Research Article

Definition and Categorization of E-Government Capabilities: Lessons Learned from a Canadian Public Organization

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Abstract

Developing e-government projects requires leveraging and/or deploying various types of capabilities. The goal of this paper is to identify, define and categorize the capabilities needed for a successful e-government development. Based on St-Amant and Renard's (2004) knowledge repository of e-administration and an in-depth case study of a Canadian public organization that has successfully implemented and developed e-government projects, we proposed a categorization of e-government capabilities and an architecture of the required organizational and dynamic capabilities.

Keywords: E-government, Organizational capabilities, Dynamic capabilities, Organizational transformation

Introduction

Since the late 1990s, most countries have implemented or adopted e-government initiatives. The motivations to undertake this wide-ranging, transformative experience range from top-down political decisions to proactive organizational decisions. Whether such a decision is politically or organizationally motivated or even is made following international prescriptions, a guiding reference system

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to the requirements in terms of knowledge, competencies and/or resources for e-government implementation and development can be useful to government, particularly in developing countries.

There are as many definitions of e-government as there are research papers published on the topic. The UN's definition is the most frequently used. Broadly, electronic government (e-government) involves the use of information and communication technologies to increase and improve interactions between public organizations and citizens (individuals or businesses) for service delivery, online transactions or access to information. E-government is a concept used to define and describe governments' change and transformation at different levels. While early definitions of e-government mainly adopted technical and technological perspectives as the key focus, an in-depth examination reveals more intricacies. We share the view that e-government is a more complex system that links together several aspects, such as technical, human, social, and ethical. It can be considered as a fast, continuous and multilevel transformation impacting the government's relationship with different stakeholders simultaneously.

An e-government initiative requires leveraging and/or deploying specific types of capabilities to develop and provide different kinds of public services at the right maturity level. Based on an in-depth case study, this research aims to identify and define the capabilities needed for an e-government project to increase the likelihood of success. More specifically, the absence of one of these capabilities could imperil the success of an e-government service delivery implementation.

This research is based on the premise that public organizations need organizational and dynamic capabilities, which they either have or must acquire in order to successfully execute the e-government transformation and overcome the challenges of adopting and implementing e-government service delivery. The specific objective of this study is to identify and classify these capabilities.

The remainder of the paper is organized as follows: firstly, we define the organizational capability concept and present St-Amant and Renard's (2004) organizational capabilities classification, which was used as an analytical framework for this study. Secondly, we describe and analyze the GOP case. Thus, we propose a typology of e-government capabilities. We conclude by highlighting the implications of our study and suggesting avenues for future research.

Theoretical foundations of e-government capabilities

The objective of this section is to understand the concept of organizational capabilities and then introduce the first e-government-related typology of organizational capabilities proposed in the literature.

Public organizations are often considered as operating in a stable, certain environment. Contingency theory highlights that how an organization is designed and how it functions reflect the environment in which it belongs (Lawrence and Lorsch, 1967). Mechanistic organization, characterized by a tall/multilevel hierarchical structure in which authority is clearly defined and delineated, is considered as the most appropriate design for public organizations. By contrast, for organizations that operate in a more dynamic, faster-changing environment, an organic design is considered more appropriate. For this second type, cross-disciplinary teamwork, open communication, and shared decision-making facilitate integration within and between silos and correspond to a flat structure. While very different in terms of structure and design, both types of organizations view predictable stability as the norm and changes as occasional events (Ford, 2008). These perspectives are not appropriate for the increasing complexity of e-government (Ben Dhaou and St-Amant, 2013).

Several scholars have suggested that a capability perspective is relevant to define organizations that must deal with a challenging environment (Teece, Pisano, and Shuen, 1997; Zollo and Winter, 2002; Eisenhardt and Martin, 2000; Dierickx and Cool, 1989). For example, Renard and Soparnot (2010) proposed an organizational architecture based on the organizational capabilities perspective. This architecture is divided into three layers. The first layer encompasses the "will-do" capabilities that have a strategic impact. The second layer is the "transformation layer," integrating the dynamic capabilities called "enable to do." Lastly, the third layer groups all the operational capabilities that directly support the organization's mission and vision and create value for customers (Renard and Soparnot, 2010).

