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# Inter-Organisational Electronic Information Sharing in Local G2G Settings: A Socio-Technical Issue

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## Abstract

*Local Government Authorities (LGAs) are information-intensive organisations. To satisfy their information requirements effective information sharing within and among LGAs is necessary (internally among departments and externally with other authorities). The problem of Inter-Organisational Information Sharing (IOIS) has been regarded as inevitable for the public sector. Despite a decade of active research and practice in this complex problem area, the field lacks a comprehensive framework to examine the factors affecting Electronic Information Sharing (EIS) among government bodies at the local level. The research presented in this paper contributes toward resolving this problem by developing a conceptual framework of factors affecting EIS in Government-to-Government (G2G) collaboration. By presenting this framework, we attempt to clarify that information sharing in LGAs is a combination of environmental, organisational, business process and technological factors and should not be scrutinised from merely a technical perspective. To validate our conceptual findings, a multiple case study based research strategy was adopted. From an analysis of the empirical data collected from two case organisations, this paper exemplifies the importance of these factors in influencing EIS and offering LGA officials with specific advice on how to better interpret EIS and its underlying problems. The paper should be of interest to both academics and practitioners who are interested in IOIS, in general, and collaborative e-Government, in particular.*

**Keyword:** Electronic Information Sharing, Information Integration, G2G collaboration, Local Government Authority, socio-technical factors

# 1. Introduction

The enormous usage of Information and Communication Technologies (ICTs) has altered different aspects of life; how people live, how businesses run, and how governments interact with their citizens. Recently, the adoption and development of these technologies in private sectors has put massive pressure on public sectors to keep up. Governmental organisations discover that it is essential to transform their administrative processes in order to improve the efficiency and effectiveness of interacting with their citizens (Fountain, 2001). One such transformation is the use of ICT to facilitate government information sharing in a networked environment. Electronic information sharing (EIS) across government boundaries requires fundamental technical and organisational changes. Therefore, to have an effective and sustainable EIS, governmental organisations need to overcome a range of problems and challenges. From a technical point of view, information system developers are faced with a variety of challenges related to the existence of different platforms, diverse data structures and incompatible network infrastructures. From an organisational perspective, enabling information sharing requires new work processes among the organisations, leading to a considerable change in organisational structure and culture. Several information integration and sharing development projects fail to deliver the expected benefits. A large percentage of these failures are the result of social and organisational factors, rather than just technical issues. Conceivably, a significant problem facing system developers is that the organisational impacts resulting from the implementation of an information system are undesirable and unpredictable (Doherty & King, 2005). In recent years, several studies have identified and analysed a variety of environmental, inter-organisational and intra-organisational issues affecting governmental inter-organisational information sharing, however they have not explained a comprehensive set of factors involved. Most of the frameworks and models (e.g., Dawes's conceptual model) specifically focused on interagency information sharing at the state level. Although there are some similar issues regarding electronic information sharing between central and local governments, an investigation which specifically focuses on electronic information sharing in local government agencies is essential. Local government agencies are not just the scaled-down version of central government as their human, financial, and technological resources are more limited compared to central governments. Furthermore, previous research (e.g. Lee & Rao (2007) and Gil-Garcia et al. (2007)) is mainly focused either on technical issues and factors involved in information sharing or managerial and organisational factors.

Consequently, being able to identify and analyse challenges influencing participation in inter-organisational information sharing in local government becomes vital in order to understand the complexity and socio-technical nature of this initiative. Hence the objective of this paper is to present a conceptual framework of the factors affecting electronic information sharing in Government-to-Government (G2G) collaboration at a local level in order to illustrate clearly the social and technical nature of the phenomenon. The conceptual analysis presented here draws mostly on the literature of G2G collaboration and inter-organisational information sharing.

