Exploring the Application of Web 2.0 Technologies in the context of e-Government

A thesis submitted for the degree of Doctor of Philosophy

by

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Abstract

Electronic government (e-Government) in terms of public service delivery and administration has endured signification transformation over the last decade. More recently, modern second generation web technologies (Web 2.0) have started to be used to deliver e-Government. However, this in turn has brought about additional challenges. By its nature, Web 2.0 is more interactive than the traditional model of information provision or creation of digital services and as such opens up a new set of benefits, costs and risks to those who make use of it as part of their e-Government approach. In the main, the usage of Web 2.0 is in its infancy within e-Government and this creates a need for research into exploring the application of Web 2.0 technologies in e-Government and to provide practical advice to practitioners. This research draws on the existing literature to present a novel conceptual model that could be used to guide implementation and evaluation of Web 2.0. The conceptual model draws the existing literature into the traditional information systems (IS) evaluation model (benefits, costs and risks) specifically in terms appropriate to Web 2.0. In turn that evaluation is set in the context of the impact on the organisation in terms of organisational, technological and social consequences. This conceptual model was tested in a United Kingdom local government authority (LGA) that had recently started to make use of Web 2.0 in terms of service delivery and for internal work purposes by its employees. The result was a qualitative enquiry making use of interviews and documentary evidence to explore the validity of the conceptual model as a tool to assist decision making in this field. The findings elicited from the in-depth case study offer an insight into IS evaluation criteria and impact factors of Web 2.0 from both a practical setting and an internal organisational perspective. An interesting finding of this study was the contrast between the agreement on the need for evaluation of Web 2.0 tools and how to carry that out, and the fact that this had not been formally carried out by the case study with respect to its early Web 2.0 projects. This study concludes that a combined analysis of the evaluation and impact factors rather than a singular approach would better assist the decision making process that leads to effective application of Web 2.0 technologies.

Keywords: e-Government, Web 2.0, Information Systems Evaluation, Impact, Local Government Authorities (LGAs).

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Declarations

I declare that, to the best of my knowledge, no portion of the work referred to in the thesis has been submitted in support of an application for another degree, or qualification to any other university, or institute of learning.

The thesis conforms to British Standard BS 4821: 1990, the 'British Standard Recommendations for the Presentation of Thesis and Dissertations', and follows the Harvard referencing system.

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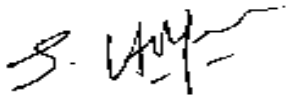

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Chapter 1

Introduction

1. Introduction

1.1 The use of Information and Communications Technology by Governments

Governments worldwide are striving to deliver more efficient and effective public services in order to meet the increasing demands and expectations of citizens whilst overcoming the major hurdle of reduced public budgets (Osimo, 2008; Ferro et al., 2013). This also applies to transnational bodies such as the European Union where high standards in public services are considered to be a key driver in the European policy for realising social cohesion, inclusion and better quality of life for its citizens (Huijboom et al., 2009). Information and communications technology (ICT) in this context is considered to be instrumental for the improvement and innovation of public services (Zissis and Lekkas, 2011). Furthermore, the rise of Internet and the World Wide Web (Web) in the 1990s enabled countries to redesign their government processes in order to improve the quality of its service and the political participation of citizens, companies and societal organisations (Bekkers and Homburg, 2007). The continuous developments in ICT has been one of the pivotal factors for the rise in popularity and the transformation from how government services were delivered traditionally (e.g. face-to-face meetings etc.) to electronic-government (e-Government) where government services are delivered using digital technologies such as the Web (Tat-Kei Ho, 2002). Hence, ICT systems are now at the heart of government processes where efforts are still being made to ensure they continue to improve the delivery of government services. In addition to this, citizen-demand and new public management initiatives, have also contributed to the advent of e-Government (Irani et al., 2005).

1.2 The Evolution of the Web and the Rise of Web 2.0

In the last few decades, Internet technologies such as the Web, email and semantic search engines have provided unparalleled opportunities and worldwide connectivity for individuals and organisations. The Web in particular has become almost an iconic cultural reference that is ubiquitous and familiar to almost everyone. According to recent internet usage statistics, the number of internet users doubled to more than two billion users between the years 2005 and 2013 (The World Bank, 2013). The Web in particular, has seen a recent explosive growth

in usage with more than a billion users (Anderson, 2007) and has also been leading the way in the shift away from closed proprietary systems such as paid software's (e.g. Microsoft Office applications, etc.) (Dunn and Varano, 1999). The Web has evolved rapidly from the time of its inception in the early 1990s and has since transformed from the traditional (Web 1.0) to a second generation Web (Web 2.0). In contrast to the earlier Web, Web 2.0 is more participative, interactive and emphasises on-line collaboration and communication with users using new software services and tools (O'Reilly, 2007). According to Buigues-García and Giménez-Chornet (2012), despite these attributes being planned at the start of the Web, the main difference is due to the increase in the scale and speed of internet users, making Web 2.0 more superior. Coromode (2008), states that the substantial shift in Internet traffic has been a result of the dramatic increase in the usage of Web 2.0 sites.

