

Investigating the Barriers to G2G Adoption

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Abstract

Compared to other e-government sectors, Government-to-Government (G2G) is a new research area. Up to now, a commonly accepted definition doesn't exist and the domain of G2G projects is still unclear. The short experience accumulated in these few years isn't enough for the responsible groups to extrapolate widely accepted theories. Many theories are concerned only with the technical aspect of intergovernmental cooperation; others on the contrary, try to give a broader vision including organizational and cultural issues. This paper examines the importance and main G2G barriers of development. A selected review of current literature on the G2G barriers were used to propose a conceptual framework to study the multiple barriers influencing G2G adoption. Investigating this framework within one of the local governments (council) in the UK, this analysis examines the extent to which G2G barriers are currently reflected in the practical guides. This paper ends with highlighting the significant barriers and those which have been overcome by some emerging tools. We conclude with eliminating some barriers not showing empirical significance in our case under investigation, while classifying some barriers that can be grouped and examined together as they deal with similar issues or with issues that are interrelated.

Keywords: e-government, G2G, decision making processes, inter-organizational integration

1. INTRODUCTION

In the last few years, due to the Internet and networking revolution, the scope of information systems has been widening crossing organization boundaries (O'Brien, 2003). Consequently, some trends have evolved such as e-business, e-commerce, and e-government (Laudon and Laudon 2004). Concerning the area of e-government in particular, Joia (2004) highlights that various governments have seized the moment provided by information and communication technology as the ideal opportunity to rethink and reformulate their administrative *praxis*. This restructuring concentrates not only on the internal aspects involved, but also on those related to the relationship between government and other organizations, social groups, and/or citizens. In other words, similar to the domain of e-business at government level, as Bonham *et al.*, (2003) present e-government, might be viewed in the context of three sectors: government to business (G2B), government to government (G2G), and government to citizen (G2C). These sectors along with others are going to be briefly introduced in the next section.

Although that there are several emerging trends of government as we will discuss later, while presenting G2G in more details; according to the United Nations Division for Public Economics and Public Administration DPEPA and The American Society for Public Administration ASPA (2001), none of the highest countries in e-government adoption has reached the last phase of e-government development

(Emerging Presence, Enhanced Presence, Interactive Presence, *Transactional Presence*, Seamless or fully integrated). Few countries such as the United Kingdom and the United States have reached the transactional presence, which means complete and secure transactions like obtaining visas, passports, etc. Digital signatures may be recognized in an effort to facilitate procurement and doing business with the government. Secure sites and user passwords are also present. The interactive phase, means that some interactions between citizens and service providers are present like e-mail and post comments area. The capacity to search specialized databases and download forms and applications or submit them is also a feature of this phase.

To fulfil the e-government services, one of the most challenging e-government sectors is the digitally-enabled collaboration and cooperation perspective among different government agencies (Joia, 2004) — commonly referred to by the acronym *government-to government (G2G)*, which is - as mentioned above—the main focus of this study. Consequently, this work seeks to analyze the key factors for successful implementation of G2G projects. This includes as well as to establishing the main obstacles to the deployment of such enterprises, and the associated causes and possible solutions, through proposing a preliminary framework of G2G adoption and thereto avoid potential drawbacks and overcome all hurdles.

In order to explore the importance and challenges of G2G adoption in practice, this paper presents empirical findings from a study applied at one of the UK governmental agencies (council). The next section introduces the term e-government along with its sectors. Section 3 provides an overview of G2G, while section 4 is conceptualising a framework for the barriers to G2G adoption. Section 5 presents the methodological approach adopted in the research. Section 6 provides an understanding of the empirical case, while section 7 provides the discussion of the case. The paper concludes with set of recommendations that we envisage will influence future research in G2G in general, and G2G adoption frameworks in particular.

2. E-GOVERNMENT SECTORS

Similar to e-business, the term e-government has been defined from different perspectives. These definitions range from making services available online: “Any usage of government online at all levels (federal, state, local)” (Sakowic, no date: p.1) to general definitions describing e-government as another definition provided by Sakowic (no date: p.1): “the use of information and communication technologies (ICT) to transform government by making it more accessible, effective and accountable”. This idea of inconsistency of e-government definitions is supported by Bonham *et al.*, (2003) as they believe that e-government means different things to different people. As they clarify, some observers define e-government in terms of specific actions: using a government kiosk to receive job information, applying for benefits through a website, or creating shared databases for multiple agencies. Other observers define e-government more generally as automating the delivery of government services. While perceptions of e-government vary widely, some common themes can be identified that capture its evolutionary nature.