## 2. Theoretical Background on Information Integration and Sharing

A number of academics have clarified that in order to gain the maximum benefits of using ICTs in government processes, organisations within a government must integrate and share their information. Dawes (1996) simply defines information sharing as exchanging information within and across government agencies or otherwise giving them access to information (Dawes, 1996). Since single and dependent organisations within a government cannot deal and solve complex problems related to service delivery alone, managing public services increasingly relies on multiple networks of interdependent organisations. As Scholl and Klischewski stated, information integration can be recognised as “the forming of a larger unit of organisational entities, temporary or permanent, for the purpose of merging processes and/or sharing information” (Scholl & Klischewski, 2007). Gil-Garcia et al (2009) clarified that inter-organisational information integration and sharing is a combination of both social and technical elements hence it is a very complicated field to study. They suggested four interconnected factors ranging from social to technical which would help for a comprehensive understanding of the concept: (1) trusted social network, (2) shared knowledge and information, (3)

integrated data, and (4) interoperable technical infrastructure. Trusted social networks refer to a set of collaborations between those actors who are involved in inter-organisational information sharing and who trust each other as the fundamental stage of exchanging information. Shared information and knowledge refer to the flow of tacit and explicit knowledge in the form of formal documents, information relationships, messages, emails, etc. Integrated data indicates the integration of data at different levels based on a standard among networked organisations. Lastly, the interoperable technical infrastructure is clarified by different information systems which are able to communicate with each other and transfer information. A review of the literature indicates that research on inter-agency electronic information integration and sharing, especially in public sector, is very limited. In general, previous research has focused on a combination of electronic and non-electronic information sharing and can be divided into three main contexts: (a) intra-organisational, (b) inter-organisational, and (c) interagency (Akbulut, et al, 2009). In the intra-organisational context, prior research has mainly focused on analysing the individuals' intention to share information/knowledge within an organisation. In the inter-organisational context, the studies have acknowledged the importance of information sharing as a booster of networked collaboration in supply chains (e.g. Guo et al, 2006); (Kelle & Akbulut, 2005). In the interagency context, the researchers were able to identify only two detailed studies. The earliest research conducted at this level was a study by Sharon Dawes in 1996. She carried out a survey in the state of New York and analysed the attitude and thoughts of 173 governmental managers regarding the identified benefits and barriers of information integration and sharing. Around 80% of the state managers identified that information sharing among different agencies brings beneficial results. They considered the following as the most important benefits: (a) more integrated plans, (b) improvement in policy development and programme implementation across agencies, (c) more accurate data and information for decision making and problem solving, (d) improvement in using the resources, and (e) improving the networked collaboration among the agencies. Around 40% of the participants in the study clarified that they were concerned about the risk of adopting information sharing in their organisation. Based on the findings of the surveys, Dawes proposed a theoretical framework of interagency information sharing. The proposed model argued that the agencies' decision on whether they should adopt and participate in information sharing or not is strongly dependent on their perceived risks and benefits, while the deployed policy and management framework is inevitable. Sharing experience, consequently, is generating the basis of actual benefits and risks and could be a lesson for the future policy and management framework. The model by Dawes provides a foundation for understanding information sharing by highlighting that sharing experiences should be used to identify the actual benefits and risks. However, the framework is limited in two aspects. Firstly, the survey was conducted in the 1990s when information technologies were not as advanced and developed as they are today. Therefore, it fails to consider and capture the technological factors which facilitate interagency information sharing in an electronic manner. Secondly, the model does not differentiate between electronic and non-electronic information sharing. This issue is fairly important as the expected benefits and risks differ in electronic and non-electronic information sharing.

The second study was conducted by Landsbergen and Wolken in 2001. This study mainly focused on electronic interagency information sharing, built upon the theoretical model proposed by Dawes in 1996. The researchers reviewed a variety of prior studies on information system interoperability, information resource management and networked collaboration in the public sector (Landsbergen & Wolken, 2001). Landsbergen and Wolken selected two different case studies – one focusing on environment reporting and the other concentrating on Geographic Information Locator Services (GILS). They interviewed federal and state officials in five states (Kansas, Massachusetts, Ohio, Texas, and Washington). Based on the result of the gathered data, they proposed their extended model of interagency information sharing and argued that in Dawes' study the agencies participated because there were motivated by a set of tangible benefits, as well as a strong political pressure to share their information. They criticised that these factors (i.e. political pressure to share information) would not be sufficient to provide a response to a broad range of circumstances especially with the rapid pace of technological change. The main contribution of their model therefore is its emphasis on the need for a technological infrastructure along with a legal, managerial and policy infrastructure to maintain and support interagency information sharing via electronic means. Despite the extension, the model is

limited in one significant respect. Landsbergen and Wolken focused on recognising the experiences and viewpoints of those government agencies which were pioneers in using technology and complex systems, rather than those agencies which might not be familiar with these initiatives. As a result, the findings of their study cannot be generalised to government agencies that are unaccustomed to electronic information sharing.