Based on a review of the strategic management literature on capabilities (Amit and Schoemaker, 1993; Collis, 1994; Grant, 1991; Zollo and Winter, 2002), organizational capabilities are broadly defined as the leveraging, combination and coordination of resources, competencies and knowledge through different processes to achieve strategic objectives. This definition implies that any strategic initiative or project is based on the existence within the organization of systemically interrelated capabilities (Renard and Soparnot, 2010). In other words, when an organization is planning to formulate and deploy a strategy, it should previously diagnose its available organizational capabilities. Depending on the situation and the strategic objectives, they will determine which organizational capabilities are required to be leveraged at which level of maturity and which capabilities will need to be created, acquired or developed. In brief, there is a triple foundation for the existence of organizational capabilities. Firstly, the concept of organizational capability is based on the identification and availability inside or outside of the organization of resources, competencies and knowledge. Secondly, an organizational capability takes concrete form at a certain point in time in specific processes. Thirdly, an organizational capability emerges from the individually and collectively learned and stabilized activities that deploy, combine and coordinate resources, competencies and knowledge to achieve an expected outcome aligned with the strategic objectives.

St-Amant and Renard (2004) and St-Amant (2006) proposed a specific classification scheme for e-government capabilities. This classification scheme is composed of two broad groups of capabilities that we can consider as meta-capabilities: progress capabilities and context capabilities. These two groups of capabilities are composed of different categories. This scheme defines the organizational capabilities that a public organization has or needs to acquire/develop to start an e-government project and reduce the risks of failure related to that project.

Progress capabilities refer to the capabilities that support the execution of an e-government project. These capabilities are divided into two groups:

- Change management capabilities adopt a psycho-organizational approach that emphasizes the human and organizational aspects of progress. These capabilities facilitate issues such as human resource management and personal and organizational development.
- Management per project is a more techno-economic approach to progress. The focus is on the management of deliverables: how to plan, organize, coordinate and assess deliverables. It targets one specific e-government initiative and cannot be generalized to the whole project. The project approach to e-government adopts a production perspective that requires stakeholders to understand and fully assess the needs to determine, among other things, a precise budget and schedule to produce deliverables that respond clear, explicit functional specifications. Progress capabilities contribute directly to the creation

and/or development of context capabilities, which will be defined in the following paragraph.

Context capabilities refer to the capabilities in a specific organization. They exist through the service delivery processes already available to citizens. This group of capabilities is divided into three categories: Information and Business Governance capabilities, Business Management capabilities and Information capabilities.

• Information and Business Governance capabilities are composed of the organizational capabilities required for coordination between top management and stakeholders in different professions specific to each public organization, on one side, and the related information, on the other side.
• A public organization's Business Management capabilities comprise the set of capabilities that enable it to organize, plan, direct and assess all the business resources allocated to e-government projects.
• Information Management capabilities define the organizing, planning, directing and assessment of all the information resources allocated to e-government projects. This set of capabilities is the responsibility of internal or external experts and specialists.

Ben Dhaou and St-Amant (2010) empirically tested this conceptual categorization and proposed a preliminary repository of knowledge of e-government capabilities to validate the reliability and availability of the broad categories and the progress and context capabilities, and to specify their nature and their roles in any e-government initiatives. Their work resulted in changes in both groups of e-government capabilities. Firstly, Business Management capabilities were updated to take into consideration the integration of multichannel service delivery. Secondly, Management of Information Resources capabilities changed to integrate innovation and learning in the whole set of management domains related to the management of information and communication. Thirdly, progress capabilities were redefined as dynamic capabilities and not organizational capabilities. These capabilities contribute to the progressive development and adaptation of the context capabilities. They differ from one initiative to another. As defined by Teece et al. (1997), dynamic capabilities have the role of creating, developing and managing existing organizational capabilities. Lastly, the study showed that e-government projects lead to new initiatives that require public organizations to adapt, adjust and change. Each new initiative or e-government project requires the leveraging of different types of capabilities or the acquisition of new ones. In other words, public organizations have to constantly create, develop or reinforce their organizational capabilities. It is a continuous process.