The above mentioned definitions of e-government describe e-government from different perspectives and may complement the global picture of what an e-government is. Nevertheless, they are not comprehensive from our point of view, as they do not include the three sectors of e-government mentioned by Bonham *et al.*, (2003) and also by the World Bank Group (no, date): These include, as mentioned above, government-to-government (G2G), government-to-business (G2B), and government-to-citizen (G2C). Some observers also identify a fourth sector, government-to-employee (G2E). Since G2E operations tend to focus on internal, administrative activities, they can be considered a subset of the G2G sector.

Government-to-Government (G2G). In many respects, the G2G sector represents the backbone of e-government. Some observers suggest that governments at all levels must enhance and update their own internal systems and procedures before electronic transactions with citizens and businesses can be

successful (Atkinson and Ulevich, 2000). G2G e-government involves sharing data and conducting electronic exchanges between governmental actors. This involves both intra- and inter-agency exchanges at the national level, as well as exchanges between the national, provincial, and local levels.

Government-to-Business (G2B). Government-to-Business (G2B) initiatives receive a significant amount of attention, in part because of the high enthusiasm of the business sector and the potential for reducing costs through improved procurement practices and increased competition (Gilbert, 2001).

Government-to-Citizen (G2C). The third e-government sector is Government-to-Citizen (G2C). G2C initiatives are designed to facilitate citizen interaction with government, which is what some observers perceive to be the primary goal of e-government. These initiatives attempt to make transactions, such as renewing licenses and certifications, paying taxes, and applying for benefits, less time consuming and easier to carry out. One of the goals of implementing these initiatives should be to create a "one-stop shopping" site where citizens can carry out a variety of tasks, especially those that involve multiple agencies, without requiring the citizen to initiate contacts with each agency individually (Hasson, 2001).

To conclude, we are going to present a more comprehensive e-government definition, from our point of view as it refers to the above mentioned sectors as well as technology infrastructure: "E-government involves using information technology, and especially the Internet, to deliver government information, and in some cases, services, to citizens, businesses, and other government agencies. E-government could enable citizens to interact and receive services from the government 24 hours a day, seven days a week. Some observers of e-government initiatives suggest service delivery could become more convenient, dependable, and less costly." (Bonham *et al.*, 2003: p.1) However, as can be seen, although this definition is more comprehensive, it adopts the citizen centered view of e-government. As we will see later, concerning G2G in particular, that providing services to citizens shouldn't be the only purpose of G2G, but also integrating cross-organizational processes for the purpose of resources management.

As briefly mentioned, our main emphasis is investigating barriers for governmental decision making processes integration. As will be seen in later sections, our main focus will be G2G as a backbone of e-government and enabling inter- and intra-agency exchanges. The following section is going to present G2G in further details along with its challenges as reported from prior empirical studies.

3. OVERVIEW OF G2G

There are extensive research efforts in the domain of cross-organizational integration in the context of governmental applications. For example Beaumont (2005) introduces the arrival of geoportals in many areas of public service delivery. This necessarily entails inter-agency collaboration and the pooling of information resources. There is an established track record of the successful use of GIS to facilitate this (e.g. Higgs, 1999), and developments in GIS architectures and networking is enabling access and interrogation of such pooled resources at a distance (e.g. Hudson-Smith *et al.*, 2003). Also, according to Silicon Trust, the new term u-government stands for ubiquitous government starting to emerge. In the context of government the term ubiquitous government was established in 2003, because the interactions and transactions between governments and their citizens are now possible anywhere, anytime, unconstrained by power lines and telephone wires. For example, a variety of devices, from PDAs to embedded chips, will push internet access into the most remote corners of any nation. Even though, few examples such as in Singapore and Germany do already exist, at the moment, u-government can still be considered a dream of the future. Although the progress of the supporting technology, we can note that none of the countries worldwide reached all e-government development phases (United Nations, 2003) even without those emerging trends. Furthermore, compared to other e-government sectors, there are few studies that have reported G2G experiences. One of those is the UK Inland Revenue Experience as presented by Beynon-Davies (2004). Joia (2004) also presents some key success factors associated with

the implementation of G2G projects in the Brazilian market. She also shows how public agencies can benefit from the use of Internet technology in order to link their processes digitally with their counterparts in different public agencies, so as to streamline their workflows and assist citizens more effectively and at reduced cost. Nevertheless, such studies did not focus on G2G as a cross-functional integration issue and the nature of government processes; neither did they provide any framework to guide governments concerning this issue. In this section we are going to explore some basic literature about G2G to understand its basic function.