While a precise definition of both these Web generations is elusive, a common consensus among researchers and practitioners is that the concept of Web 2.0 was introduced around 2003-2004, and is now an umbrella term that encompasses Web applications and Websites differently from their predecessors in the earlier years of the Internet which is now referred to as Web 1.0 (Cormode and Krishnamurthy, 2008). Web 1.0 served as a passive information resource with one-way transmission of information to the consumers (Shinn, 2008; Xiushuang et al., 2006), whereas Web 2.0 presents a social and participatory platform allowing individuals to collaborate, network and interact with each other (O'Reilly, 2007). Hence, the essential difference between the two Web generations is that in Web 1.0, only a few users acted as content generators while the majority of users were consumers of content. Web 2.0, on the other hand, allows any user to be a participant as well as a content creator, thus enabling users to exploit the large knowledge pool of information created by them (Cormode and Krishnamurthy, 2008). During the Web's infancy, knowledge of technical skills such as Hyper Text Markup Language (HTML) was required by the users in order to publish information online. Thus, restricting the number of users who were able to write as well as read information on the Web. However, now with such constraints increasingly reducing due to the availability of easier and user-friendly Web publishing tools, Web 2.0 can be thought to be a platform for creation of products and services by the people that use them (Tapscott and Williams, 2009).

The term Web 2.0 was coined by Tim O'Reilly and Dale Dougherty while investigating the differences between businesses that survived and those that did not survive the dot com

catastrophe of 2001 (O'Reilly, 2007). Following O'Reilly, Web 2.0 technologies are a simple and effective second generation of Web services that provide a social and participatory virtual platform for businesses to collaborate, network and interact with stakeholders (O'Reilly, 2007). Wienclaw (2008) argues that even though the term Web 2.0 implies that it is a new form of Web (i.e. a new technological version of WWW) but in actual fact, it does not refer to a technical upgrade or incremental version. Likewise, Wienclaw asserts that Web 2.0 is not a new technology but is the creative use and synthesis of existing technologies for use in new ways (*ibid*). In the past few years, there has been a rapid development and wide adoption of Web 2.0 technologies where new applications emerge on a daily basis, creating fresh choices for the Web users. According to Constantinides and Fountain (2007), the rapid development of these applications is because the applications are increasingly being built on open-source frameworks rather than proprietary platforms. As a result, this has also facilitated the applications to be built with new forms of functionality allowing the "democratisation" of technology. Chong and Xie (2011) discuss that applications such as social networking sites have already "matured" to the "age-neutral" stage where Internet users, young or old, use social networking sites in their everyday lives.

To summarise, the emergence of Web 2.0 is a result of following various combinations:

- **Accessibility to technology:** an increasing number of people around the globe having access to the internet and the rapid take up of mobile devices such as smart phones, laptops and tablets outnumbering personal desktop computers (Levy, 2009). Furthermore, the United Nations (2011) declaration of Internet access as a fundamental human right and disconnecting people from it being against international law should now mean that there is even little restriction for people to gain access to Internet.

- **Technological advancements:** this has been a key enabler for the development of Web 2.0 has been to include better graphical user interfaces (GUI) and a more interactive platform for users in contrast to Web 1.0. Although there has been no new and revolutionary techniques that make Web 2.0 applications or technologies different, the development of technologies and programming languages such as AJAX (Asynchronous JavaScript and XML) and Application Programming Interface (API)

is considered a major technology for Web 2.0 applications such as Facebook, YouTube and Google Maps (Kim et al., 2009)

- **Marketing of technology:** the attempt to build a positive opinion towards the Web after the dot com bubble burst, at fall 2001 by the software industry (O'Reilly, 2007; Constantinides and Fountain, 2007).

This supports an argument that the upsurge of Web 2.0 technologies has not been mainly due to one significant change in internet technologies but due to the combination of various factors.

1.3 Types of Web 2.0 Technologies

The traditional notion of a single static website (Web 1.0) as the sole provider of information is being challenged by increasing trends towards social collaborative networks. Web 2.0 tools such as social networking sites have become the mainstream activity for internet users of all ages. According to recent figures almost one in seven people worldwide use social networking sites at least once a month and is predicted that by 2017 the global social network audience will be at least 2.3 billion (Gaudin, 2013). These numbers are only continuing to rise and highlight the rapid adoption and the significance people and organisations place on these applications.

There are several types of Web 2.0 technologies or popular applications that are well known and in some aspects define the practical aspect of the principles described above. In this regard, Table 1.1 presents some of the notable category types and examples of Web 2.0 technologies.