### 3. Electronic Information Sharing (EIS) in LGAs

While the importance of considering both technical and organisational factors in any IT/IS project such as information integration has now been acknowledged (e.g. Doherty & King, 2005), little progress has been made in order to develop a socio-technical framework so as to identify and analyse the range of factors from social to technical. One of the few examples is the survey conducted by the Centre of Technology in Government (CTG) at the State University of New York. The researchers viewed information sharing and integration as a combination of four different but interrelated contexts. The contexts are shown in Figure 1. This figure illustrates how information integration and sharing relies on four main aspects. This solution should be built based on considering intra-organisational interaction and processes such as business processes, decision making processes and so on. Subsequently, since the organisation needs to collaborate and cooperate with other entities within the larger organisation, the intra-organisational issues are affected by elements of the larger multi-organisational settings such as leadership participation, trust, etc. Also, at a macro level, the inter-organisational relationships are influenced by factors in their shared environment such as political and economic issues. Based on this discussion, we can recognise that information integration and sharing should be viewed as a multi-disciplinary notion (Pardo & Tayi, 2007). However this approach has not been tested practically at a local government level, it might assist the key stakeholders, and IT developers to move away from traditional organisational structure and boundaries and consider all factors affecting inter-organisation information integration and sharing. Therefore, it would be positive to investigate these layers in depth.



**Figure 1.** Contexts of Information Integration and Sharing (Pardo and Tayi, 2007)

#### 3.1 Policy and Social Environment

This layer refers to a regulatory framework that defines the scale, content and standards of electronic information sharing among governmental agencies based on formal policies and regulations. This includes those external factors which have strong institutional influences on inter-agency information sharing such as legislation and policy concerns, as well as the economic and political situation (Pardo & Tayi, 2007). Since most governmental activities are identified and funded through formal legislations and policies, a consideration on bureaucratic and political factors is required (Pardo & Tayi, 2007). By and large, these legislations force the agencies to focus on their own activities rather than cross-boundary collaboration and cooperation. As Landsbergen and Woken (Landsbergen & Wolken, 2001) stated, governmental agencies typically gather, process, and store information regarding those activities in which they are involved while they are not aware of the circumstances in which they can share data and information with other agencies. Moreover, *political and economic* issues have been identified as two key environmental factors affecting any e-government development project (Heeks, 2006). This applies to any inter-organisational information integration and sharing project as interdependent groups, (e.g., senior public managers, politicians, IT developers, etc.) with different objectives, values and political backgrounds, which are involved in the same project. From an economic point of view, since the benefits of information sharing among different government

agencies are still hidden and unclear, governments prefer to spend their budget on other IT-related projects. In addition, developing and implementing such projects is quite costly as it requires bringing together both tangible (people, money, equipment, etc.) and intangible (data, information, etc.) resources. In turn, governmental entities lose their willingness of carrying out these projects. Furthermore, *network externalities* would strongly affect the adoption of information sharing and integration within an organisation and they refer to “*the positive external consumption benefits as a result of a technology use*” (Lou et al, 2000:94). This means a user of new technology will benefit more as the total number of users for the technology increases. Therefore, a rise in users puts pressure on those organisations that have not yet adopted the technology. As interagency information integration and sharing involves two or more agencies to collaborate, network externalities should be recognised as a key issue to attract more agencies to participate in the notion

