the end of March 2011 – a twelvefold increase (SARS 20010/11:30). During the 2009/10 tax season, 2.3 million returns were assessed within 24 hours. This volume increased by 18% in tax season 2010/11 to 2.7 million returns (SARS 20010/11:30)

VI. Case Analysis – Sri Lanka

According to the Director General, the Pensions Department is a traditional government department that was infected with various power bases that emerged from different service structures. Before the e-Pension initiative, the department was structured along three main service types namely, administrative, accounting, and management services. There was a continuous power struggle among these service groups.. The 25 members working at senior levels of the accounting service dominated the department whilst the administrative service had only 5 members at senior level. The Director General forms part of the administrative service. The DG said that his challenge is to convert an accounting system into a full-fledged general pension system. The Finance Director commented as follows:

Though, the department developed a comprehensive change management action plan with a heavy training component in IT, application and process areas,

implementing the re-engineered processes became a major hurdle. The change from a functional based operation to a process based operation created an array of problems. Until implementation of the re-engineered processes, staff members were focussed on a limited function such as application process function of a particular fund. Now they have to learn other functions as processes are spread across several functions."

One of the project champions explained that due to poor level of self-learning among the staff the learning curve became long and as a result project suffered a further dealy.

From the beginning of the project the e-Pensions project lacked the required suitably-skilled contingent of human resources. During the first stage of the project, the BPR process consultants did not have access to the staff as planned because the relevant staff could not be released from their duties. This problem was exacerbated due to the Department's inability to recruit new staff. The same situation occurred during the systems analysis stage as well as the user acceptance testing stage. Thus, the chronic lack of human resources proved to be the lagging factor that was delaying the project. A project champion revealed his concerns regarding upcoming pilot run as follows;

"When we start the pilot run we need more people but we come under the public admin ministry, so we need to get their approval and it is a difficult and long process, we won't get staff on time, so we are going to face a lot of problems with the pilot run as in the past"

According to the DG, the department has come a long way in making this transformation during the last seven years. He said that it is not only the automation but also an improved working environment, the communication channels provided for pensioners to communicate with the department and department's communication with other external entities that got drastically changed. The improvements were all based on a solid training platform that was explained in the case description.

VII. Case Analysis – South Africa

The SARS eFiling case study offers an example of how e-government can render spectacular results in a country that is earmarked by huge developmental challenges. This case illustrates how an e-government initiative can be productively implemented by following an incremental approach.

The South African researcher used the annual reports of SARS from 1998 to 2010 to construe an implementation timeline for the eFiling initiative. These reports illustrated how and when the various milestones were reached. The personal interviews were used to investigate the various issues and challenges that surfaced during the implementation process. Viewpoints from SARS officials, individual tax payers and tax consultants were collected and reviewed. The following set of facts was diluted form the process.

Since the launch of SARS in 1998, its management embarked on a number of carefully designed strategies in order to establish a cost-effective tax system for South Africa. These strategies culminated in the following vision for SARS: [to establish] "an innovative revenue and customs agency

that enhances economic growth and social development and that supports the country's integration into the global economy in a way that benefits all South Africans" (SARS Strategic Plan 2009/10:9).

The Commissioner of SARS, Mr Pravin Gordhan provided capable and creative leadership for a 10 year period after which he was promoted to Minister of Finance. This promotion as well as the dramatic improvements in service levels that were recorded during his leadership underscores the huge contribution he made to the successful restructuring of SARS.

The restructuring process started with the Cabinet granting SARS its independent status as a fully-fledged government agency in 1997. This was followed by the empowerment of the Human Resources Department to embark on a major recruitment drive and to offer market related salaries to candidates who excelled in their professions. Tax lawyers and accountants were appointed to professionalise the services of SARS.