Types of Web 2.0 Technologies	Description of Web 2.0 Technologies	Web 2.0 Technology Example(s)	Reference(s)
Blogs	A blog is a regularly updated website containing entries, a bit like a diary. Posts are labelled with the time, date and name of the poster or "blogger".	▪ Blogger ▪ Tumblr	(Juch and Stobbe, 2005)
Collaboration Workspaces	An online collaborative platform where users interact in an inter-connected environment which they can share information and communicate with each other to transform into a virtual shared workspace.	▪ Yammer ▪ Huddle	(Noonan, 2008)
Cloud Computing – Software as Service (SaaS)	A way of delivering software applications over the internet-as a service instead of installing and maintaining software on personal computers. Thus, freeing the user from complex software and hardware management.	▪ Google Apps for Business ▪ Zoho ▪ Salesforce ▪ Stoneware	(Kulkarni et al., 2011)
Mashup	A mashup is an aggregation of content that uses and combines data or functionality from two or more sources to create a new service.	▪ Google Maps	(Cormode and Krishnamurthy, 2008)
Microblogs	A microblog is a web diary ("web log") in which posts are made and appear in reverse chronological order. Posts are limited to a small number of characters. Real-time stream of posts are an important element.	▪ Twitter ▪ Blauk	(Fischer and Reuber, 2011)
Online Picture Sharing	An online platform for users to upload and share pictures with other Web users	▪ Flickr	(Constantinides and Fountain, 2007)
Online Video Sharing	An online platform for users to upload and share videos with other Web users	▪ Youtube	(Eberl et al., 2009)
RSS (Really Simple Syndication)	RSS feeds are web feeds in a standardised format used to publish frequently updated works such as blog entries, news headlines, etc. RSS feeds benefit publishers by letting them syndicate content automatically.	▪ BBC News Feeds	(Constantinides and Fountain, 2007)
Social Bookmarking	A platform where Web users can organise, store and manage, search and share bookmarks online.	▪ Delicious	(Kaplan and Haenlein, 2010)
Social Gaming	Online gaming where users play games as a way of social interaction as opposed to playing games in solitude.	▪ Doof ▪ Pogo	(Eberl et al., 2009)
Social Networking Sites	An online service, platform or site through which users can create their own "profile page" and share their similar interests with other Web users and to connect with their friends.	▪ Facebook ▪ Google+ ▪ LinkedIn	(Kaplan and Haenlein, 2010)
Virtual Learning Environments (VLE)	Web-based learning platforms providing a collection of tools such as those for assessment, communication, uploading of content, questionnaires, etc. This allows distance learning for users.	▪ Blackboard ▪ Moodle	(Hauger and Kock, 2007)
Virtual Worlds	A computer-based simulated environment which forms an online community where users interact with each other.	▪ Second Life	(Cagnina and Poian, 2009)
Wikis	A structured website (i.e. collection of pages sharing the same structure using templates) developed collaboratively by a community of users, allowing the creation and editing of content by any number of users	▪ Wikipedia	(Bughin, 2007)

Table 1.1: Types of Web 2.0 Technologies

Even though the Web 2.0 technologies and examples identified above are not an exhaustive list, the table does present the most popular tools which are commonly utilised and provide an overview of the existing various types of Web 2.0 technologies. Despite the popularity, not all internet applications on the Web are "2.0" and often categorising Web applications as Web 2.0 technologies is not an easy task as an application may comply with two or more principles and may not comply with others (Cormode and Krishnamurthy, 2008). Moreover, to add to the existing complication, Anttirokio (2010) highlights that many recent trends in technological development such as location-based services (LBS), radio frequency identification (RFID) and open source software (OSS) have also been attached to Web 2.0. The elusiveness of Web 2.0 concept is further increased by the fact that there are already discussions of Web 3.0, 4.0, 5.0 and so on due to the introduction of systemic intelligence into interactive Web and information systems (Kambil, 2008). This clearly makes categorising Web applications as "2.0" a challenge; however an increasing number of Web 2.0 principles are slowly being integrated as components of internet solutions (Levy, 2009).

In any case, although there are several disagreements on the definition and the notion of Web 2.0, Tredinnick (2006) states that it is certain that Web 2.0 is changing the way in which Web users interact with information resources as it is now more powerful, engaging and facilitates greater user interactive experience in contrast to its predecessor, Web 1.0.

1.4 e-Government meets Web 2.0

The "reinventing government" movement, which started in the late 1980s, was an effort to reorient the focus of government operations from an inward-looking approach to outward-looking one by emphasizing the concerns and needs of end users (Tat-Kei Ho, 2002). e-Government generally refers to the use of ICT, especially Web-based internet applications by the government to provide and enhance the access of governmental information and services to citizens, employees, business organisations and other government agencies (Irani et al., 2005; Freeman and Loo, 2009). However, e-Government does not merely have to be the application of new technologies to modernise public administration but it also has the potential in building of citizen-centric and cooperative modern governance (Leitner, 2003). Public administrations now see e-Government as a key enabler to transform the public sector by significantly changing their relationships with public bodies; government to citizen (G2C),

government to employee (G2E), government to business (G2B), and government to government (G2G). Thus, adoption of e-Government allows gains in efficiency and effectiveness of the services in the process (Zhao, 2010; Lörincz et al., 2010; Leitner, 2003).

e-Government is being adopted across the globe as various states seek to extract benefits in terms of service delivery. However, implementation has been slow and a common concern is the readiness of bureaucracies to adapt and citizens to adopt e-Government (Schuppan, 2009; Kassen, 2010; Gauld et al., 2010). Progress and implementation of e-Government has been of interest to international agencies such as the UN and private consulting firms (United Nations, 2010; Smith, 2010; Lörincz et al., 2010; Capgemini, 2009). The UK Government has placed significant emphasis on e-Government as a means to deliver services (Lörincz et al., 2010) with this commitment being matched by the commitment of both financial and organisational resources (Margetts, 2006; Irani et al., 2007; Kamal et al., 2011). The intention is that by using web based interaction, tasks can be automated and the scope for processing errors reduced as well as allowing for savings in terms of the cost of delivery (Gilbert et al., 2004).