Research methodology

The objective of this paper is to identify and define the capabilities needed for an e-government project to increase the likelihood of a successful implementation. For this purpose, we adopt an in-depth case study methodology to gather evidence. We think this is the most appropriate technique when the research question is exploratory in nature and needs to be examined within a broader context. This requires a rich description of the environment, which allows for the exploration of unforeseen elements and relationships to offer better insights into the details of the organizational dimensions.

The case study was conducted in a Canadian public organization we will call the GOP. [1] The following paragraphs describe the sample strategy, research process, data collection, sources of

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[1] The data collection contract with the organization stipulates the use of the acronym GOP when referring to the public organization in question.

information, and analysis strategies. This organization was selected based on six exploratory interviews conducted with experts and researchers specialized in the field in Canada, to select the most relevant public organization involved in e-government initiatives. The GOP was unanimously suggested by the interviewees.

The sampling strategy utilized was based on Yin's (2003) case study design strategy typology. More specifically, we used Yin's second type, embedded case study, where the unit of analysis is the project. A project refers to a set of activities conducted during the design, planning and implementation of e-government. These three groups of activities will be summed up in the concept of e-government deployment. Each project studied represents an e-government initiative or change challenge for the organization. This strategy was chosen because it allowed for the contrast and comparison of several project units in the same case with different outcomes for e-government deployment.

The research design was developed based on Carroll and Swatman's (2000) structured case study model. This is a "structured" framework based on a predefined research cycle and an examination of the research findings, utilizing a graphical design that facilitates the iterative research process. In addition, this approach is particularly relevant when establishing a link between the research themes of the conceptual framework, data collection, data analysis and the theory and knowledge accumulated through the research process.

The data collection methods used semi-structured case protocols, which included analysis of multiple documents and archival records, participation in meetings and workshops, and individual semi-structured interviews. This broad-based approach using documentation and interviews provided richness, depth and validity of information. Such triangulation reduces bias and is recommended in case research (Yin, 2003).

Atlas/ti content analysis software was used to code the qualitative data based on the grounded theory approach (Strauss and Corbin, 1998; Navarro-Flores, 2007; Gendron, 2003; Sabourin and Briand, 2007). Given the exploratory nature of the research, different analysis techniques were used as well, including narrative strategy, explanation building, temporal bracketing, and pattern matching. With respect to the various sources of information, researchers were able to develop a qualitative in-depth compilation of data within the study environment, as well as a storytelling of events and activities focusing specifically on developmental issues.

In coherence with the exploratory and constructivist research paradigm, we observed the information system interpretative criteria proposed by Pozzebon (2003) – authenticity, credibility, criticality and reflexivity – to ensure the validity and reliability of the constructs utilized in this study (Miles and Huberman, 1992).

GOP case description

The GOP is one of the pioneers in implementing e-government in Canada, having started its e-government project in 1998. The GOP is an autonomous public agency created in 1965 to manage pension plan annuities. It is governed by a steering board, the members of which vote and allocate budgets, take decisions and authorize major initiatives. The organization derived from its strategic plan a set of objectives related to internal and external value creation, as well as a growth plan (including IT projects) based on a comparison to other public sector organizations and its business partners.

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Table 1: GOP's e-government development

1998–2004	"Service renewal strategy project" is characterized by long periods of strategic thinking, technological infrastructure implementation and the development of the first e-services, such as online presence, contact and interactive PDF forms.
2004–2008	"Internal digitalization and shared infrastructure" is defined by an intensive period of technological development and online service adoption, collaboration for shared infrastructure and integrated e-services with other agencies and ministries.
2008–2012	"Multichannel strategy and organizational transformation" is the adoption of an action plan to transfer the beneficiaries of services from front office, mail and phone services to online services; the workflow and organization change to increase efficiency, provide value-added services, and increase cooperation and partnership.

A cabinet shuffle in the early 2000s marked a turning point when a new e-government vision was adopted. The GOP's e-government development plan was part of a broader organizational transformation which was seen as necessary to meet the growing demands of an aging population and pressures for updated and more efficient services for its clientele. The intent of this project was to better serve the increasing number of GOP beneficiaries while facing restrictive government funding and resources for operational expenditures.

