

## E-government: A Special Case of ICT-enabled Business Process Change

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### Abstract

*The literature on Business Process Reengineering (BPR) has evolved into a strand of literature which studies organizational change (OC), and more specifically, Business Process Change (BPC), induced and enabled by Information and Communication Technology (ICT). With the unfolding of electronic government (e-government) changes to the way government works also seem to be imminent. Electronic government increasingly impacts business processes and workflows in the public sector. The BPC/ICT research, hence, has the capacity to directly inform both the research and practice of electronic government. In this paper, the findings of the BPC/ICT literature are reviewed and discussed regarding their applicability to electronic government. Both the theory and preliminary empirical evidence suggest that electronic government must be seen as a special case of ICT-enabled business process change.*

### 1. Introduction

Technological change has always catalyzed organizational change. When government began using telegraphs and telephones, the old messenger-based processes and organizational formats were not merely conducted as before but just over a wire, they rather were first gradually and then radically replaced by new formats and processes greatly enhancing the immediacy of government action and reaction<sup>1</sup>. But new threats co-emerged. On the basis of the new technological infrastructure, messages could be spread or intercepted in new and undesired ways. Any technology not only enables desired and planned outcomes, but also those that are undesired, unplanned, or unanticipated outcomes. This will be no different for electronic government.

Since the definitions abound and the term has been blurred, any paper on electronic government (e-government, e-gov) needs to clarify the meaning and use of the compound term before dealing with it. After introducing the working definition for electronic government the implications of emerging computer-mediated networks such as the Internet/Intranet on

existing business processes in government are analyzed and assessed. In the absence of literature dedicated to this particular subject, the various literature of ICT-enabled business process change is reviewed. The applicability and relevance of this literature, its similarities and differences with regard to e-government are discussed. Generic strategic choices in technology-induced and enabled organizational change are laid out and related to the phenomenon of e-government. Based on the BPR literature, propositions are presented which connect the BPR literature to the special case of electronic government. A future, more comprehensive empirical study is briefly discussed.

### 2. What is Electronic Government?

Since ancient times Information and Communication Technologies (ICT) have enabled and enhanced government in terms of both its management and its services. The appearance of the somewhat phony and imprecise, however, popular term of e-government for electronic Government (or even shorter, e-gov) indicates that modern electronic ICT-enabled management and services in Public Administration, particularly those which are Internet or Intranet based, have reached relatively high degrees of public interest and demand.

Although definitions of e-government abound, no single definition has been widely accepted. Some definitions enumerate the areas of impact on government, others read like mission and vision statements. Many of the latter definitions emphasize a (re-)orientation on citizens', business', and agencies' needs, or on gains in administrative efficiency, cost savings, or on high service availability such as 24/7. However, these definitions reflect the anticipation of desired outcomes rather than the particular technologies and tools used, which may or may not enable these outcomes. For example, the notion of citizen-centric government could have been propagated long before the advent of the Internet. If the definition of e-government is to bear any meaningful sense, then it needs to reflect what the term "electronic," in connection with government, stands for. Any outcomes, desired or not, if included in the definition only cloud the essence of the difference between electronic government and previous forms of government. In the context of a western democracy, any definition of government including e-government will reflect on the source and the purpose of all government. Two definitions are proposed here, one

<sup>1</sup> Thanks to our less hype-prone ancestors, this innovation was not labeled something like t-Government even though the telegraph and telephone-induced changes have been quite dramatic.

which (definition 1) is crafted along the lines of those for e-business and e-commerce (cf., [1]), while the other (definition 2) has been jointly developed by academics and government practitioners. While the first definition emphasizes the constitutional foundation of western democratic government and connects it to the technological progress via networks, the second delineates the impact of innovative information technology on how government works and interacts. Both definitions overlap to some degree but also highlight distinct perspectives.

*Definition 1:* Electronic Government<sup>2</sup> is any process that the citizenry, in pursuit of its governance<sup>3</sup>, conducts over a computer-mediated network<sup>4</sup>.

This first definition of e-government specifies the underlying technology of computer-mediated networks *and* the processes conducted over them as the differential between e-government and its government predecessors. This definition invokes the government concept of western democracy. It is wide enough such that it encompasses the study of every e-government-related phenomenon including possible outcomes, which might be neither foreseen nor desired.

*Definition 2:* Electronic government is the use<sup>5</sup> of information technology to support government operations, engage citizens, and provide government services.

The second definition invokes the aspect of efficiency of government operations, while it emphasizes the involvement of citizens at the same time. In this paper both definitions are used concurrently.

### 3. Business Process Change: Strategy and Business Process Implications

It was the fanfare of the reengineering movement in the early 1990s that Business Process Reengineering (BPR) and Business Process Change (BPC) have to be revolutionary to business, and that changes have to be radical in order to produce any desirable results [2, 3]. However, as Markus had suggested in advance of the BPR movement, the more radical the desired change, the more thorough the analysis of likely hindrances and enablers of this change should be [4]. This knowledge notwithstanding, rather than carefully rethinking the business from scratch and crafting resilient strategies for the fundamental changes envisioned, business practice in

the early to mid 1990s frequently resorted to coup d'etat-like approaches and revolutions from the top [5], which were sometimes even acclaimed and advocated by academicians (cf., for example, [6]). Business history indicates that the downsizing campaigns of the 1990s ended in friction and even disaster for many organizations and resulted in business process reengineering failures beyond the 70 percent mark (cf., [7, 8]). In fact, the disasters became so numerous and widely visible that BPR became almost a synonym for strategic malpractice.