However, as Irani et al. (2006) argue, e-Government is not just about cost reduction but also about service improvement and expansion. However, despite the expected benefits there remains a number of concerns about the adoption and implementation of e-Government. One issue is that the complexity of public administration means that it is very hard to convert existing systems to an ICT platform. This means managing such projects are a significant challenge to the public sector (Irani et al., 2009; Weerakkody et al., 2007).

Equally an early concern was of citizen take up, but the expansion of Web 2.0 technologies by internet users offers the prospect that this barrier to adoption has been removed (Osimo, 2008; Ferro and Molinari, 2010). Likewise from a technological point of view, Web 2.0 tools are now widely adopted in a range of organisations (Tucker, 2011) and there are a variety of applications that can be adopted by the public sector (Kuzma, 2010a). In effect, Web 2.0 technologies offer the means to improve both the internal operations of a government organisation and take up of e-Government initiatives (Osimo, 2008).

1.5 Research rationale

Governments have followed private sector organisations in implementing and trying out Web 2.0 technologies and now they are focusing on investments in these technologies as part of their Information Technology (IT) Strategy (Dadashzadeh, 2010). However, government agencies may not be able to afford the use of the same trial and error approach adopted by the commercial organisations and have an obligation to implement new technologies responsibly in a way that does not compromise privacy and security (Kinder, 2010). In the UK, there already remains a lack of public trust due to the government's failures of large-scale IT projects which have repeatedly failed to deliver their technical promise, service objectives or project savings (Kinder, 2010). For example, the failure of London Ambulance Service Computer Aided Despatch system in 1992, UK benefit cards, Identification (ID) Cards. In addition, there is also added pressure on government officials by their stakeholders on the accountability of public budget spent on IT (*ibid*). Hence, in order to meet the increasing demands and expectations of their stakeholders, government agencies now need to deliver more efficient and effective public services whilst overcoming the burden of reduced public budgets.

The review of the existing literature highlights that the use of Web 2.0 technologies in the private sector have been studied in detail. However, research into its application in e-Government especially within local government has many gaps and still remains a developing area. This has been supported and highlighted in various studies (Bertot et al., 2012; Adams and Smith, 2010; Osimo, 2008). Thus, the value of this research study lays in the fact that the development of knowledge of factors that encumber or encourage adoption of Web 2.0 technologies in public services, will enable governments to implement Web 2.0 technologies that suit the needs and wants of their stakeholders. Moreover, the proposed development of a conceptual model in this research may be used as a decision-making tool and thus, support management when taking decisions regarding the adoption of Web 2.0 technologies from an internal organisational perspective (i.e. provider's perspective) in the context of e-Government.

On the whole, the evaluation of Web 2.0 technologies for the use by local government authorities (LGAs) can help government officials understand the implications of these tools in the context of e-Government. It may also assist ICT managers formulate a realistic strategy

for the adoption of these technologies within government organisations. Furthermore, it may help government officials to understand the real value that these tools have to offer to the public services to engage with their stakeholders. In effect, using Web 2.0 technologies can lead to a stronger relationship between the government organisations and their stakeholders. A better relationship means that they can sense and respond to what is needed and wanted by their stakeholders effectively. Understanding the real value of Web 2.0 applications may also help change government officials' negative perceptions associated with tools such as social networking sites being a distraction to employees (Sander, 2008). Overall, this study will be of significant relevance to public sector and information systems (IS) researchers, policy makers, local government authorities and practitioners when implementing Web 2.0 technologies to for use by employees and enhance e-Government services.

1.6 Research aim and objectives

1.6.1 Aim of the research:

There remains a plethora of Web 2 .0 technologies in use today, with no doubt many more to emerge in the future. Many scholars and practitioners clearly suggest that the public sector organisations can leverage Web 2.0 tools to enhance e-Government services and operations of government organisations. However, the challenge for government agencies is in evaluating the use of existing Web 2.0 applications and exploring the extent of their impact. There are an increasing number of studies emerging on the implications of Web 2.0 on various public sector domains ranging from politics to health (Anfinnsen et al., 2011; Wattal et al., 2010; Hughes et al., 2009; Ajjan and Hartshorne, 2008). However, there is a dearth of research studies focusing on Web 2.0 and its application in the context of e-Government especially at a local government level. Also, the very few studies that exist in this domain lack theoretical underpinning and the backing of empirical research. The main objective of this research is to create a contribution to fill the abovementioned void. Therefore, the aim of this thesis is as follows:

"To identify the evaluation and impact criteria associated with Web 2.0 application in UK local government. In doing so, resulting in the development of a descriptive model which

will facilitate the local government authorities in their decision-making process for Web 2.0 adoption in the context of e-Government"

The research project aims to contribute to the emerging field, specifically by focussing on the following research questions:

- How could local government authorities approach an effective application of Web 2.0 technologies in the context of e-Government?
- What is the evaluation criteria that a local government authority can use to assess Web 2.0 technologies for internal work purposes prior to its implementation?
- What are the impacts of Web 2.0 technologies application by a local government authority for internal work purposes?

1.6.2 Objectives of the research:

Objective 1: To critically review the published literature in the area of information systems evaluation with a particular focus on e-Government domain. Then describe the evaluation and impacts factors of Web 2.0 from an organisational perspective, thus establishing the basis for the research.

Objective 2: To translate the research need into a conceptual model and conjectures.