According to Relani (2004) Government-to-Government is a new research area. The short experience accumulated in these few years isn't enough for the responsible groups to extrapolate widely accepted theories from the countless hypotheses made. Many theories are concerned only with the technical aspect of intergovernmental cooperation, others, on the contrary, try to give a broader vision including organizational and cultural issues. The different approaches to G2G come out of the heterogeneity to interpret the role of Government-to-Government. Up to now, a commonly accepted definition doesn't exist and the domain of G2G projects is still unclear. For example, The Swiss Federal Government bounds G2G as the vertical interaction between Federal Government, Cantons and local administrations. The internal relation between different offices is defined as Government internal (G-I) (Bund, 2002). Also, as discussed above, the relationship between the people that are involved in public administration and the "towering above" organization: Government to Employee (G2E). However, as mentioned before we are going to use the term G2G E-Government in its wide meaning, including G2E (or G-I) aspects.

The American definition of G2G emphasizes on its integrative nature: The US Electronic Government website gives a broader definition of Government-to-Government, that emphasizes on the integrative nature of G2G : "Many citizen services such as Homeland Security and verification of vital records require collaboration between Federal, State and Local governments. The goal of the Government to Government (G2G) portfolio is to forge new partnerships among levels of government. These partnerships will facilitate collaboration between levels of government, and empower State and Local governments to deliver citizen services more effectively" (The White House, no date). We can notice that this definition adopts the citizen centred view of e-government looking to G2G as a backbone for other sectors. In all cases, even in citizen focused view of e-government as the Federal Enterprise Architecture Business Reference Model shows (*c.f.* U.S. Department of Labour, no date) shows that there are several support activities that may need G2G as a backbone.

Figure 1 presents some examples of G2G applications, which show that G2G could be used as a backbone for other sectors such as G2C facilities or could be used for inter-governmental integration for other purposes. However, as will be seen while investigating the case study, G2G should not just be focusing on this citizen centered view as the role of the governments exceeds providing services to citizens to managing the country's resources through decision making processes that are cross-organizational by nature (*c.f.* El Sherif and El Sawy, 1988).

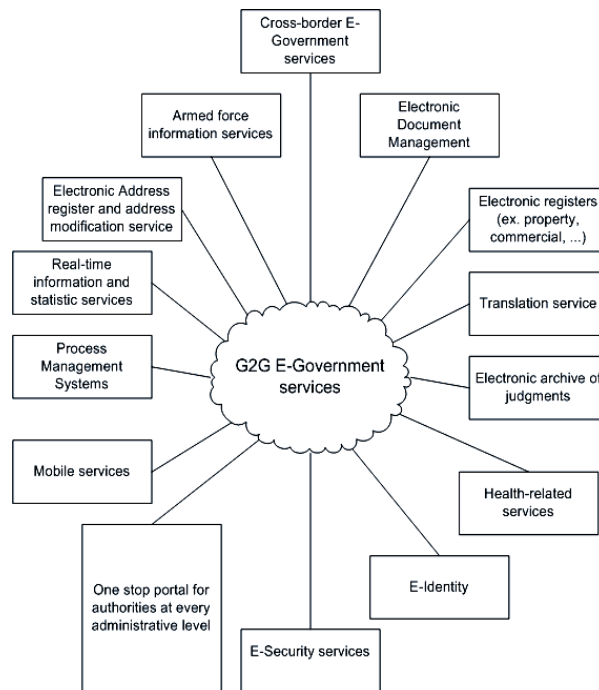


Figure 1. G2G E-Government Services (Relani, 2004)

One of the G2G definitions that we believe in, is the one provided by Relani (2004), mentioning that the implementation of IT solutions between and inside public administration offices can be considered G2G. However, not only pure technical cooperation can be considered in G2G. E-Government is the leverage from a pure bureaucratic and stovepipe organization to a true process-oriented and seamless Government. Intra and inter-governmental E-Government is and has to be much more than simply wires and computers. G2G Electronic Government has to be viewed as a coalition of many different aspects: from strategy to organization, from security to change in culture. G2G has the difficult task of completely redesigning the way government works and the way employees cooperate. Thus, in the following section we are going to highlight some barriers to G2G as reported in the literature.