Unfortunately, this circumstance bears the potential to cloud several valuable insights the BPR literature still has to offer: (1) a business can be re-thought and redesigned from the bottom rather than only incrementally improved, (2) Information Technology (IT) might play a major enabling role in such fundamental change processes, (3) Information System Development (ISD) and BPC have to be treated as two sides of the same coin, and (4) the organizational-culture context and the human interests involved in the change process matter (cf., [9]).

Over the years and with growing empirical evidence, the BPR-related literature has reflected on the original propositions in the light of the undesired outcomes. As pointed out above, in this paper it is argued that the resulting, BPR (or BPC/ISD) related insights are relevant to the electronic Government movement. In the following, a total of 18 insights from the BPR (BPC/ISD) literature are discussed. Likewise, 18 propositions are presented which relate these insights to the specifics of electronic government.

As Layne and Lee propose, electronic government advances through four stages of development: (1) the (early) cataloguing stage during which governments establish an online presence of presentation including downloadable forms, (2) the transaction stage in which services are made available for online use and databases are readied for the support of such transactions, (3) the vertical integration stage during which local, state, and federal systems in all three branches of government (legislative, executive, and judicial) serving similar functions are linked together, and (4) the horizontal integration phase, in which systems of all levels and branches, and across functions are linked in a one-stop fashion [10].

While the first Layne-and-Lee stage does not yet require any business process change, more fundamental and substantial changes become the norm in subsequent stages. Adaptations and redesigns of existing information systems along with the incorporation of completely new systems become a necessity, which in turn require significant and increasing changes to the underlying business processes. These latter three, then, are the stages where BPR and BPC/ICT literatures are relevant for understanding the implications, likely effects, and necessities of changes to either information systems or business processes or both. Government has been

<sup>2</sup> Also referred to as ICT-enabled Public Administration, e-government, or e-gov.

<sup>3</sup> This clause encompasses all processes by which the citizenry forms its government institutions, elects its representatives, as well as how this government operates, and how it interacts with the citizenry.

<sup>4</sup> Computer-mediated networks are electronically linked devices that communicate interactively over network channels [1].

<sup>5</sup> This is meant to be the innovative use

criticized for its slow adoption of new technologies and innovative practices [11]. However, in the Western system of democratic governance, which has been intentionally and purposively designed for thorough and incremental change via checks and balances, such criticism, it may be argued, misses the point (cf., also [12]). Particularly, in the case of BPR, one might even want to praise the slow adoption rate since it protected the public sector from those early BPR failures the private sector encountered so numerous. Among the strategy- and policy-related lessons learned from the private sector, which the public sector now benefits from, are the following:

*BPC requires a holistic view of the organization.* If many variables are to be changed at the same time, it follows that management cannot assume to be able to directly influence them all to the extent needed. Hence it follows that those (frequently referred to as stakeholders, cf., [9]) who can exert influence on important variables have to become part of the whole undertaking. Among these stakeholders, various groups of employees including middle managers and professionals can play decisive enabling or impeding roles towards the outcome of a BPC project. Coup d'etat-like approaches, hence, typically run the risk of failing since only an insufficient number of variables can be controlled in favor of such an approach. A holistic view of the organization, its culture, systems (including information systems), processes, and stakeholders has to be established and maintained throughout a BPC project [9, 13]. Applied to electronic government this leads to

**Proposition # 01:**

*Electronic Government requires a holistic view of the (governmental) organization, its culture, systems, processes, and stakeholders*

*Dynamic and long-term vision of the change process.* Viewing and understanding the organization as a whole also requires the change process itself to be understood in its entirety. Change processes exhibit dynamic and unforeseeable patterns of behavior. Furthermore, for change to stick, relatively long time frames must be assumed. Leadership needs to be capable of developing a vision for such dynamic and long-term processes [13], which must be done not only at the outset, but throughout the entire change process. The more fundamental the business process change, the less likely it can be planned in the traditional strategic management sense. Consequently, such change strategies are more loosely coupled and must rely on coordination by feedback rather than formal planning [14]. This also directly apply to the context of electronic government:

**Proposition # 02:**

*Electronic Government requires long-term view and flexible planning due to the iterative and disruptive nature of the change process*

*BPC success depends on stakeholders' cooperation.* Business process change typically crosses functional domains. Without cross-functional support of stakeholders who can affect and can be affected by [15] the change, the entire process may disintegrate. Gaining cooperation among and across functional domains therefore is of the essence [16]. Shared repositories may play a role in integrating functions and processes leading to flatter structures and improved management of information as an organizational resource [17]. Contrary to the BPR practices in the early 1990s, it is now understood that the more organizational flexibility is required or desired in BPC projects, the more important the concurrence and active cooperation of stakeholders [9, 18] and, particularly, employees become [19]. In the long run, this may be the more important strategic variable than efficiency gains leading to increased competitiveness in the short run<sup>6</sup>. In the government contexts, this translates into

**Proposition # 03:**

*The success of Electronic Government depends on the participation and cooperation of primary stakeholders*