Objective 3: To identify evaluation (i.e. benefits, costs and risk) and impact (i.e. organisational, technological and social) factors associated with Web 2.0 decision making by following an appropriate and a rigorous research methodology.

Objective 4: To generalise (within the confines of the study) the empirical results to the conjectures. Then, extrapolate data that translates into a revised Web 2.0 Application model.

Objective 5: Offer conclusions and recommend further work.

1.7 Thesis Outline

This thesis is organised into seven key chapters along with the references and appendices. It follows the structure suggested by Phillips and Pugh (2005) and is broken down into four key elements: (1) background theory, (2) focal theory, (3) data theory and (4) novel contribution.

The background theory sets out the broad research domain (chapter 1), evaluates the existing research and identifies gaps and areas of concern (chapter 2). This is then used to develop the second element of the thesis (focal theory) that creates a conceptual model which was tested in the course of the research (chapter 3). The data theory addresses issues such as the most appropriate epistemological stance to adopt, the development of a suitable research methodology and the constraints on the chosen research strategy. These issues are discussed in chapter 4 of this thesis. Chapter 5 then sets out the data derived from the chosen case study and provides the empirical core to the thesis. The fourth element (novel contribution) is concerned with linking the findings of the thesis to the wider field so as to set out the contribution of this research (chapter). Chapter 7 summarises the research presented in this thesis with a brief outline of contributions and discusses the potential areas for further research. Overall, as highlighted these four elements are spread over the seven chapters which are briefly outlined below.

(1) Background Theory

Chapter 1: Introduction

This chapter provides an overview of the research and considers key themes connected with e-Government and Web 2.0. The focus of the study is on the need to integrate the IS in a more flexible and maintainable way and improve the decision making process in LGAs. This chapter concludes with an outline of the structure of the whole thesis.

Chapter 2: Literature review – Critical Analysis of the Research Area

This chapter evaluates the existing research on e-Government and Web 2.0. Initially, this chapter critically reviews e-Government characteristics and its developments. It then explores the use of Web 2.0 technologies in the government context. Finally it outlines the literature findings of the benefits, costs and risks of Web 2.0 and the organisational, technological and

social impact of Web 2.0 use in e-Government respectively. This allows identification of both a conceptual model that can be tested as well as gaps in the existing literature.

(2) Focal Theory

Chapter 3: Developing a Conceptual model – Web 2.0 Application in e-Government

Chapter 3 draws on the themes in the literature review and proposes a conceptual model for Web 2.0 application in e-Government from an organisational perspective (figure 3.2). The goal of this model is twofold. It is designed to create a model and set of research conjectures that can be tested using the data gathered in the course of this research. In addition, it represents the first step towards generating a theoretical construct that can be used by practitioners considering the adoption of Web 2.0 approaches.

Chapters 2 and 3 set out the background of this research and were used to construct a conceptual model for Web 2.0 adoption in LGAs. Chapter 3 is important as it has provided a set of testable conjectures. In turn, this informed the choice of research methodology used to test the proposed conceptual model in the practical arena.

(3) Data Theory

This is split into two chapters. The first considers the appropriate research methodology and the second reports on the data gathered in the course of this research.

Chapter 4: Research Methodology – A Qualitative Case Study Approach

Chapter 4 sets out the rationale for the research design adopted. This starts with a brief review of choosing the appropriate research approach in terms of epistemological stance that meets the research aims of this thesis. It then provides an analysis of the chosen research strategy which was a qualitative in-depth case study. The problems within the various research methods are stated and the justification of the chosen research strategy and methodology is provided. Finally the research methodology is discussed in detailed and the case study protocol is reported.

Chapter 5: Case Empirical Data Analysis and Conjectures Testing

This chapter provides a description of the case study conducted in the United Kingdom (UK). The chapter starts with a background to the chosen Local Government Authority (referred to

as UKLGA) and describes and analyses the main issues including: (a) a non-IT managerial perspective of the organisation's culture and the role of ICT, (b) the authorities Web 2.0 strategy and its adoption in the organisation, (c) findings of the benefits, costs and risks evaluation of Web 2.0 (d) findings of the organisational, technological and social impact of Web 2.0 in the case organisation and finally (e) overall assessment of the application of Web 2.0 tools in the organisation.

(4) Novel Contribution

Chapter 6 – Revised Model for Web 2.0 Application in e-Government

Based on the case study empirical findings and the literature review, this chapter reviews the conceptual model proposed in chapter 3. This chapter starts by presenting the revised model. It then maps the factors of the model with the findings of the case study to the factors extrapolated from the literature. This helps (a) revising the existing factors influencing the decision making process for Web 2.0 adoption in the case organisation, (b) describing new factors extracted from the empirical findings. In doing so, this contributes to one of the aims of this thesis by offering the decision-makers and researchers a revised model for Web 2.0 application in e-Government. In addition, the revised model of application can be used to support management when taking decisions regarding Web 2.0 adoption in LGAs. Finally the contribution of this revised model is reported

Chapter 7 – Conclusions

This chapter summarises the overall research study. It first reports how this thesis has met the research aim and objectives. It then sets out the overall research findings and an evaluation of the main findings. Afterwards, the possible limitations of the research are reported. It then presents how the development of the conceptual model contributes to the overall research field by discussing the novelty of this study in terms of theoretical and practical contribution. Finally, it describes the potential areas of further research.