4. CONCEPTUALIZING A FRAMEWORK FOR THE BARRIERS TO G2G ADOPTION

G2G projects have to handle many technological and organizational problems. Large scale projects involve many stakeholders and create many interactions among them. The coordination of a G2G solution is essential for the success of the project. In the same way, G2G E-Government is subject to indirect bounds and has to solve indirect problems that emerge when organizations start to exchange information across traditional organizational borders (Homburg and Bekkers, 2002). To avoid these problems, a radical change in an institution's morphology has to be considered. Although public service reorganization presents some similarities to change private sector it, implies more variables and problems, imposed by a rigid and complicated organization (Rainer, 2004). In this section we are going to highlight some of those barriers as discussed in the literature:

- **Legislative & Regularity:** One of the objectives of most G2G E-Governments is to integrate the information and services across different administrative functions in order to set up a unique virtual counter where the users can ask. This vertical and horizontal integration will simplify the relationships of administration- administration, administration-citizens and administration-business. To carry out this plan, the legislators have to adapt many current

laws to fit the special requirements of the virtual government, jeopardizing the roots of our democracies (Jaeger, 2002). G2G E-Government legislators have to be aware of the importance that the separation of powers, namely legislative, executive and judiciary as a constitution of democracy (Rainer, 2004). The E-Government policies have to be planned with respect for the autonomy and individuality of the three branches at risk in order to downsize the integration of the information and services. In fact, facilitating the sharing accessibility of information to every branch of the public administration could reduce the autonomy and independence of the three powers (Jaeger, 2002) and consequently, restrict individual liberty.

Regarding regularity issue, e-Government in general and G2G in particular, it has the potential to improve and simplify collaboration across agencies and organizations (OECD, 2003). The benefit is counterbalanced by the regulatory barriers like accountability rules or the authentication of digital documents. Setting up E-Government solutions without changing the current legislation is a utopian way of thinking. A simple technological implementation can't supply a complete solution and is the prelude to a failure. The success of E-Government initiatives and processes are highly dependent on government's role in ensuring a proper legal framework for their operation (OECD, 2003). To exploit the chance coming from new technologies, public administrations need time to discuss and approve laws and rules to support the new way to management.

Different from private organization, public administration is strongly bureaucratic and engages long change processes due to the time it takes to assess legislation within and among the different governments. This lack of flexibility slows down the introduction of complete and uniform E-Government solutions. The slowness of regulation adaptation to new technologies creates "two speed" situation. A typical example of regulatory adaptation comes out of the long debated introduction of the digital signature. After many years, almost every developed country has adopted a digital signature code. Other countries are about to introduce new legislation, while most developing countries have not yet found a clear solution to digital signature (Courtney, 1997). At the local, regional, national or international level, the common prerequisite for a swift deployment of E-government is an appropriate legal and regulatory framework. Leitner (2003) suggests that an appropriate regulatory framework is necessary if E-Government is to become a key factor in facilitating the transition to a knowledge-driven economy.

- **Security:** Concerning G2G, in everyday transactions, all public administration officers receive, exchange and collect the personal information of many citizens, public organizations and other offices. The importance of data protection and a security increase with services involving information sharing among many different national and international level agencies. Through government networks flow much personal and secret data (Cyert *et. al.*, 1998). This information has to be protected in a legal way (creating new and consolidating existing rules) and a technical way (using security protocols and technologies). Government has the responsibility to develop a culture of privacy protection and security (OECD, 2003). Further, Courtney (1997) argues that low IT diffusion and the lack of instruction in most of these countries put the hurry to use Internet for legal acts in the background. Overcoming the issue of privacy is not just technical, but as also involves some organizational issues such as those presented by Rainer (2004) including, educating and training government officials for privacy and limiting the access to personality identifiable information and not automatically allowing employees to tap into databases including such data.

As listed in The European Parliament and The Council of the European Union, (2002), many countries and intergovernmental organizations have issued protection policies and have established working groups and commissions to grant and improve the fundamental right of

privacy. Moreover, the European Union has recognized the need to create a common set of rules for privacy in order to consolidate the information society and to simplify the exchange of information among different offices. Following the existing European and national data protection legislation, the European Commission for Interchange of Data between Administrations has elaborated privacy policies to uniform Pan-European E-Government (Duck, 1993).