Once the required personnel were appointed the management of SARS embarked on a digitization drive. eFiling was introduced in 2001 to enable companies to pay Value-added-Tax as well as executing PAYE payments. The system was expanded in 2007 to all individual tax payers. Since the restructuring process proved to be a huge financial success, SARS never experienced any difficulties to obtain funds for new initiatives. The fact that they also resorted under the Minister of Finance who controlled the national budget also worked in their favour.

The fact that South Africa has got 11 official languages also did not impact negatively on the activities of SARS. The fact that there are always call centre personnel on duty who could deal with any of these languages prevented problems that may arise from misunderstandings. SARS's network of regional offices further ensures that all tax payers are serviced in their mother tongues. Since the minimum taxable income is relatively high, most of the problems that are associated with the digital divide are eliminated.

The core finding was that the successful implementation of the E-filing initiative rested heavily on a well-funded and streamlined communication process. A scientific advertising and communications campaign was implemented to keep the public informed every step along the way. This campaign that compared favourably to the more sophisticated marketing campaigns that are utilised in the business domain is still sustained today. The same goes for the BPR practices that were implemented to re-engineer the tax collection system from a time-intensive manual system to a streamlined electronic system.

In an interview with the Head of Communications of SARS, he indicated that communications was deliberately used as the hub of the whole BPR process. Despite the financial and administrative constraints that the Public Finance Management Act placed on the outsourcing of services, the management of SARS nevertheless made ample use of external contractors to ensure technological as well as communication excellence. Fully-ledged advertising and public relations pitches were staged within the ambit of the legislation while the internal communications section was strengthened by way of orchestrated head hunting. The

official pointed out that not one infringement of any regulation pertaining to financial or resource management was registered.

At the start of the BPR process, the official obtained his MBA degree. He admitted to playing a major part in the integration of the technological and communication processes. "Some of our public communication bordered on propaganda. We had to get the public to buy into our systems and we could only achieve this if our systems worked," he confessed. When this issue was raised with a well-known tax consultant he responded in the following manner:"When I heard SARS was going electronic with tax filing I expected the worst. The fact that they suddenly adopted a public image caught me totally off guard. Before eFiling you only read about them in the court reports. The next moment they were splashing advertising money all over the media. They even won a major award for creative advertising. This was unheard of in the government domain."

A senior official at SARS who requested to remain anonymous informed the researcher that the well-published 7S model of McKinsey was used to track progress with the BPR processes that drove the implementation of eFiling. He pointed out that the following elements were included in the monitoring framework: strategy, structure, style, staff, skills, systems and shared values. He clarified that style refers to cultural orientation and the idea to use communication as the primary driver of the process came from within the task team that was formed to initiate the project. He added that a conventional software-driven project management approach was and is still used to ensure that all deadlines are met.

VIII. CONCLUSION

Designing and implementing e-Government initiatives are challenging endeavours in developing countries due to various factors such as insufficient resources and technology, as well as restrictive social conditions. This paper provides some important lessons from two e-Government case studies from Sri Lanka and South Africa respectively. In both cases the initiators embarked upon BPR processes in order to create suitable implementation platforms.

After seven years of long and committed endeavour the e-Pensions project in Sri Lanka was scheduled to start its live implementation by end of 2011. The delay of four years that preceded the completion of the project can be attributed to unresolved problems such as failure to provide the required human resources, failure to resolve internal conflicts (group dynamics), failure to provide the necessary funding in time and failure to overcome bureaucratic constraints.

The South African case study, on the other hand, is a glaring example how sound planning and scientific project management can secure the seamless implementation of an e-Government initiative that faced similar challenges than the Sri Lankan case. The meticulous planning, implementation, and refinement of eFiling by SARS have been going on for more than a decade. A number of best practices for the implementation of e-Government initiatives are embedded in the lessons learned from these two cases. In the case of eFiling the implementing agency used a solid training platform as the implementation hub for the various BPR

initiatives. The more unconventional positioning of the communication function at the centre of the BPR process at SARS warrants further investigation, probably by extending the cross-case methodology to other successful cases. This applies specifically to commercial approach that was adopted towards external communication.

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