### 3.2 Inter-Organisational Setting

The notion of sharing and integrating information within governmental organisations strongly depends on inter-organisational relationships and *network collaborations* (Pardo & Tayi, 2007). Formation of these networks has been identified as a complicated process as the goals and objectives are quite diverse among different departments. The entities involved might have different interests, expectations and goals (Navarrete, et al, 2010). This lack of shared *goals and objectives* within the government departments can be identified as a primary challenge to information integration and sharing projects, possibly leading to confusion and conflict among different roles and responsibilities. Therefore, the success of inter-organisational information sharing and integration is associated with clearly defined goals for each department. *Leadership* can be identified as another key factor concerning information sharing and integration (Faerman, et al, 2001), (Gil-Garcia et al, 2007), (Zheng, et al, 2009). It refers to the task of managing the collaboration process. Leadership at all levels plays a significant role in order to define the rules and situation for the individuals involved. Four major tasks for managing and maintaining collaboration networks have been identified: activating, framing, mobilising, and synthesizing (Agranoff & McGuire, 2001). Activating refers to the identification of participants and stakeholders in the network. The process of framing involves defining the operating rules of the network. Mobilising encourages individuals to make an efficient commitment to the network. Finally, synthesizing is the task of improving the condition for having a productive interaction and collaboration among the network. Leaders can use their power and reputation to legitimise ways to deal with and solve problems (ibid). Participation in inter-organisational information sharing is also strongly dependent on *trust* among different departments and entities (Pardo & Tayi, 2007), (Gil-Garcia, et al, 2010). Anderson & Narus (1986) in Neergaard & Ulhoi (2006) define inter-organisational trust as “*a company’s belief that another company will perform actions that will result in positive outcomes, as well as not taking unexpected actions that would result in negative outcomes for the company*”. Building trust can be seen as a significant step in order to establish successful inter-organisational information sharing. The result of empirical analyses by Zaheer et al. (1998) clarify that inter-organisational trust reduces negotiation cost and conflict and increases performance among different sections involved in information sharing. In addition, financial matters would certainly influence EIS participation in the public sector. On the one hand, the governmental agency might face some difficulties related to obtaining the *level of funding* they have requested, and on the other hand, they should deal with the complexity of the funding allocation (Lam, 2005). Furthermore, financial capability is inevitable for procuring and developing adequate levels of hardware and software as well as for improving the level of IT knowledge among the employees (Kim & Bretschneider, 2004).

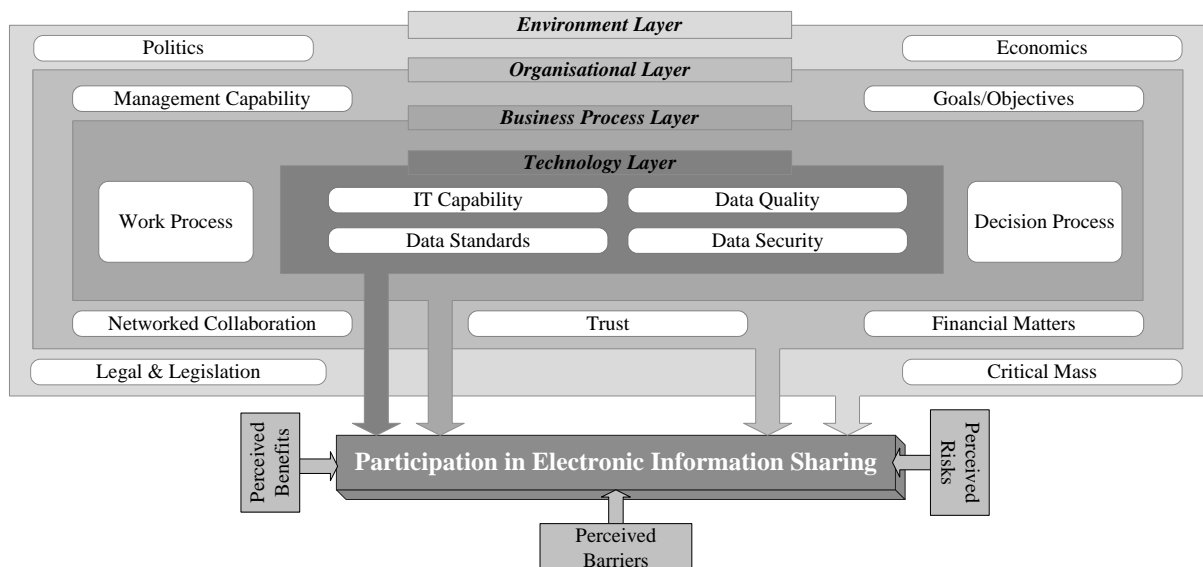
### 3.3 Business Processes

In general, information systems have strong influence on the *work process* of organisations as these systems embed the processes and information flows in complex software (Pardo & Tayi, 2007). Information sharing and integration involves mutually adjusting work processes of multiple organisations. It requires not only a technical transformation, but also change in *decision-making policies* and in the mind-set of the employees. Therefore, change in processes, functions and management mind-set, especially in the public sector, represents a key issue (Lam, 2005). However the development and adjustment of separate processes, information flows, and workflows is an

extremely complicated task, resulting in a significant reduction in overall integration cost as the integration time and maintenance would be reduced.