- **Resource Barriers:** The coordination of human and financial resources is the Achilles' heel of many E-Government projects. The failure or the success of G2G projects is strictly related to resource allocation. The provision of the required resources for the eRevolution can be one of the most problematic issues of the administration. In addition, the difficulty to evaluate the expenses and the return of the investments make it harder for the E-Government responsible groups the call for funds. (Riedel, 2004) These resources so also include some long term preparations such as having skilled staff to accomplish technical and organizational projects depends on the presence of educational institutes (like universities or technical high schools) in the region. The academic support of G2G E-Government with skilled people coupled with the installation of specific research centres gives public services an advantage. Unfortunately, not every region has its own educational institutes and the workers are often reluctant to change their living place (Riedl, 2001), especially when they have to move to poorer or peripheral regions. Most penalized in this case are the rural and developing countries which have difficulty recruiting competent staff.

Moreover, according to OECD (2003), the resource allocation problem intensifies in G2G projects between two or more administrations or between offices based in two different countries. The vertical funding system used by most countries is a real obstacle to inter-governmental projects. The actual budgetary frameworks don't take into account specific needs of long-term inter-governmental projects.

- **Cultural:** As mentioned above, G2G includes not just the cooperation between two public organizations but also the cooperation between two governments. As Riedel (2004) discusses, culture makes a country unique, allowing it to be distinguished from the others. The cultural identity of a country comes from its history, religion and traditions. At the national level, the cultural differences are softened because of a common cultural denominator and due to the presence of central authorities able to mediate and enhance every cultural difference. In the context of different countries, each culture is a great potential for every single country for economic creativity. At the same time, these differences represent an obstacle to cross-border cooperation: the cultural gap between different administrations often means the failure of international cooperation (Riedel,2001).
- **Coordination:** E-Government projects involve many stakeholders. The coordination of everyone in G2G projects is a difficult task. The differences don't only come from different cultures or from the national pride, but particularly from the different points of view of the different categories of specialists involved in the implementation of Electronic Government systems, deriving partly from the egoism of the stakeholders and partly from their ignorance. For example, IT consultants have little idea about the Public sector while proponents of public governance reform continue to ignore much of potential of IT (Lenk, 2004).

- **Technical Obstacles:** Information Systems integration and standardization in private business has become a widely discussed subject. Mergers and alliances within the public sector have engaged many IT experts to homogenize legacy systems and to develop interfaces able to join different data structures. As for the private sector, increased collaboration among many PAs has required an "integration policy". Technical aspects of E-Government become very important in horizontal and vertical integration of different offices. (Layne, 2001) There are many difficulties and a lack of standards at the moment that make the implementation of a joined-up E-Government challenging. In this section, we will discuss the key issues. Standardization From the paper format to the first digital information, every country (or even every region) has developed personal semantic formats. These differences, in the form of ad hoc developed and proprietary data representation, prevent the introduction of a widespread accepted semantic. In some cases, knowledge of employees can compensate for the lack of a well-defined semantic (Riedel, 2004).
- **Legacy Systems:** Although many public administrations have upgraded their applications during the Y2K crisis, many legacy systems still remain. (Leitner, 2003) These systems are often inflexible and the incompatibility among them makes it hard to develop middleware applications. Legacy system can increase costs, for instance for data transfer (OECD, 2003), maintenance, development of new modules or functions upgrading and lack of common standards. Those responsible for G2G implementation can't ignore the investments public administrations have already made in Information Technology and consider including the existent systems in their architecture. How the modern Information System (IS) is integrated in the existing one has a tremendous impact on the success of the project. For recent studies to overcome this barrier (Themistocleous *et. al.*, 2004).
- **Organizational Structure:** Osterloh and Frost (2003) believe that until now most Public Administrations have built their organization in a departmental way. The function-oriented division of responsibilities creates a vertical structure divided by different hierarchies. Personal contact is very rare and most employees know only their specific part of the entire process. Moreover, the bureaucratic organization is characterized by a formal hierarchy. The relationships between different hierarchy levels are regulated through inflexible regulations, codes and laws that are a real obstacle to the fluidity of information and they create a real bottleneck. The bureaucratic organization is nowadays inefficient to an always more dynamic market. The operative costs of function-oriented offices are high and not more justifiable. The need for a transition from an office-oriented to a customer-oriented system has increased with the insertion of IT. To fully exploit the benefit of the insertion of IT the public administration offices have to change their process organization: from a vertical to a flat structure. The process-oriented organization is concentrated on the processes and is not separated by functions.
- **Information and Knowledge Interchange:** As Relani (2004) argues, one of the most ambitious tasks G2G tries to achieve is the national and international exchange of information between different public offices. The transmission of information involves many variables and many knotty problems to solve. The technical aspect, i.e. the transfer of digital data, is only one aspect. Organization, culture, language and many others are the obstacles to overcome. The reorganization of back-offices is the basis to enable a seamless government organization. For a strictly functional organization, IT can help transform back-offices to become process-oriented and more customer-centric. Moreover, the correct use and interchange of information can reduce the administration costs and the length of processes. A complete integrated and networked intra and inter-governmental organization is the basis for a fluid and boundless interchange of information and knowledge.