*Business and ICT strategies must be tightly coupled.* Though business processes could be streamlined without the use of ICT in principle, the enabling role of ICT in BPC is emphasized within and beyond the BPR literature. However, it is not technology that drives the organizational change process. Rather business strategy and ICT strategy co-evolve (cf., [21, 22]). Business design and information systems design should be integrated [23], particularly since the life cycles of information systems and of business-relevant information rarely match [24]. If business strategy does not inform ICT strategy and vice versa, organizational frictions (for example, through multiple system standards at the expense of organizational efficiency, cf., [25]) are inevitable. The implementation of a Chief Information Officer (CIO) in numerous organizations and her involvement in formulating a coordinated business and ICT strategy is meant to addressing this problem. The coupling of BPC and ICT strategies shows improved success rates in redesign projects [14, 26]. The integration of both strategies allows for a pre-project assessment of the organization's (a) overall innovative capacity along with (b) its ICT maturity [26]. Hence, the evaluation of business process redesign and information systems must be integrated as well [23]. Finally, it has been argued in the context of private-sector firms that ICT may impact the boundary definition of the organization [27], both vertically and horizontally. To some extent this may hold true also for the public sector and, therefore, requires the integration of business and ICT strategy. Hence,

<sup>6</sup> Lloyd, Dewar, & Pooley also observe a tradeoff between business flexibility and competitiveness in BPC [20].

**Proposition # 04:**

*Agency<sup>7</sup> Electronic Government programs and agency ICT strategies must be intertwined*

*Strategic dimension of Electronic Government.* In authoritarian or in even totalitarian societies, electronic government cannot have the same orientation as it almost naturally has in democratic societies. While in democratic societies government is a means by which the citizenry pursues its (self-)governance and its protection from internal and external enemies, governmental institutions in authoritarian and totalitarian societies serve mainly the ruling elite's interests. Efficiency of government means different things under the two scenarios. Processes performed over computer-mediated networks in an authoritarian government context are indeed capable of improving government oppressiveness. In democratic societies, a tension between gubernatorial efficiency needs and citizens' needs and interests [10, 28] is not the exception, but rather the norm. The constitution provides powerful safeguards for the preservation of such a democratic equilibrium. However, the question remains for a democracy-based electronic government how much vertical and horizontal integration in government should be sought? When, where, and how might citizens' constitutional rights be at stake in this evolution which has the potential for changing the way government works [29]? Hence, it has been argued that business process change for the sake of developing electronic forms of government encompasses a conceptual change and rethinking of democratic government as such [28]. This is even true for basic technical reasons. As laws, statutes, and other rules require, almost every government action, transaction, and interaction has to be documented for audit, review, oversight, and other after-the-fact evidential purposes. In this context, electronic government poses a major new challenge regarding creation, maintenance, preservation, security, integrity, and accessibility of government records [30].

Even in terms of Layne and Lee's first stage of electronic government (cataloguing), while it may formally resemble the equivalent phase that private-sector organizations have gone through, this stage is different in that governmental documents and forms once they are made accessible over the Internet not only enhance the dissemination of information at low cost and in timely fashion [31], but also constitute full governmental authority, accountability, and liability in the constitutional sense which gives them a heavier weight than those documents a private-sector organization makes available in technically the same electronic fashion. Gant & Gant

<sup>7</sup> Here, the term agency acts as a placeholder referring to an agency, department, office, or other entity at any level or in any branch of government

demonstrate that governments have tackled this task with varying intensity and success [32]. Hence,

**Proposition # 05:**

*Electronic Government poses a new challenge regarding government records (in terms of creation, maintenance, preservation, security, integrity, and accessibility)*

*Modest scope and objectives.* As Kallio et al. demonstrate through their case studies, the more radical and far-reaching the BPC projects, the higher the failure rate, or, conversely, the more modest the BPC projects in scope and objectives, the higher the success rate [33]. This finding, however, does not suggest that fundamental rethinking of the business and radical changes are failure-destined per se, but rather that the more radical and fundamental the change, the more variables (including hard-to-measure ones such as cultural readiness for change) come into play at the same time which makes their management and control an exceeding and oftentimes impossible task to perform successfully [13]. But even modest changes in business processes can affect any combination and depth of organizational tasks, structure, information systems, and culture [6] with an inherent complexity that defies straightforward planning and execution.

Another tenet of the early BPR movement has not stood the test of practice, either. While Hammer and Champy propagate the "clean slate approach" to BPR [2], it has become obvious in projects following this approach that the risk of failure also dwells in this particular proposition. As O'Neill and Sohal demonstrate, at least three problems arise: (1) another inefficient system can be the result, (2) important and valuable knowledge embedded in the current system and processes can be ignored, and (3) the scope of the problem may be underestimated [34].

**Proposition # 06:**

*Modest objectives and scope more likely lead to electronic- government project success than aggressive objectives and wide scope*

#### **4. Motives, Focal Areas, and Methodologies of Business Process Change**

*Motives.* Since overcoming inertia and resistance presents a major challenge to any major organizational change project, it has been argued that (real or artificial) crises may help increase the stakeholders' willingness to embrace the proposed change (cf., [35, 36]). However, as the BPR literature unveils, in particular, business process change seems to be problematic under circumstances of organizational crisis [37]. When a number of variables has already gotten out of hand, as is typically the case in a crisis, adding a few more, which cannot be controlled, may set up the organization for disaster. In other words, business process changes may best be pursued in times of normal or thriving business. However, this, in itself, presents a challenge to argue for as the necessity for

(costly) change may be questioned by the decision-makers.