The GOP's e-government project was divided into three main phases, the first of which was a strategic reflection phase during which upper management and design teams specified and planned the e-government services. This period was characterized by great uncertainty and a lack of knowledge about what e-government is. The second phase was an intensive period of technological development, characterized by a high level of uncertainty but an increase in involvement and training, knowledge acquisition and skills development. The third phase was marked by the top management change, close to the "Service renewal strategy" project's completion. At that time, multiple organizational initiatives were launched and, consequently, objectives changed during this period, with a qualitative focus on e-

government development. The "Multichannel strategy project" transformed the organization and greater cooperation and integration with other public organizations were adopted.

E-government projects resulted from continuous, progressive changes in the GOP and in its relationships with its customers and business partners, supported by new technology adoption and changes (e-services, workflow, etc.). Consequently, e-services were considered as a means of realizing their new mission and vision, allowing the agency to deal efficiently with issues arising from the rapid transformation of the environment. During this period, e-government and related technology implementation was based on a dynamic change strategy. In the GOP's case, design and planning were not limited to the first phase and continued in all phases to enhance, clarify, review and update its e-government development strategy.

Throughout the project, three major characteristics can be noticed. The first was that the undertaking was seen as a transformation project and not as the adoption of e-government. The GOP's project team planned and designed the main project, titled "Service Delivery Renewal," which was perceived more as a service delivery transformation than the adoption of an e-services channel. The

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second characteristic noted was that the GOP's project team tried to regularly (approximately yearly) recalibrate the project by reviewing, repositioning and formulating a new plan at the end of each phase. This regular project evaluation allowed for reassessment of the project's scope, timelines, and progress, while providing enough flexibility to deal with lack of knowledge, uncertainty and the increasing complexity of projects of this size and importance. For example, there was a constant effort to coordinate strategic objectives and managerial action in order to ensure that they converged while meeting the conditions for organizational change and integration of new ideas, new technological opportunities and emerging initiatives. As for the third characteristic, it was recognized that the GOP reassessed and adapted the project based on external considerations and stakeholders, such as customer expectations, partnerships, political interests and interorganizational relationships. For instance, during the second phase of the project, the GOP appropriately adjusted the project timing, completed the missing and unseen portions of the project, and even

re-evaluated some costly and time-wasting decisions (e.g., prototyping development of GOP e-services). Thus, these three characteristics can be interpreted as expressing the impact of continuous change on organizational capabilities.

Discussion of e-government capabilities

The classification of e-government capabilities from strategy formulation to e-government deployment is derived from the data analysis using iterative analysis based on the theoretical foundations presented in the literature review section and the case study. The organizational capabilities identified were created or developed during the three phases described above. They contributed to the e-government project and to the continuous change of service delivery and broadly to the GOP's organizational transformation.

In this research, we adopt a conception of the organization as the overlay of a dynamic network of capabilities architecture on a formal organizational structure.
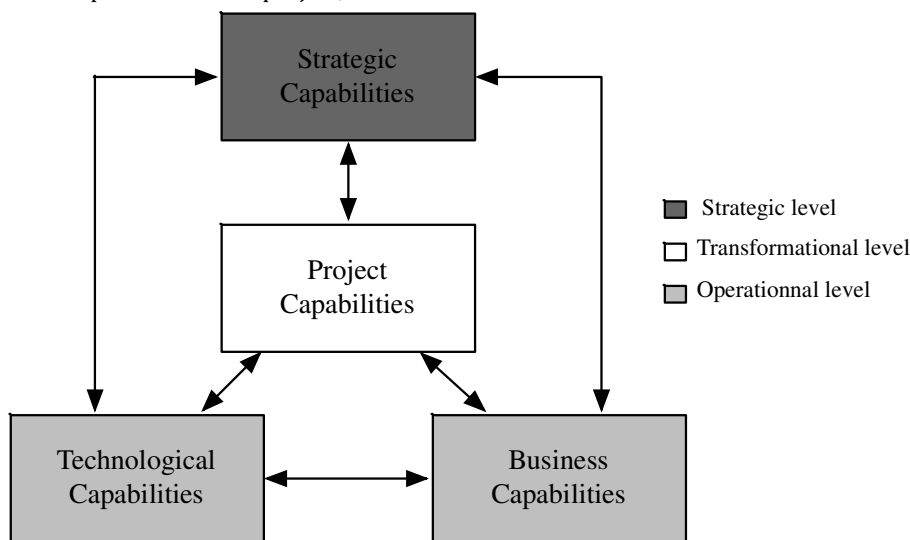