- **Resistance to Change:** The eRevolution has to deal not only with external difficulties, but also with the internal resistance to change which can be an obstacle for the modernization of the public offices. In fact, many employees (especially the older) don't see E-Government revolution as an opportunity, but as a threat for their future: they are afraid to lose their jobs. The risk of such a resistance is the collapse of the new organization. The employees can refuse to adopt the new working methodologies or continue to work in the same manner they worked before behind the administrators' backs. An organized management of change has to be established. The organizational change has to be discussed with the people involved and they have to be well informed of what is going on (Rainer, 2004).

To sum up, we can view the challenges of G2G mainly as problems of integration including those related to technical and non-technical issues. Thus, we believe it has to be identified what level of integration are we aiming? And before answering this question what kind of G2G are we willing to adopt? Is it a backbone to support other sectors? Is it citizen centred or process centred? Or is it used to support a strategic process by nature? For example Klischewski (2004) distinguishes the two types of integration information and process integration. Information integration aims at facilitating information flow, i.e. providing access to structured informational resources across technical and organisational borders in order to enable new services based on a virtually shared information environment. Process integration on the other hand, centres around interrelating steps and stages of process performance across technical and organisational borders in order to enable new services based on an overarching monitoring and control of process flow. Based on the discussion above, we developed a research framework that combines all these barriers identified in disparate studies in the normative literature. The proposed conceptual framework is illustrated in Figure 2.