Therefore, three efficiency-oriented arguments or motives have mainly fueled business process change projects: Expected or desired (1) cost savings, (2) speedups of the business, and (3) customer service improvements [16]. The (direct) cost-savings argument, despite its popularity in justification efforts—in particular when advocating for ICT projects—has frequently not stood the test, and rather provided evidence to the contrary. In BPC/ISD failure analyses, significant cost overruns rank among the premier causes of project failure (cf., for example, [38]). Even information systems text books now suggest, that cost-based arguments in justifying ICT investments may present a rather weak line of support (cf., [39]) and may need to be reduced to the opportunity cost argument (of doing business). ICT investments typically do not produce, by and in themselves, above-normal profits, that is, Ricardian rents, whereas they might be expressed in terms of shareholder returns [40]. Some evidence is found for the reduction of external coordination costs by means of ICT [27]. By and large, the direct cost savings argument in favor of BPC and related ICT investments might be viewed as the weaker argument. The other two arguments (speedup of business through streamlining and improvement of customer service), of course, may translate into certain cost savings at some point, however, these savings are hard to quantify *ex ante* and equally hard to measure *ex post*, such that in practice many of BPC and ICT-related investment decisions are made in good faith or on the basis of another rationale (seizing a perceived opportunity, reacting to or preempting competitive pressure, or addressing customer demand, etc.). This leads to

**Proposition # 07:**

*Speeding up business processes and improving services are among the major motives for launching electronic-government projects*

However, information systems (and, hence, the antecedent or ensuing change in business processes) are not only developed and deployed for entirely rational purposes as Markus observes [4]. Rather, non-rational purposes play a role in the decision-making in any socio-technical context (*ibid.*). In a similar vein, Tillquist finds that advocacy in favor of BPC/ISD projects may also root in self-interest of project planners rather than in the pursuit of the public good [41] or the shareholders' best interest. The agency problem he points to can be minimized, in his view, when stakeholders of the project have sufficient opportunity to influence its trajectory (*ibid.*). Therefore,

**Proposition # 08:**

*Multiple (also personal) interests can affect the development of electronic-government projects*

*Focal Areas of Application.* Among successful BPC projects, one particularly finds those that focus on overcoming internal inefficiencies rather than external pressures [33]. In the electronic-government context, the same three motives may prove as plausible for justifying business process changes as in private-sector settings.

According to Hammer and Champy, many, if not most, existing business processes are fragmented, unnecessarily complex, and not conducive to the "natural" flow of work from start to finish [2, 3]. As a number of scholars have pointed out, the mirror-image, ICT-based automation of business processes as they exist is no longer seen as an acceptable practice [2, 42], since the existing processes' fragmentation, complexity, and distortion are just carried over to the ICT-based mirror-image processes, which Mohan and Holstein enjoy to call "manumation" efforts [43]. Before any implementation of ICT-based support for existing business processes, they must be analyzed and, if fragmented, be redesigned and streamlined [2]. Prior to change, the status quo ante has to be established and documented [37]. This is typically done by taking detailed inventory of all business processes, ICT hardware, ICT software, ICT skills, internal organizational characteristics as well as external environmental conditions (*ibid.*). Only such thorough analysis and documentation provides the basis for a careful redesign of the business process structure which needs to antecede any related ICT investment decision [9, 17].

Various approaches to BPC have been proposed which may differ regarding (a) the radicalness of process change, (b) the process structuredness, (c) customer focus, and (d) the expected potential for ICT enablement<sup>8</sup> [45], cf., also [21]. One of the "clean-slate"-type approaches to BPC and information systems development (ISD) has become known under the "new venture" label [46], which goes through the stages of brainstorming, designing, and building (*ibid.*). This latter approach, however, runs the risk of creating systems that are as inefficient as those they are meant to replace. Also, a horizontal perspective of processes has been proposed, so the process analysis may be more efficient and lead to more robust design strategies [23]. In government, this can be expressed as

**Proposition # 09:**

*In order to be successful, before a major electronic-government project is launched, a thorough understanding and a detailed inventory of business processes, ICT hard- and software, skills, internal and external conditions*

Identifying the "right" processes to be analyzed and streamlined and, also the "right" BPC methodologies for

<sup>8</sup> Some scholars even doubt that the use of ICT benefits BPC altogether [44], while others see declining unit cost in process coordination as a major driver for ICT investments and process change [27].

doing so, as it has been proposed [16], however, is easier postulated than done. Obviously, the cultural context, which will be addressed in detail below, plays a major role as well as the level of experience an organization possesses in regard to BPC. Both the process of streamlining as well as the final result—the streamlined business processes and their embedded workflows—rely on ICT [47], they are ICT enabled [14], however, not ICT driven [48]. While business processes are typically described and analyzed at a relatively high level of abstraction, information system design deals with the detail complexity of single or multiple workflows. In other words, from the high-level viewpoint of business process analysis, conclusions regarding the specific design, functionality, and other characteristics of those information systems, which eventually will enable the streamlined businesses, cannot be drawn. This can, and therefore should, only be done after the analysis of business processes has cascaded down to the analysis of single workflows, of the information systems used, and of the underlying data structures [9]. Despite these differences regarding their levels of detail, the design efforts in BPC and ISD need to be closely coupled since they significantly influence each other [20, 23].