### 3.4 Technology Solution

From a technology point of view, developing inter-organisational information integration and sharing is a complicated task as it involves complex systems composed of different software, hardware, and telecommunication technologies. Participation in such projects requires a certain level of *IT infrastructure*, knowledge, and capability among the involved organisations (Fan & Zhang, 2007). Moreover, accessing and sharing information from diverse sources such as different databases, text files, images, etc. would cause severe problems. Solving these technical problems typically involves the development of *data standards*, constructing systems of ontologies, and designing interoperable applications to provide a structure for alignment of meaning across heterogeneous and unstructured resources (Pardo & Tayi, 2007). Lack of interoperability standards and disparities in architecture are a noticeable concern among information sharing projects (Lam, 2005). Sharing and integrating large amounts of data with different forms, from different organisations with different geographical locations and different technological platforms also poses numerous challenges regarding other technical factors such as *data quality*, *security*, accuracy, consistency, and completeness. Perhaps, one of the most significant challenges for developing such a project is *application security*. It is vital not just for improving the work and information flow between different agencies and departments, but also for building confidence and trust among them.



**Figure 2:** Factors Influencing Inter-Organisational Electronic Information Sharing and Integration

The factors affecting inter-organisational information sharing have been summarised in Figure 2. As we discussed before, these factors, which are either technical or social nature, should be viewed holistically. As with other information system projects the expected performance of EIS among organisations requires the consideration of perceived benefits, risk, and barriers. The benefits refer to the potential achievement of participating in electronic information sharing which can play an important role as a driver for participation. Reduced cost and increased productivity, accuracy of information, completed information for decision making, and improvement of networked collaboration among governmental organisations are some examples of perceived benefits of electronic information sharing (Fan & Zhang, 2007). Furthermore, there are certain risks of information sharing among different organisations as the information collected by one department would be available to others to access and use. One of the main concerns is that information sharing and integration in the public sector will increase evaluation or criticism as it makes governmental organisations more transparent (Fan & Zhang, 2007). As the result a large number of departments be

concerned about sharing their information as they might be questioned about the accuracy and validity of the shared information.

## 4. Research Methodology

This research was carried out in three phases (Jankowicz, 2000) namely: (a) research design, (b) data collection and (c) data analysis. As the current research attempts to validate the conceptual framework previously presented, therefore, based on the needs of the empirical study, the authors decided that the research design would utilise an interpretive, qualitative case study approach to test the factors (as explained earlier). Interpretivism was adopted, as the aim of this paper is to test factors influencing EIS among local government authorities. An interpretivist stance allows the authors to navigate and better explain this phenomenon. It is also anticipated that as the social world cannot be reduced to isolated variables, such as space and mass, it must be observed in its totality. Therefore, the authors assert that, there is a need for a research approach that may allow LGAs to be viewed in their entirety and allow the authors to get close to participants (i.e. the interviewees), penetrate their realities and interpret their perceptions. Hence, the authors consider interpretivism as more appropriate for the research reported herein. The rationale for selecting a qualitative research methodology is that when an area of science is involved with human and organisational idiosyncrasies, qualitative research methods should be used (Remenyi and Williams, 1996). Besides this, Irani (1998) supports this argument that events that form a phenomenon are conditioned by interacting variables, such as time and culture. As a result, it appears that quantitative research methods are inappropriate in this case, as they are unable to take account of the differences between people and the objects of the natural sciences. Other reasons for suggesting a qualitative approach as more appropriate are to: (a) investigate less acknowledged phenomena like IOIS in LGAs, (b) examine the in-depth complexities and processes, e.g. analysing the importance of factors influencing the decision making process for EIS among local government authorities, (c) examine the phenomenon in its natural setting, (d) provide considerable flexibility during interviews and observations and (e) learn from practice.