Chapter 2

Literature review: Critical Analysis of the Research Area

2. Literature review: Critical Analysis of the Research Area

2.1 Introduction

The continued development of ICT has seen significant changes in human interaction, the management of corporations, and governance of states (Bhuiyan, 2010). Governments around the world have placed great efforts and focused on ICT as a tool for transforming both internal operations and the external delivery of its services (Cabinet Office, 2011). The use of a broad class of technologies ranging from personal computers to mobile devices has enabled governments to offer convenient and enhanced accessibility to government services and information to citizens, businesses and governmental units (Carter and Bélanger, 2005). The internet and the developments around Web in particular has been able to provide a new generation of instruments to facilitate social networking, information sharing and collaborative work (Osimo et al., 2009). It has opened new sets of possibilities for governments, ranging from the joint production of public services in cooperation with citizens, social organisations and businesses, from the wide distribution and re-use of government information to the introduction of new forms of democratic participation. Governments around Europe are aware of these new possibilities and have actively started exploring them *(ibid).*

However, e-Government is about far more than simply introducing new technologies and involves major changes in internal organisational structures as well as the need to convince potential users that e-Government is in their interests (Irani et al., 2009; Weerakkody et al., 2007). Despite spending enormous amounts on web-based initiatives, government agencies often fail to meet users' needs online. One solution, following Baumgarten and Chui (2009), is by employing new governance models, investing in Web capabilities, and embracing user participation, agencies can raise the effectiveness of their online presence. Government agencies must therefore assess the business case and the requisite organisational and governance changes that a shift to Web 2.0 entails prior to adopting these modern technologies (Dovey and Eggers, 2009). In addition, the internet itself is constantly changing as social media sites such as Facebook and Twitter gain and lose popularity. This means that

those introducing e-Government often face a moving target as to which social media platforms to make use of (Saulles, 2011).

2.2 e-Government Characteristics

The term e-Government has been open to several different interpretations and there is no universally accepted definition of e-Government in the literature (Moon, 2002; L. Elaine, 2004; Irani et al., 2006; Yildiz, 2007). The definitions generally differ according to the varying e-Government focus and are usually centred on technology, citizen, business, government, functional or a process outlook (Seifert and Petersen, 2002; Weerakkody and Dhillon, 2008; Weerakkody et al., 2011). Moreover, the terms digital government, e-Government, and e-Governance have become synonymous with the use of ICT in government agencies (Gottschalk, 2009). Nevertheless, the term that eventually gained wide acceptance is "e-Government" (Chan et al., 2008). Therefore, in order to adequately highlight the variety of e-Government uses, some definitions from the literature are presented below.

As early as 1990's, Milward and Snyder (1996 p.262), referred to e-Government as the use of technology to connect citizen to government services, thereby eliminating or reducing the need to interact with government employees to gain access to services. Similarly, Silcock (2001 p.88) defines e-Government as the use of technology to enhance the access to and delivery of government services to benefit citizens, businesses and employees. The term e-Government is discussed in more detail by Fang (2002 p.1), as "a way for governments to use the most innovative ICT tools, particularly web-based Internet applications, to provide citizens and businesses with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in democratic institutions and processes". For Ciborra (2005 p.261), e-Government is ICT applied to collation of three kind of processes. The first process according to the author is "the relationship (transaction) between the administration and the citizen (customer) and the related re-engineering of the activities internal to the administration". The second process is "the way in which boundaries between the state and market are redrawn, by the creation of an electronic, minimal state, more transparent, agile and accountable". Finally, the third level process is discussed as to deal with the purpose of aid policies to help introduce e-

Government into developing countries. The key element of all these definitions however, is the use of ICT to enhance the public sector by transforming its internal and external processes and its interrelationship with stakeholders.

Nevertheless, at times the narrow approach to defining and conceptualising e-Government limits consideration of the range of opportunities it offers. As highlighted by Ndou (2004), one of the main reasons why e-Government initiatives fail is related to narrow definitions and poor understanding of the e-Government concept, processes and functions. e-Government in general can be distinguished between the objectives for internally focused processes (operations) and objectives for externally focussed services which is to fulfil public needs (Zhao, 2010). There are various dimensions that reflect the functions of government itself within the broad definition of e-Government (Saxena, 2005). Therefore, in order to understand these functions, table 2.1 presents a taxonomy to characterize the e-Government's components. The characteristics of e-Government has been systematically categorised against three classifications; participation, services and administration, which outline the overall functions of e-Government. These have been developed as they represent the main broad strands in the e-Government literature (Saxena, 2005). Participation relates to the process by which citizens can be assisted in interacting with governance, both as a means to support the conventional electoral process, gather feedback on policy developments and to enable new ideas such as on-line petitions (Sæbø et al., 2011). Service delivery was probably the most common early form of e-Government, in its basic form allowing citizens to carry out some interactions (such as application for services or to pay bills) online rather than visit a government office (Zhao, 2010). Administration is primarily about the use of ICT for internal bureaucratic processes, in effect streamlining the operation of public administration (Schuppan, 2009). As with all such categorisations, there is some overlap, but this typology indicates some of the main differences in the wider field of e-Government.