**Proposition # 10:**

*In order to be successful, any major electronic-government project requires a detailed workflow analysis beyond the high-level business-process analysis*

Among the primary focal areas for BPC, the organization's core processes and those crossing functional and organizational borders have been proposed as good candidates [49]. In the government context, the transactional domains in all three areas inter- and intra-government (or government-to-government, also referred to as g2g), government-to-business (g2b), and government-to-citizen (g2c) may provide opportunity for the introduction of electronic government. However, the g2g domain has the highest volume of transactional processing [50] and may hence become the primary target for electronic-government applications. Layne and Lee hold that electronic government truly comes into existence with the second stage of their model (the transaction stage). In this stage, the two authors anticipate a change in the relationship between citizens and government [10]. This, then, invokes the necessity for business process change, which, as argued earlier, is intertwined with ICT investments and ISD. In the electronic government context this yields

**Proposition # 11:**

*Agency core business processes are primary candidates for electronic-government projects*

*And*

**Proposition # 12:**

*Government-to-government (g2g), government-to-business (g2b), and cross-functional business*

*processes are primary candidates for electronic-government projects*

Since organizational conflict can emerge with any change in these types of business processes, formal modeling methods (for example, by means of cognitive maps, workflow analysis systems, system dynamics among others) may assist in uncovering such potential frictions, while at the same time they may also increase the organization's understanding about its core activities before the change process is even launched. This organizational experience, though it may be complemented and enriched by external knowledge, is unique for every organization and a prerequisite for the change process. Because it has to be accumulated within the organizational context, it follows that an organization cannot hope to replace it by using external change agents instead. Further, since BPC is a complex undertaking involving and impacting many stakeholder interests, a stock of technical and organizational experience has to be built up before change efforts are pursued on a larger scale [48]. In other words, careful and systematic preparation, as well as the continual monitoring and measuring of BPC progress and performance, are key elements in a successful change process (ibid.). The monitoring of stakeholder-related process changes and their results is an essential part of BPC management (ibid.).

BPC/ICT projects also have the quality of redefining the boundary definition of the organization. If ICT allows for processes that smoothly and efficiently integrate internal and external contributors independent from geography and time zone, then a variety of organizational formats may arrive at equivalent results under a transaction cost perspective. As Malhotra et al. find, interorganizational teams, which are connected via ICT and work across a value chain, share content-specific information and have the capacity of superior performance compared with conventional, internal, and local teams [51].

Nevertheless,

**Proposition # 13:**

*For electronic-government projects to succeed, organizational knowledge and experience regarding electronic government must be developed internally*

*Methodologies, Techniques, and Tools in BPC.* When discussing the techniques and methods in BPC (and, as an outcome and enabler, also ISD), Kettinger, Teng, & Guha propose the use of the stage-activity framework (envision-initiate-diagnose-redesign-reconstruct-evaluate) [45]. For each sequential stage of this framework, the authors enumerate and discuss techniques taken from various fields such as industrial engineering, total quality management, creativity techniques, organizational behavior, human resource management, and information systems analysis and design. The stage-activity framework serves as both a practitioners' guide to



appropriate methodologies, techniques, and tools for BPC as well as a frame of reference for scholarly inquiry on BPC-related methods research. Grover et al. also propose incorporating into BPC technologies which (1) facilitate better communication among organizational members, (2) allow for common repositories of documents, (3) provide an infrastructure for applications, and (4) enable information system development and implementation. In a similar vein, ICT is portrayed as a potential mediator in BPC projects [21] that helps tie together geographically and organizationally remote entities fostering cross-functional/cross-organizational collaboration and cooperation as the indispensable basis for BPC.

In this context Homburg & Bekkers argue that BPC projects (including the methodologies, techniques, and tools used) may be better understood from a process rather than a project management perspective. In terms of goals, cultural orientation, organization, the environment, as well as conventions and procedures, BPC projects escape the scope and scale of traditionally managed projects in many ways, and in particular, in that they are geared to changing the very environment in which they are rooted. This leads to organizational ambiguities, multiple goals, and long-term dynamics that may not be readily translatable into a stage-activity model [52].

Alongside the Homburg & Bekkers argument, empirical evidence also suggests that active stakeholder involvement in the business process redesign is essential for a smooth ISD process and vice versa. Discussing the alternatives and evaluating the redesign and development results in both areas with stakeholders throughout the change process makes BPC/ISD projects less failure-prone [9, 24]—see also Proposition #03.

While some see the greatest risk for a BPC/ISD failure in the elements of the ICT infrastructure, that is, the technologies, the sourcing arrangements, and the policies [14] or mainly on the technical side, that is, the new process would not work [34], others take a different perspective: (1) the informational demand of users (stakeholders) was incorrectly assessed, or, (2) behavioral or habitual patterns were attempted to be changed, or, (3) ICT literacy was insufficient, or, finally, (4) the managerial direction was discontinued [53]. These latter three factors may play a role, for example, in the failure of BPC by means of implementing an Enterprise Resource Planning (ERP) system. When introducing BPC through ERP systems, the organization's new business processes are tailored along the processes embedded in the systems, that is, they are foreign to the organization. Valuable process knowledge may be lost because the new system cannot represent it. As Tang et al. observe, since ERP systems have a reputation for allowing "panoptic" control and supervision, some prerequisites for successful BPC projects, such as the development of shared understanding, stakeholder involvement, and employee empowerment, may, intentionally or not, fall by the

wayside when opting in favor of off-the-shelf ERP systems [54].