In the context of this paper, the authors focused on a multiple-case study (Yin, 1994) – i.e. conducting two case studies (hereafter referred to as LGA\_North and LGA\_East from regions of England – for confidentiality reasons the authors employ these coded names to refer to these entities). In addition to the interviews, data was collected through several other sources like observation, minutes for meetings, consultancy reports, the website of the case organisation and archival documentation based on a detailed questionnaire. In this research, interviews constituted the main data source in the case organisations. Three participants from LGA\_North and LGA\_East were interviewed using structured interviews. Structured interviews were based on an interview agenda whereby the interviewees replied to specific questions regarding EIS participation. Semi-structured interviews also took place but without the use of an interview agenda. All the structured or semi-structured interviews took place at interviewees' offices. Unstructured interviews dealt with discussions that the authors had with interviewees but without using a structured or semi-structured type of interview. The authors had unstructured interviews during lunches, coffee breaks, out of office hours. Through the unstructured interviews important data regarding the case studies was collected. All of the interviews were recorded and transcripts prepared as soon as possible after each individual interview. The interview agenda focused on collecting data from the following areas:

- **Section A:** General 'LGA' information, e.g. general questions on organisational background.
- **Section B:** General 'interviewee' information, e.g. general interviewee's role and responsibilities in the selected case organisations.
- **Section C:** 'Electronic information sharing in local government authority' information, e.g. questions mainly focusing on factors and their impact during the decision making process in the case organisations.
- **Section D:** Questions focusing on inquiring the 'importance of factors influencing electronic information sharing in local government authority'.



## 5. Case Organisations: LGA\_North and LGA\_East

Since the aim of this paper is to validate the conceptual framework (Figure 2) and the research presented herein is at an early stage, in this paper the authors only focused on testing the influential factors (as discussed in Section 3). In doing so, two case studies were undertaken with this section reporting the data from them. Both case organisations are situated in regions of England and are responsible for providing services throughout various sectors such as: social and environmental services, housing, education, health, etc. As reported earlier, structured, semi-structured and unstructured interviews were conducted in both case organisations to investigate the decision-making process for electronic information sharing. In achieving this, those factors considered to influence the decision-making process were identified, when seen from a multiple-stakeholder perspective. These perceptions were seen from those stakeholders that were involved in the electronic information sharing process. From LGA\_North, the stakeholders that were interviewed included the: Head of Information Technology (HIT), Project Manager (PM) and Information Services Manager (ISM). At LGA\_East stakeholders interviewed included: Head of Information Communication and Technologies (HICT), Senior Information Systems Developer (SISD) and Information Service Delivery Manager (ISDM).

### 5.1 Inter-Organisational Information Sharing and Integration Problems

#### 5.1.1 LGA\_North

The interview sessions highlighted that LGA\_North was faced with considerable pressures to cope with the extensive social regeneration of their Borough, while trying to meet statutory requirements for integrated service delivery targets, performance indicators, e-Government targets, legislation changes and most importantly focusing on inter-organisational information sharing. In addition, LGA\_North faced funding pressures and challenges in terms of improved resource and asset management. LGA\_North was also confronted with pressures to reduce the cost of maintaining non-integrated IT infrastructure, providing better service delivery, IT infrastructure and information integration, and support improved ways of working through collaboration, information sharing and remote/home working capabilities. The interviewees at LGA\_North mutually agreed that:

*“... their IT infrastructure was very much fragmented with different IS all over the Borough with no integration and information sharing, there was no communication and lack of transparency and silo mentality prevailed ...”.*

LGA\_North's efforts to modernise have been hindered by an IT infrastructure that has grown piecemeal over the years. LGA\_North implemented various information systems to enhance their service delivery and share information internally and with other councils. These information systems did not solve all the problems as they used a variety of hardware of different ages, running different operating systems and software applications. Thus, LGA\_North turned to integrated applications by developing manual point-to-point connections. However, such an approach has also led to a complex intertwining of applications which increases the complexity of the integration solution as the number of interconnected applications rise thus, preventing in overcoming the limitations of their IT infrastructure and information sharing issues. These problems became an obstacle for LGA\_North as they prevented it from implementing its business goals. For instance, LGA\_North could not support its goal of closer collaboration, inter-organisational information sharing and coordination of inter-organisational business processes due to the non-integrated nature of its applications. This also held LGA\_North back from achieving cost reductions.