Classification	e-Government Characteristics	Brief Description	References
Participation	e-Participation	▪ The use of ICTs for supporting communication and interaction of citizens with other individuals, communities and public authorities in order to facilitate transparent policy-making and efficient decision-making processes.	(Bailey and Ngwenyama, 2011)
	e-Democracy	▪ The term refers to the use of ICTs to enhance the governance process and democratic activities which enables the governments to increase and improve citizen engagement in democratic processes (e.g. voting, polling, discussion, etc.) and thereby enabling citizens to engage in the government's policy making process.	(Şendağ, 2010)
	e-Voting	▪ This refers to the government using ICT to provide the public to express their view by casting a vote electronically on civil affairs (e.g. election of representatives, legislations etc.) either at a terminal in a polling station or remotely (i.e. home, workplace etc.).	(Zissis and Lekkas, 2011)
	e-Rulemaking	▪ This terminology refers to the application of ICT to transform traditional rulemaking process whereby allowing citizens to access electronic filing systems in order to see and comment on the rules proposed by public agencies, the supporting documentation, and the comments of other citizens.	(Schlosberg et al., 2007)
	e-Politics	▪ The use of internet technologies to improve the effectiveness of political decision-making by making citizens aware of the decision-making procedures and facilitating their participation in this process.	(Watson and Mundy, 2001)
	e-Poll	▪ E-polling services are the use of ICT to obtain public opinions on policy agenda and administrative decisions.	(Kim, 2008)
	e-Petitions	▪ The use of Web by governments to allow citizens to submit electronic petitions by adding their name and address online.	(Anderson, 2007)
Services	e-Services	▪ This refers to the electronic delivery of government information, programmes, services and strategies where e-services emphasise an innovative involvement of the citizen as a customer	(Saxena, 2005)
	e-Police	▪ Primarily, the use of Web by the Police forces to provide basic service information and online reporting systems to public.	(Holliday and Kwok, 2004)
	m-Government	▪ The term refers to the extension or supplement of e-government but the difference is the use of mobile ICTs to provide information and services to government employees, citizens, businesses and other organisations.	(Lee et al., 2006)
Administration	e-Administration	▪ This is the automation and computerization of back office tasks supporting the management and administrative functions of public agencies.	(Torres et al., 2005)
	e-Management	▪ In the public services domain, the term refers to the use of ICTs to enhance the management of government by streamlining its process to improve the flow of information within government offices.	(Saxena, 2005)
	e-Governance	▪ Generally refers to the application of ICT to enhance governments' governance processes such as the online engagement of stakeholders in the process of shaping, debating and implementing public policies.	(Saxena, 2005; Torres et al., 2006)
	e-Procurement	▪ Leveraging ICT to transform the methods of government's purchasing goods and services and engaging with their suppliers.	(Hardy and Williams, 2008)
	e-Authentication	▪ Within the e-government context, the term refers to a single-sign-on approach that allows a user to interact with multiple e-government systems.	(Holden and Millett, 2005)

Table 2.1: e-Government Characteristics

The characteristics presented above can be used to draw parallels and differences between them. Despite not being an extensive list, they do highlight some of the most notable elements of e-Government. In particular, although all the dimensions play a significant role in e-Government, three fundamental dimensions help highlight the overall functions of the e-Government: connecting the government and the people (e-Service), building and improving external interactions (e-Participation) and improving internal work process of the government (e-Administration). Hence, it is now important to explore these key dimensions of e-Government in more detail. As highlighted above, the categorisation has been developed by the researcher as a means to classify the wide range of functions that are captured under the rubric of e-Government and figure 2.1 graphically illustrates these functions.

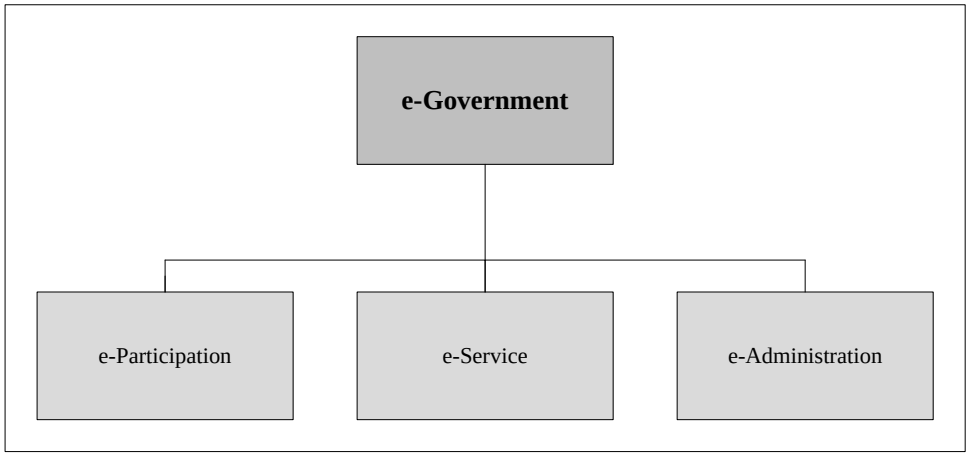

Figure 2.1: Fundamental functions of e-Government

2.2.1 Exploring the e-Participation dimension of e-Government

The development of enhanced public participation lies at the heart of many governments' modernisation agendas (Sæbø et al., 2011). The use of ICT has long been anticipated to be a significant tool for greater and more effective political participation (Komito, 2005). As e-Government initiatives advance, there is increasing focus among governments on the access, usage and electronic participation to support political processes (Bailey and Ngwenyama, 2011). Therefore, the notion of electronic participation (e-Participation) among governments is often advanced as a means to revive citizen participation (Salmat et al., 2011). e-Participation is the use of ICT to extend political participation by enabling citizens to communicate and interact with all stakeholders such as elected representatives, societies and