**Proposition # 14:**

*Off-the-shelf electronic government systems are inadequate if they do not support all existing organizational and process knowledge*

**5. The Cultural and Social Framework in Business Process Change**

A growing body of literature suggests that the success of BPC is largely dependent on the organizational culture and context [9, 55]. The organizational culture may act as a strong impediment to any type of BPC [34]. Also, successful change strategies and tactics, which have worked in one organizational context, may not work in a different one [19]. It follows that organizational cultures which are not conducive to change may not be suitable for either revolutionary or (forced) evolutionary BPC approaches [42]. A cultural assessment of the target organization, hence, appears as an adequate first step to any BPC project [19]. In other words, rather than beginning with a technical systems or workflow analysis, a social and political context analysis is in order [4, 56]. Therefore,

**Proposition # 15:**

*In order to avoid failure, major electronic-government projects require the up-front assessment of the organizational culture context*

As seen above, in the heydays of the reengineering movement, revolutionary, top-down approaches to BPC were heralded, while in recent years less radical, less single-handed, more inclusive, evolutionary approaches have been pursued.

In the revolutionary approach, there is an emphasis on external change agents, an intentional exclusion of internal players, a preference for single-handed decision-making from the top, the establishment of and attendance to well-defined milestones, and the selective qualification and involvement of employees [6]. The organization as a social system as well as its technological underpinnings are attempted to be changed with new business processes at the same time. This is also referred to as the coup d'etat or revolution-from-the-top approach to BPC.

In the evolutionary approach, current employees and managers are entrusted with bringing about the necessary change, plans are broadly shared, internal stakeholders are motivated to pursue self-improvement, milestones are treated in a flexible fashion, and the existing social system is not disrupted but gradually modified (ibid.). Employees are encouraged [49] rather than intimidated. The evolutionary approach relies on the principles of inclusiveness and shared purpose (see proposition #03).

Both approaches can lead to the radical redesign of business processes. However, according to the literature, the evolutionary and inclusive approach (cf., [42, 55]) has produced superior results compared with the top-down approach, while it may present a more difficult and

complex task to master. While the creation of shared meaning and orientation among primary stakeholders in the change process is indispensable [52], the practical alignment of the various perspectives, the social, the functional-technical, and the organizational [13], is anything but trivial (cf., [37]). Disruptions of relations within all three dimensions are inevitable in a BPC project and have to be carefully observed and managed [57]. Anticipation and planning for these disruptions help avoid or reduce the need for playing catch-up with the aftermath [24]. In this regard, Cooper presents the argument that it is not the culture-, politics-related, or other social issues per se that embody the real obstacle, but the lack of creativity to deal with them [58] (also, see proposition #02).

As Kraatz and Zajac point out, inasmuch as an organization's historically valuable resources may function as facilitators in a change effort, they can likewise act as barriers to learning, as buffers shielding the organization from environmental influences, or as long-term commitments, which organizational members may not want to abandon easily [59]. In successful ICT-enabled BPC projects, a major focus, hence, has been put on the development and change of the stakeholders' mindset [60]. BPC can also be seen as a collective organizational, social, and technological learning process, in which the acquired new knowledge needs to be disseminated and leveraged (ibid.) (cf., proposition #03).

With the growing internal and external experience garnered through BPC projects an opportunity for upfront, pre-project learning and training arises such that the organization does not have to rely on learning-by-doing exclusively but rather can also employ a learning-before-doing approach [61]. Another opportunity generates from frequent interaction across functional boundaries via interdepartmental integration and structural overlay as an essential part of developing the required innovative capacity in BPC [26, 51]. Such integration and overlay also may help address the interdependency between BPC/ICT and human resource planning [62].

Since BPC relies on enablement via ICT, a technology-tolerant or even friendly atmosphere has to be created so that it can positively impact the creativity of both individuals and groups [58]. As has been known for a long time—so also in the BPC/ISD process—poor system design typically leads to rejection of new information systems. However, users may have other, non-system related reasons to reject a system [4]. As Markus emphasizes, there is also a third, little-studied source for system rejection which lies in the interaction of system features with certain aspects of their use in the organizational context (ibid.). Hence, the structuring of tasks and personal relationships between users, on the one hand, and designers and developers of new systems, on the other hand, is a major determinant of success (ibid.).

Further, among conditions which help the information system and, hence, the business process change succeed and stick are (1) a low perception of potential threat by the project, (2) employee satisfaction, (3) self-training, (4) a high degree of integration between the old and the new (for example, in terms of legacy systems), and (5) a profound technology and know-how transfer (ibid.).