#### 5.1.2 LGA\_East

LGA\_East is a big Borough with several service areas. Each service area has its own IT infrastructure with numerous heterogeneous information systems that were based on a diversity of platforms, operating systems, data structures and computer languages. Most of these systems were legacy applications that still run today on mainframe environments. Since there was a lack of common IT infrastructure, and a lack of central coordination of IT, the majority of LGA\_East departments

adopted their own applications to support their business activities. These individual applications were not developed in a coordinated way but instead evolved as a result of the latest technological innovation. This led to incompatible systems with integration problems and most importantly no level of sharing of information internally as well as externally. LGA\_East has attempted to overcome this problem by integrating their systems. For example, LGA\_East implemented ERP systems to overcome their integration problems and automate their business processes. Although ERP systems partially addressed the problems of inter-organisational information sharing and integration, nevertheless, they simply provide some degree of solution for the integration problems. This is because ERP systems were not designed to integrate disparate systems but rather to replace them to achieve integration. The need for an integrated and flexible IT infrastructure has been necessitated with the existing infrastructure causing numerous problems. The interviewees at LGA\_East illustrated that their IT infrastructure has been underdeveloped and not integrated and thus, several limitations existed, e.g. the interviewees mutually agreed that:

*“... IT infrastructure was constructed in a departmental way. Each of the major service areas within this borough had their own IT infrastructure ... and this led to lack of information sharing and information integration”.*

## 5.2 Electronic Information Sharing Process

### 5.2.1 LGA\_North

The limitations in the IT infrastructure led LGA\_North to take a decision to significantly advance in electronic information sharing and service delivery by adopting integration solution (e.g. making use of enterprise application integration technologies) to develop an integrated IT infrastructure. Project manager reported that:

*“... the reasons for adopting integration solution was reduction in duplication of data and cost of implementing an integrated IT infrastructure and improved information sharing, improvements in business process reengineering, savings and efficiency, streamlining processes, accuracy of data output and up-to-date information ...”.*

LGA\_North was faced with the option of withdrawing their heterogeneous systems and procuring new systems, or finding a method of migrating to a new generation of systems, which would support integrated service delivery. Due to the rich source of information contained in them and to make development more manageable, the second option was chosen to work on an integration project (covering IT infrastructure integration, information integration and integrated information sharing). The aim of the project was to provide citizens with better services and share information within and externally with other councils. Later during the interview sessions, the interviewees were asked to highlight the importance of factors influencing inter-organisational information sharing. The level of importance as presented in Table 1 follows a scale similar to the one used by Miles and Huberman (1994) i.e. scale of less important (○), medium important (◉) and most important (●).

		LGA_North		
		HIT	PM	ISM
EF	Factors			
	Politics	●	●	◉
	Economics	●	●	●
	Legal & Legislation	◉	◉	◉
OF	Critical Mass	●	●	◉
	Managerial Capability	●	●	●
	Goals/Objectives	●	●	◉
	Networked Collaboration	●	◉	●
	Trust	●	●	◉
BPF	Financial Matters	●	●	●
	Work Process	●	●	◉
	Decision Process	●	●	○

TF	IT Capability	●	●	●
	Data Quality	●	●	●
	Data Standard	●	●	●
	Data Security	●	●	●
CF	Perceived Benefits	●	●	●
	Perceived Barriers	⊙	●	●
	Perceived Risks	○	○	⊙

**Table 1: Importance of Factors Influencing EIS at LGA\_North**

As highlighted in Table 1, the factors have varied findings and such preferences on the importance of factors by the interviewees are simply based on the interviewee's observation, understanding and involvement during different inter-organisational information sharing projects within LGA\_North.

### 5.2.2 LGA\_East

To overcome their integration problems, LGA\_East initiated a plan for integrating their CRM system with their back-office legacy applications – focusing on a pilot project. The motivation behind this project was to address the limitations of its existing systems on a shorter scale and to meet the targets set by the central government (i.e. later by working on large scale project based on the outcomes of this pilot project). The managing board made the decision for this project after discussing this issue with their project manager and other senior managers involved. The objective of this project was to demonstrate to LGA\_East and to other LGAs that investing in a long-term programme of integration between CRM systems and legacy applications was necessary. On this basis the adoption of such integration architecture within LGA\_East and other London Boroughs would deliver measurable business benefit. Later during the interview sessions, the interviewees were also asked to highlight the importance of factors influencing electronic information sharing (Table 2). The level of importance as presented in Table 2 follows a similar scale as used for testing the factors used in Table 1.