Figure 1: E-government capabilities architecture (adapted from Ben Dhaou, 2010)

We were able to identify and define four main types of e-government capabilities composing the architecture (figure 1):

strategic capabilities, project capabilities, technological capabilities and business capabilities. Each category of capabilities

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was revealed based on the identification and the analysis of different activities that occurred during the GOP's e-government projects. It is important to recall that organizational capabilities exist only in actions. In other words, they are embedded in the performance of a set of activities that, together, compose the processes. And it is inside these processes that organizational capabilities are created, stabilized and formalized. Thus, processes are considered here as the setting for experimentation and validation of organizational capabilities (Lorino, 2001; Lorino and Tarondeau, 2006). The types of e-government capabilities we identified will be presented in the following paragraphs in detail using the description of their operationalization from the GOP case.

Strategic Capabilities

Several researchers have highlighted the importance of acquiring or developing the necessary strategic organizational capabilities to succeed in a specific field, to face external environment change challenges or initiate them (Prahalad, 1993; Iansiti and Clark, 1994; Teece, Pisano, and Shuen, 1994; Leonard-Barton, 1992; Davies and Brady, 2002). The GOP case confirmed the importance of creating and developing e-government strategic capabilities and their role in the success of the deployment of e-government. This category of capabilities was created in the first phase of the e-government deployment at the GOP during the strategic thinking phase between 1998 and 2001. They were needed, leveraged and developed during the two following phases.

During the first phase, the e-government strategic capabilities were built through several processes, such as the definition of the new vision that guided the organization transformation during the last decade, the review of the organization's mission and the formulation and deployment of the strategy. They resulted from different activities and interactions involving the CEO, the strategic committee, top management members and the strategic

designated committee (Chandler, 1992; Croom and Batchelor, 1997). Reflection meetings (10 to 12 per year) and strategic sessions were held very frequently and regularly during that period; participants learned how to manage resource allocation, define and create value for citizens and for the organization, propose and adopt innovations, and create and develop partnerships. All these exercises contributed to defining a certain way of doing things that did not previously exist in the organization and was developed specifically during these repeated, intensive meetings at the strategic level of the organization.

Two broad categories of strategic capabilities can be clearly deduced from the GOP case. The first one comprises capabilities to observe, read and regularly analyze the internal and external environment. The second category refers to the relationship with stakeholders and, more specifically, the relationship with other public organizations.

During the following two phases, the newly developed strategic capabilities contributed concretely to the e-government deployment and supported the organizational change using the same methodology as in phase 1. The same competencies, knowledge and resources were leveraged in different processes. For the shared infrastructure development project in partnership with other organizations, stakeholders had to review these capabilities, according to the new information, and adapt them to the new context. At that time, they also transferred these newly acquired strategic capabilities in the context of other major projects.

The e-government strategic capabilities can be linked to the strategic level (figure 1) of Renard and Soparnot's (2010) organizational structure of capabilities. These capabilities expressed cognitive competencies, innovation capacity and how to adopt innovation in the organization (Dimitriades, 2005). They also linked the knowledge and competencies of a group of actors from

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top management and the strategic level together (Chandler, 1992). Consequently, the existence of these strategic capabilities in the GOP organization facilitated the progression and the organization changed faster and more effectively because of its good knowledge of innovation and how to innovate.