Business process and cultural change in the public sector is not very different in this regard. In the democratic system of checks and balances, in general, any change depends on building coalitions with both internal and external stakeholders [12]. Electronic government, with its potential for transformation of the inner workings of government, has to seek and rely on a broad consensus among government officials as well as the citizenry. With commitment and ownership at all levels, electronic government-related business process changes are implementable (cf., [60]). Hence,

***Proposition # 16:***

*For the success of electronic government, a broad consensus among officials and citizens is necessary*

**6. Roles and Players**

As seen in the evolutionary approach to business process change, inclusiveness and openness towards all stakeholders build a cornerstone of the undertaking. The literature heavily emphasizes the role of senior management in this context. This continued, personal, active involvement, and "championship" [63] of senior executives is portrayed as critically necessary [57, 62], indispensable [37], and mandatory [22]. Even though senior management still typically lacks a sufficiently high degree of ICT literacy and expertise, organizational scale, scope, and importance of ICT-related decisions demand an increasing proficiency and knowledge on behalf of these decision-makers [25], which they cannot leave to others. Uninformed decision making may have serious negative consequences regarding the effectiveness of ICT development and deployment and, by the same token, regarding the overall BPC project. The visible and more than symbolic senior management support is also critical in overcoming initial resistance to the required learning involved, when identifying and developing electronic services in government, and for the solicitation of interdepartmental and interagency cooperation [64]. In BPC projects, the roles of senior managers can take on the forms of leader, group member, advisor, sponsor, and steering committee member [49]. Many organizations pay tribute to the necessity of senior management's involvement by installing a Chief Information Officer (CIO) whose primary role is to build and manage the organization's ICT infrastructure, the skill base, and the relations between ICT-related organizational stakeholders [65]. The CIO is typically chartered with the tasks of devising, implementing, and improving ICT-related management processes (ibid.). However, the strategic nature of ICT related decisions necessitates increased



understanding and expertise also from non-specialized senior managers.

**Proposition # 17:**

*The active involvement and continued commitment of senior government leadership is indispensable to the success of any major electronic-government project*

The importance of stakeholders and their roles in BPC/ICT-related projects have been highlighted by various authors. If, for example, primary stakeholders are not taken into account, any project almost inevitably runs the risk of failure [9, 41, Halachmi, 1997 #61]. Pardo and Scholl, for example, when presenting an enhanced framework of the BPC/ISD cycle, call the omission of stakeholder inclusion and the neglect of stakeholder needs analysis a shortcut to failure. Tillquist argues that a project's trajectory can be severely and conceptually constrained if major stakeholders' voices remain unheard [41]. Kwahk and Kim propose the analysis of cognitive maps and causal paths which stakeholders follow [66]. The norms that stakeholders hold influence any BPC/ICT project to a high degree, since they provide the social context which defines the potential spaces in which any action takes place [41]. As pointed out above, stakeholder analysis leading to their active involvement in the BPC project also may minimize the agency problem, that is, the risk of biased or even selfish behavior on behalf of project advocates or other immediate beneficiaries (ibid.) (see also, proposition #08).

**7. The Make or Buy Decision in the Context of Business Process Change**

A hidden or sometimes neglected aspect of business process change and the employment and deployment of ICT is that, more often than not, it confronts the organization with a make-or-buy decision. The strategic appropriateness of this decision represents a critical success factor for every major BPC/ICT project. Any decision in favor of an off-the-shelf information system, for example, implicitly is also a decision in favor of the workflows, and hence, the business processes this system embodies. While in one scenario, a buy decision may be the proper choice, in another it may turn out to be disastrous. This is also true for electronic government. A short discussion of what might need to be considered in BPC/ICT projects appears thus adequate.

Economists have discussed the make-or-buy problem for decades, if not centuries. Coase, for example, finds that the private firm exists because the internal combining of inputs provides it (up to a certain point, of course,) with a superior transaction-cost position compared with combining these inputs via an exchange market [67]. In a public sector context, the relative transaction cost position certainly might not provide the defining distinction for the make-or-buy decision. However, these considerations, though pertaining to the private sector, may still have the capacity to inform public sector scenarios.

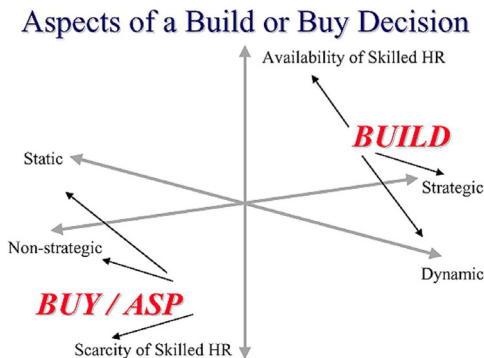
Kogut and Zander find three elements governing the make-or-buy decision: (1) "how good" is the organization already "at doing something," (2) "how good" is it "at learning specific capabilities," and (3) how well do these capabilities serve "as platforms into new markets" [68, 395]. The two authors argue that "{f}irms make those components that require a production knowledge similar to their current organizing principles and information" (ibid.). Even if the new capabilities are distantly related, firms tend to make, rather than buy according to Kogut and Zander. Only "{i}mmediate survival pressures encourage firms towards a policy of buying" (ibid.), or a situation in which "suppliers have superior knowledge," which cannot easily be codified (ibid).