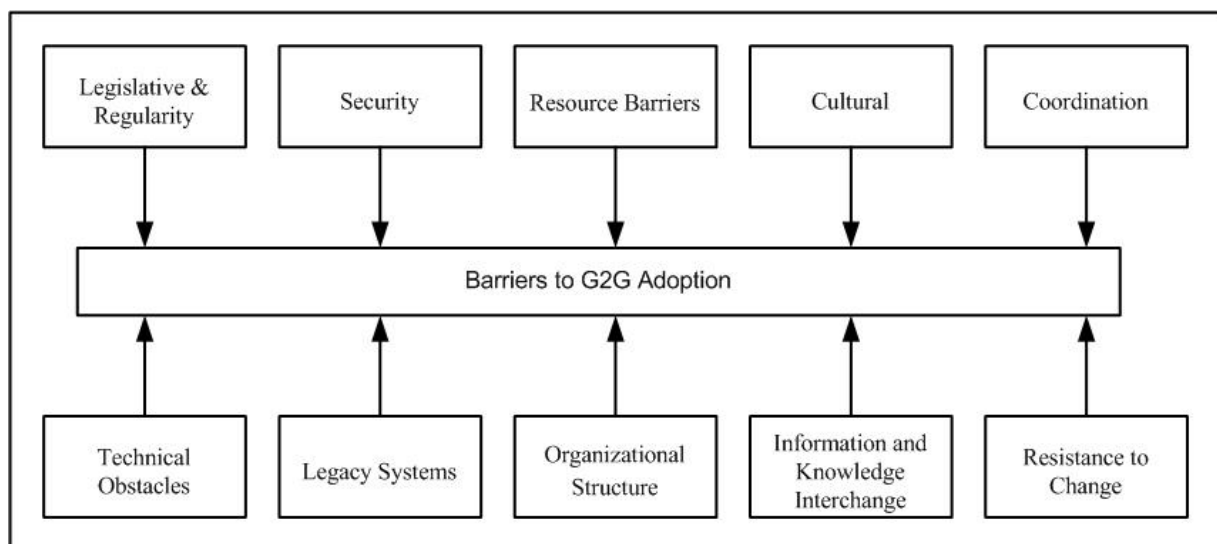


Figure 2. Conceptual Framework for the Barriers to G2G Adoption

5. METHODOLOGY

The aim of this paper is to investigate the barriers to G2G adoption. In doing so, we proposed a conceptual framework to study the multiple barriers influence the decision making process for G2G adoption. We have selected an interpretive, qualitative case study approach to conduct this research. Interpretivism stance was selected for this research since, the aim of this paper is to understand better these barriers. An interpretive stance allows us to navigate and explain better this phenomenon. Also, we suggest that in the context of this research a qualitative approach is more appropriate as such approach can be used to: (a) investigate little-known phenomena like G2G adoption; (b) examine in depth complex processes (G2G decision making); (c) examine the phenomenon in its natural setting and, (d) learn from practice. In doing so, various data collection methods such as interviews, documentation, and observation were used. For the purpose of this study, a number of interviews was taken place including 5 structured, 4 semi-structured and 3 unstructured. The structured interviews lasted for around 30-40 minutes. The bias that is considered to be a danger in using qualitative research approach is overcome in this research by data triangulation.

6. CASE DATA

The case organisation is a local government (council) that is situated in the North-East of London (NEL) and has an area of 1,898 hectares and a population of 202,819. For the purpose of this paper, we use the coded name NEL_Council to refer to this organisation due to confidentiality reasons. The strategic plan for NEL_Council by 2014, is to improve the quality of life in the borough, increase public and voluntary agencies and to provide higher quality, accessible and responsive services and facilities. In 2002 the council took the decision to implement G2G solutions and integrate them with its existing IT infrastructure. As a result, the NEL_Council decided to run multiple projects that require coordination among different government agencies. In this paper, we present the case of the child-project.

The child project is one of the projects within the NEL_Council where an integrated solution is being developed to provide multi-agency access and sharing of information required to track and monitor children in need between 0-19 years of age. Currently various agencies concerned with child support (such as education support service, social services, health, youth offenders team and community support and safety) own and manage their own applications and databases. The agencies are not aware of the information held on a specific child within another agency, which has led to a number of cases of children who needed help from abuse, unhealthy environments, parental problems and other issues, but it was too late to take action. For example social services hold a record of child A faced with parental drug abuse, education holds a record on child A for not attending school regularly, and health sector holds a record on child A for child losing too much weight. As the sectors do not share information they are not aware of concerns raised for child A within other sectors hence the urgency for help required by child A is not recognised.

The aim of the child project is to achieve a balance between family support and child protection by developing new G2G solution and integrate this solution with existing applications involved to monitor the children and share information. The integration of these multiple agencies will provide each agency with information held by other agencies based on a child and ensure corrective action is taken in good time for a child in need.

- **Legislative & Regularity:** All the interviewees reported that initially they phased a many problems with the legislation framework and the regulations. As the project manager mentioned:

'... in the beginning we had many problems. The implementation of these systems changes many things in our every day life. We need to know whether we are authorised and covered in running this new mode of work'

Clearly, the lack up-to-date information regarding the new legislations and the regularity issues was an important problem. According to the IT manager, the implementation team had to change its technical design. The reason for this is that some functionality required by the stakeholders was left out of implementation as there was legal cover by the existing regulatory framework.

- **Security:** Security was not a real barrier for this case as the staff uses IT solutions for many years and they are familiar with computers. The staff accepted the new implementation without raising a security issue. A basic concept that was implemented by the system deal with information sharing. For that reason, time was spent for the identification of the users that should have access to sensitive data.
- **Resource Barriers:** The case organisation experienced a lot of resource barriers. An internal consultant reported that two were the most important reasons. Firstly, a new technology called Enterprise Application Integration (EAI) was used to integrate the existing applications with the new G2G solutions. Since, EAI is relatively new technology there was a lack of skilled employees to support this project. Thus, there were delays as the project could not run as planned. To overcome this problem, NEL_Council asked the support of external consultants and relied more on its software vendor. Secondly, there were internal problems regarding (a) the re-allocation of the employees work on the project and (b) the financial resources required for this project. Initially, the council did not plan to employ consultants to support the project. However, since there was a lack of skills and the project was on risk the council had to find the financial resources to rescue the project (by employing external consultants).
- **Cultural issues, Coordination and Resistance to Change:** The biggest issues that were raised deal with the control of the processes and the issues related to trust. For instance employees who used to control a process for long time they were not satisfied of giving access to 'their' data to other staff members. Moreover, in cases were the control was transfer to another agency the staff members (used to have the control) reacted as they believed that they loose their power. To address this issue, the council spend extra amount of money to train its staff.
- **Organizational Structure and Information and Knowledge Interchange:** As mentioned above the implementation of an e-government project that integrates existing application with a new G2G solution has brought changes in terms of structure and management. For instance, decisions regarding a child, were used to be taken at departmental level. With the implementation of the new system, the decisions are taken in a more collaborative way with multiple government agencies contributing in the decision making process. It appears that the exchange of information and knowledge is done in a more efficient way rather in the past. As a result, information and knowledge interchange does not seem to be a barrier in this case.
- **Technical Obstacles and Legacy Systems:** These two barriers were not reported as important in this case. The project manager explain the reasons as coded below:

'We used a new technology that is called EAI. EAI integrates disparate applications including legacy systems. Thus, it was not difficult for us to keep these legacy systems up and running and integrate them with the rest applications... the technical obstacles were not big as EAI helped us overcoming most of them... the only problem we had is to understand the complexities of this technology'.

Based on the comments of the interviewees it appears that possibly these two barriers should be seen as on (technical) due to the functionality and the role of EAI in integrating different types of systems.

7. CASE DISCUSSION

The empirical data revealed that the majority of the barriers summarised in the Figure 2 exist when NEL_Council adopted and integrated government to government applications. Based on the findings and the discussions we had with the interviewees, it appears that the most important barriers in this case were the legislative & regularity and the cultural issues. Important were also the resource barriers and the resistance to change with the latter associated with cultural issues. It appears that although the lack of skills can be addressed with either training or outsourcing (support from consultants) it results in increased project cost. This might make the adoption of a G2G solution more difficult due to the lack of financial resources. Nonetheless, this kind of expenditure is required to achieve a successful implementation, as the lack employees with the appropriate skills would possibly lead to failure. Due to the nature of this project security was not reported as an important barrier. In addition the technical obstacles did not seem to be important too as the use of EAI tools helped to overcome the problems. An interesting finding is that the use of EAI completely overcome the barrier of legacy systems. This means, that this problem did not exist in this case. All the findings are summarised in the Table 1.

Barrier	Level of importance in this case
Legislative & Regularity	High
Security	Low
Resource Barriers	Medium to high
Cultural	High
Coordination	Medium
Technical Obstacles	Low
Legacy Systems	Does not exist
Organizational Structure	Medium
Information and Knowledge Interchange	Low
Resistance to Change	Medium to high

Table 1. Level of Importance

Based on the findings it appears that it is possible to group some barriers or eliminate some others. For instance, in cases that EAI technology is used, the legacy systems barrier should not be considered as EAI technology fully integrates this category of systems. This finding is in line with the normative literature (Themistocleous et al., 2004). The case data indicate that the following barriers can be grouped and examined together as they deal with similar issues or with issues that are interrelated:

- **Group1: Cultural issues, Coordination and Resistance to Change:** Resistance to change is caused due to many cultural issues. The empirical data suggested an efficient way to coordinate and overcome these problems is through training.
- **Group2: Organizational Structure and Information and Knowledge Interchange:** The organisation structure is affected by the changes caused by the G2G applications and their integration with the existing systems. Through these systems the way of communication and the

sharing of information and change is also altered. Therefore, we suggest that it will be better if rename these barriers into *organisational structure and change*.

7. CONCLUSIONS

This paper focused on one of the e-government areas with vital importance, namely its backbone G2G and its barriers of adoption. Our investigation for those barriers is based on our conceptual framework for G2G barriers, which was synthesized from the literature. Its comparison with practical guides has provided insight into the extent to which research is reflected in guides to inform practice. Based on the findings as listed in Table 1, it appears that the impact of each of those barriers varies. The most important barriers in the case under investigation were the legislative & regularity and the cultural issues. Important were also the resource barriers and the resistance to change with the latter associated with cultural issues, while the use of EAI completely overcome the barrier of legacy systems. The case data indicate that some barriers can be grouped and examined together as they deal with similar issues or with issues that are interrelated. We recognize that the emphasis of these barriers might be different in other G2G projects. Nevertheless, this classification model can aid planners and implementers of these systems to consider all potential barriers and provide guidance on how to address the similar barriers to prepare the appropriate infrastructure. Future research will investigate these barriers in the context of information integration versus process integration aiming to further propose a framework for G2G adoption taking these barriers, especially the non-technical ones, into consideration.

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