We agree with Chandler's (1992) position on the importance of creating, maintaining and disseminating strategic capabilities. Their absence can lead to negative impacts on e-government deployment. Furthermore, and in opposition to St-Amant (2006), we demonstrated that strategic capabilities are created and developed, and not supposedly available in all public organizations. They are not exclusively related to a political decision-making process at the government level. They must also be available at the organizational level. Furthermore, they are essential for an organization that wants to perform well. However, this category of capabilities is not easy to acquire: at the GOP, they apparently required a lot of effort and also faced cultural resistance. The strategic capabilities must also be enhanced and sustained by systematically collecting data, analyzing them, and learning about citizens, service delivery, processes, partnerships and other internal and external relationships, all of which can be costly and demanding for a public organization with resource constraints.

Project Capabilities

The concept of project capabilities is a recent one in the research field. It is defined as a set of required knowledge and experience that is deployed in different project activities, such as bidding or outsourcing or "core activities of firms that design and produce complex products and systems in low volumes to specific customer requirements" (Brady and Davies, 2004: 1603). For example, this type of capability allows a private company to grow and increase its number of customers, develop offers, design and implement projects or

provide continuous support to customers.

Project capabilities were available at the GOP prior to its e-government projects and were progressively strengthened. However, the GOP reviewed and adapted them to the specific needs of the "Renewal of service delivery" project. These capabilities are related to the content of the project and techniques, such as cost management, deadlines, consistency of project quality and risk management. The case analysis showed that, even though quality management was deeply embedded in the organizational culture, it was essentially operational and technical and not relational. The GOP seems to have learned and gained more control over these different management fields, which directly contributed to the e-government projects' success and to the organization's progress. In turn, this helped renew and strengthen the GOP's project capabilities.

Project capabilities were also identified from the process of the e-government projects, leveraging the essential soft skills and know-how based on the knowledge acquired from human resources and communications. During the execution of the e-government projects, the GOP experimented with new ways of handling projects, such as involvement, empowerment, providing the best conditions for the success of the project (i.e., time management, coaching and training, etc.). The GOP also invested extensively in communication with both internal and external stakeholders, using a variety of media. It facilitated learning and information and knowledge sharing and contributed to the openness and transparency that the top managers had in mind during the strategic thinking period.

The creation, acquisition and development of knowledge, resources and skills in change process management are among the most important innovations that the GOP worked on in the context of the "Service delivery renewal" project. They facilitated the change process, workflow and

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organizational design. These new capabilities helped to support and strengthen the GOP's project capabilities. The majority of the interviewees agreed that change process management skills were one of the key success factors in the e-government deployment. Project capabilities are transformational capabilities and thus contributed to the progress of the e-government development.

The GOP case showed that there is a clear trend in public organizations to manage by project. E-government started with one large project: the "Renewal of service delivery." Lessons learned from this first project were at the origin of new e-government projects, enabling project capabilities to evolve and progress because of learning within and between projects (Davies and Brady, 2004).

In conclusion, project capabilities are central to e-government development. These capabilities allow public organizations to cope with the various e-government project challenges. However, project capabilities may turn into rigidities if they do not take into consideration the specificities and complexities of each project.

Technological Capabilities

The concept of technological capabilities has been widely studied in the field of information systems (Bharawaj, 2000; Weil and Vitale, 2002). Weil and Vitale (2002) defined these capabilities as a set of integrated services available to support technological existing applications and all new initiatives. The adoption of any new initiative will in itself depend on the organization's technological infrastructure (including security and methodology infrastructure) and technological capability. These capabilities were available in a silo at the GOP's IT department, but through the e-government deployment they were generalized and shared with all the departments at different levels using the outsourcing and learning strategies the organization adopted. Technological capabilities were improved and strengthened throughout the e-government projects and initiatives.

The adoption and deployment of e-government led to multiple changes in the GOP's technological infrastructure needs and IT skills. The technological infrastructure, lack of knowledge, and resources and competencies available in the public sector were a real challenge. For example, the GOP found it difficult to attract and retain IT workers. Changes and adaptation were required at different levels to develop its technological capabilities. The GOP carefully studied the challenges linked to the IT infrastructure during the strategic thinking phase. During this first phase, the stakeholders engaged the whole organization, provided training for people who were motivated to learn and develop their technological skills, and implemented incentive programs for the less motivated. They were also aware that they had to be reactive and learn fast because of the pace of change in IT. The second period was characterized by the acquisition of new knowledge about Internet technology, the creation of new jobs and activities to cope with technological progress in the management of the IT strategy, the alignment of the new activities with existing ones, and the development of architecture that was created entirely as a result of the e-government initiatives. Prior to that, IT mainly played a supporting role at the GOP and did not have any strategic impact. These events created important changes in the organization in terms of technological expertise and information system development. Positive results emerged rapidly. The GOP became a Centre of Excellence, providing support in terms of knowledge, resources and competencies at the government level.