In Information Systems Research, the make-or-buy decision has been discussed with mainly the cost argument in mind. Ewers and Vessey, for example, argue that homegrown systems foreclose the introduction of productivity tools and off-the-shelf system components because professional ICT staff may obstruct such a decision and treat it as an encroachment on their territory putting the organization at a cost disadvantage [69]. Webb argues that (in the case of real time operating systems) commercial packages typically have the advantage of being more scalable, more modular, more reliable, and provide a far better support structure compared with homegrown systems, which rely on the expertise of a few individuals [70]. However, Sandrick maintains that in-house system development does not necessarily start from scratch, but typically incorporates generic off-the-shelf tools and components into a tailor-made system [71].

How well do these arguments translate into a government context? To some extent public-sector business processes are sanctioned and prescribed by laws, statutes, and regulations. Other business processes appear to be similar to counterparts in the private sector. However, generic business processes such as contracting (purchasing) or revenues differ significantly between government levels and branches, and also between states and municipalities. Government systems are required to be conducive to legislative and statutory change. Many governments, hence, have traditionally opted in favor of mostly homegrown systems for supporting their core business processes, for example, even those as mundane as accounting.

ICT has become a major pillar of business not only in the private sector but also in government. Capabilities have been developed over long periods of time. Business processes are ICT enabled in many ways, also in government. Government officials possess a profound know-how about their business processes and the enabling ICT infrastructure. In the context of electronic government, hence, the question arises, to what extent can or must governments rely on homegrown systems, and how far can they go in using off-the-shelf ICT in this endeavor?

The author hesitates to provide clear-cut answers to these questions. However, some considerations may help find answers in a specific case. Kogut and Zander maintain for the private sector that how good an organization already is at performing a core capability determines the options in the make-or-buy scenario. In other words, if no supplier can make available a superior product or service, then this capability must be considered strategic, typically demanding a make rather than a buy decision. If the organization is good at learning, then strategic capabilities can be even further expanded, which again strongly supports a make decision. In government, furthermore, there are certain functions where a buy decision is precluded by law or statute (for example, military defense cannot be contracted). Government business also has other idiosyncrasies which private sector business does not have. Accounting, for example, in a statewide system is different from accounting in a multinational firm. Systems used in one context cannot be readily transferred into the other.



**Figure 1 Aspects of a Build or Buy Decision**

In Figure 1, the aspects of a make-or-buy or build-or-buy decision in BPC/ICT scenarios are shown which also apply to electronic government contexts. The more strategic (and also, the more unique and specific) to the organization the business processes and the respective ICT are, the less likely is a buy decision. Further, the more changes to the business processes and the supporting information systems that can be anticipated, the more an overarching dependency on outside fulfillment becomes questionable. Examples may illustrate the dimensions: Productivity tools such as word processors or spreadsheet programs will not have any strategic dimension to most organizations, they will not be customized to specific needs in most cases, and they will not change frequently. These tools are readily available in standard formats from the market, and there is no specific need for developing and maintaining them in-house.

However, when high system specificity is desired as in the case of tailor-made logistics systems (for example,

UPS or FedEx) or is inevitable for legislative or statutory reasons as in the case of systems in public administration (for example, military or accounting), then making and maintaining such systems may foreclose any buy option. Since an organization's specific (and, hence, strategic) capabilities become more and more ICT-enabled, off-the-shelf systems seem less suited to support these critical capabilities. Of course, combinations of standard and tailor-made components are possible, however, as a norm, the investment into the development and maintenance of homegrown ICT capabilities and systems appears increasingly mandatory, the more strategic the business processes and their underlying infrastructure are to the organization.

A third dimension influencing the make-or-buy decision is whether or not skilled human resources can be found and retained for sustaining a make decision. In the absence of qualified ICT personnel, a make decision would not be rational. Government, for example, has long suffered from low retention rates of ICT experts. Electronic-government projects, particularly, those in the stages 2 to 4 in the Layne and Lee framework [10], however, can be expected to depend on the availability of highly skilled ICT experts. In electronic government, off-the-shelf, standard systems may become available over time for a number of areas, however, it remains to be seen which areas such systems would cover. Government must master the challenge of competing with the private sector for highly skilled ICT experts, especially, in the stages of vertical and horizontal integration of ICT-enabled government business processes.

The strategic nature of a BPC/ICT project can also be determined in terms of the expected length of productive life of the resulting ICT systems. Experience indicates that backbone-ICT-systems typically have life spans of 25 years or more. This is due to the fact that architectural commitments to both the business process and the ICT design cannot be reversed easily. In other words, the investment and the bias towards it escalates over time. At Request-for-Proposal (RFP) time, however, such long-term projections are rarely made. Instead, unrealistic five-to-ten-years projection is used in many cases. Not only is this life span projection wrong, it also dramatically camouflages the locus of the lion's share of the total costs, which reside in the later approximately 85 percent of the usage period. It also calls into question cost considerations and comparisons that overemphasize differences in the early stages of a BPC/ICT system's life cycle, while grossly underemphasizing the total costs of ownership. In the government context, this leads to

**Proposition # 18:**

*Areas of strengths and core competencies predispose an agency to make rather than buy its electronic government systems*

## 8. Conclusions

The propositions presented in this paper will be empirically tested through a series of semi-structured interviews with government ICT managers. In a half-day group interview an empirical pretest was conducted which further encouraged this avenue of research. If confidence can be built in the theory that electronic government presents a special case of business process change, then a whole host of BPC literature can be immediately used for research and practice in e-government.

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