		LGA_East		
		HICT	SISD	ISDM
EF	Politics	●	●	⊙
	Economics	●	●	●
	Legal & Legislation	⊙	⊙	●
	Critical Mass	●	⊙	⊙
OF	Managerial Capability	●	●	●
	Goals/Objectives	●	●	⊙
	Networked Collaboration	●	⊙	●
	Trust	●	●	●
BPF	Financial Matters	●	●	●
	Work Process	●	⊙	⊙
BPF	Decision Process	●	⊙	○
TF	IT Capability	●	●	●
	Data Quality	●	●	●
	Data Standard	●	●	●
	Data Security	⊙	⊙	●
CF	Perceived Benefits	●	●	●
	Perceived Barriers	⊙	●	●
	Perceived Risks	●	●	●

**Table 2: Importance of Factors Influencing EIS at LGA\_East**

## 6. Discussions

Through the empirical findings presented earlier, the authors studied the area of electronic inter-organisational information sharing in LGA\_North and LGA\_East by testing the factors. No claim for generalisation is made for interpretive research of this type. It is not the intention of this paper to

offer prescriptive guidelines for EIS in LGAs, but rather to describe case organisation perspectives that allow others to relate their experiences to those reported. Hence, this paper offers a broader understanding of the phenomenon of EIS in LGAs. Therefore, what we learnt from the case studies conducted is a result of the description provided and do not seek to be prescriptive. It is clear from responses provided by the interviewees that most of the factors have influenced electronic information sharing in LGA\_North and LGA\_East. As reported earlier, this paper is a conceptual paper and the authors intended to validate their conceptual framework and get feedback from the case organisations regarding the acceptability of the conceptual framework presented. In doing so, the results, in the form of importance of factors (Tables 1 and 2), illustrate that the conceptual framework is well accepted within the two case organisations. Moreover, the data collected from the two case organisations was confirmed to be of relatively similar significance with marginal differences – thus increasing the validity of the conceptual framework. Relevant strategies and organisational-wide policies play the primary role in making electronic information sharing a success. The importance of factors presented in this paper provides a direction for consideration of the evaluation of electronic information sharing strategies towards their operational practices. Moreover, the case studies of LGA\_North and LGA\_East provide an illustrative reference for such evaluation. Therefore, the analysis presented in this paper would be beneficial for evaluating any other LGA electronic information sharing practices while also investigating its influential factors.

## 7. Conclusion, Limitations and Future Research

The combination of theoretical discussions, analysis of the literature and empirical research discussed earlier represents the start of research on EIS participation in LGAs especially in the U.K. Participating in inter-organisational electronic information sharing and integration is a challenging issue in local government authorities as it requires understanding of LGA business processes and reengineering the organisational structures in some cases. LGAs have recognised that they can gain significant advantages by sharing and integrating their information electronically. As discussed in Section 3, EIS phenomena should be seen as a socio-technical issue in which a range of environmental, organisational and technological factors would affect the outcome. Therefore, this paper attempts to identify and analyse the factors which influence participation in EIS projects by suggesting a conceptual framework. Empirical data for this study were collected through various sources of data such as structured and semi-structured interviews, formal documents and observations from the case organisations in order to validate the factors (Figure 2) influencing the participation in EIS within LGAs. As depicted in Tables 1 and 2, most of the factors were validated throughout the case studies, thus, supporting the authors' proposed conceptual framework. However, the result of this research cannot be generalised and should be developed further. One reason of this limitation is because of the organisational structure of LGAs in the UK. The theoretical and empirical data collected are confined to the limited context of LGAs in the UK. There are five different types of local authorities in the UK which are divided into single-tier and two-tier authorities with differences in structure, nature, size, etc. hence, we cannot be assured that the interviewed authorities are entirely representative of other LGAs. Accordingly, it is recommended to conduct a large-scale survey regarding EIS participation in local government authorities in order to be able to prioritise the influential factors and provide a guideline to the authorities to improve this initiative.

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