The IT department considered e-government to be an important innovation for the organization. It impacted IT processes within the department and in its relationships with other units. E-government put the IT department at the core of the activity. Employees had to learn new ways of

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engaging in strategic planning, change their practices and functioning in IT project management, and collaborate and form relationships with the operational business areas and top management. They had to adapt to a new type of matrix structure.

The impact on knowledge acquisition and skills development related to design methodology and information systems was a major one. Employees had to take training and seek knowledge outside the organization and implement this knowledge while they were still learning. All this was perceived as a major challenge because the GOP decided to develop its new systems in-house.

The IT department used to lead all the major IT and information systems projects at the GOP. With the e-government project, they had to agree to be participants at the same level as any other unit in the organization. The first phase of e-government was very challenging for relationship and conflict management. The development, delivery and implementation were done differently than usual. In brief, these technological capabilities now directly support the organization's mission and vision and create value for citizens, so we can add this category to the operational layer of the architecture (Renard and Soparnot, 2010), like the business capabilities presented in the next section (figure 1).

Business Capabilities

Business capabilities are related to the capabilities required for online service delivery. They support and complement the existing business capabilities. According to St-Amant's (2006) conceptual framework, they form part of context capabilities.

These business capabilities were solicited and leveraged throughout the e-government deployment process. They interact continuously with the other capabilities previously presented and they support them. In return, strategic and project capabilities have a direct impact on business capabilities and may change them. Business capabilities are critical as they reflect the results of the changes and transformations adopted or enacted by the e-government projects. In other words, depending on the kind of e-government, we may observe the creation, stabilization, development or disengagement of some business capabilities (Helfat and Peteraf, 2003).

Business capabilities encompass the GOP's operational and functional capabilities. Operational capabilities are all the capabilities that directly support the organization's mission and vision and create value for citizens (Renard and Soparnot, 2010). Functional capabilities are organized by functions in the GOP's departments and units.

The GOP case showed clearly the critical importance of this category of capabilities during the e-government development. Top management and the project management team emphasized very early in the project that e-government should not be considered as a technological implementation project. Rather, this project transformed the organization's core competencies and business. The business units played an active role in the e-government project. Operational capabilities were particularly impacted during the third phase, "Multichannel strategy implementation." Several management domains are embedded in this category of capabilities, such as the management of business resources, service delivery management, impact management, and human resource management. The results show that e-government transformed the GOP's methods and business skills, particularly at the operational level.

Conclusion

The objective of this paper was to develop a categorization of e-government organizational capabilities based on lessons learned from the GOP case. We have identified four main categories of interrelated capabilities: strategic capabilities, project capabilities, technological capabilities and operational capabilities.

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E-government development was studied here from a strategic management and capabilities perspective, which provided a rich in-depth assessment of the organization. This perspective also facilitated a detailed description of the dynamic change and transformation that e-government development implies. It is an innovative perspective that can complement the classic perspective, using key success factors in organizational deployment. This perspective seems to be more appropriate for coping with the growing complexities of e-government deployment (Tsouka and Chia, 1999).

From a theoretical point of view, this paper constituted a first step toward building a repository of e-government capabilities. In this context, it will be relevant for understanding in depth the existing interrelationships and the ongoing progression and integration of organizational capabilities.

From a methodological point of view, the identification of organizational capabilities presented several challenges. Firstly, the organizational capabilities can be revealed only through the outcomes and results that are generated. According to Croom and Batchelor (1997), organizational capabilities encapsulate organizational skills. Consequently, to capture organizational capabilities, given their tacit nature, we rely essentially on participants' perceptions, understandings and interpretations, which may lead to reliability issues.

Acknowledgments

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