public agencies and generally to connect citizens with local governance (Mossberger et al., 2013). This also facilitates transparent policy-making and efficient decision-making processes instead of just top-down initiatives of the governments (Macintosh and Whyte, 2006; Bailey and Ngwenyama, 2011). Some examples of ICT tools to enable e-Participation are electronic forums, chat technologies, electronic voting systems, group decision support systems and blogs (Sanford and Rose, 2007). The key drivers for e-Participation initiatives by governments have been mainly attributed to the growing awareness of the need to achieve more democratic governance along with a widespread public interest in the potential of ICT to empower citizens (Coleman and Gøtze, 2001; Hart and Teeter, 2003; Sanford and Rose, 2007). These e-Participation initiatives serves varied objectives such as providing information to public, using publics' input in decision making, generating support among public and inquiring for public needs (Salmat et al., 2011). Further, it also enables a two-way communication between governments and citizens which can help educate citizens on the rationale and complexity of policy-making, legitimize government decisions and provide opportunities for mutual learning (Coleman and Gøtze, 2001).

According to Phang and Kankanhalli (2008), e-Participation offers a number of benefits over offline channels of participation such as public hearings or newspaper forums. The use of internet for e-Participation can overcome the offline difficulties of physical constraints of time and space for citizens which can in turn enhance accessibility and increase their chances of engagement. Hacker and Van Dijk (2000), state that successful e-Participation implementation can help establish more transparency in government by allowing citizens to use new channels of influence which reduce barriers to public participation in policy making. Further, e-Participation could be an effective tool for collecting or disseminating information and knowledge from citizen, experts, and stakeholders (Salmat et al., 2011). It can also extend the appeal of political participation, particularly with hard to reach groups such as people from ethnic minorities and younger people who are less willing to participate in traditional forms of consultation such as public meetings (Gibson et al., 2005; Macintosh et al., 2003).

While e-Participation can help to enhance transparency, participatory decision making and accountability, the governments still need to overcome challenges to implement and facilitate it. In particular, such initiatives emphasise the importance of any digital divide in limiting the participation of all citizens (Barzilai-Nahon and Scholl, 2007; Odendaal, 2006). One of the

main issues to the development of e-Participation is the inclusion of low-income, older and non-tech savvy citizens (Bailey and Ngwenyama, 2011). Further, there is also the challenge of accessibility, usage and low literacy levels within different groups of society which must also be addressed (Conroy and Evans-Cowley, 2006; Loukis et al., 2009; Scholl et al., 2009). Andersen (2007) argues that even though e-Participation might lead to better governance and cost reduction of public services over time, public organisations need to be aware of the administrative costs in transferring e-Participation practices and techniques. This is mainly because of the uncertainties, the externalities and the challenges in measuring and capitalizing on e-Participation. There is also the issue of the choice and the use of e-Participation tools amidst the large number and variety of available tools, making the decision about platform and services more difficult for managers in public organisations (Andersen et al., 2007). Therefore, it is vital to use appropriate ICT tools for different e-Participation objectives at various phases of the policymaking process to increase the effectiveness of e-Participation initiatives (Phang and Kankanhalli, 2008). These are all some of the factors that need to be scrutinized to ensure successful e-Participation initiatives.

Overall, e-Participation is a key dimension of e-Government and with the aid of ICT it has the potential to help increase citizens' input to government. Consequently, ensuring a larger number of people to participate in the movement of e-Government where the communication between government and its stakeholders can be freely accessible.

2.2.2 Exploring the e-Service dimension of e-Government

The provision of electronic services (e-Service) to citizens plays an integral role in the application of e-Government (Zhao, 2010). e-Service, a key dimension of e-Government, refers to the electronic delivery of government information, programmes and services by the government to its stakeholders (Saxena, 2005). According to Zhao (2010), one of and the key purposes of e-Government is to provide efficient, high-quality, standardised, transparent and all-inclusive public services to citizens. Government agencies at all levels, now provide a variety of online services to their stakeholders of which majority are the citizens (Johnson, 2007). For example, some of the services provided by governments to citizens (G2C) compromises of motor vehicle agency services, personal income tax filing, home and community services and employment related services. In addition, there are also services

offered by government to businesses (G2B) which include new business registrations, license verification and tax payments. It is certain that the array of e-services offered by governments is growing with no doubt many more to follow in the future.

However, in an ever changing and demanding political and societal environment, the provision of digital services is often challenging (Apostolou et al., 2011). Hence, there is a need for governments to constantly enhance these services in order to reflect the political and societal change. The continuing changes of e-Government services as highlighted by Apostolou (2011) may be instigated by the changing citizens' needs, varying legislations, new outsourcing opportunities, provision of different service models and the rapid evolution of new technologies. Since the governments provide an extremely diverse set of services, this also proves challenging as it requires prioritization in e-Service development for effective budget allocation where costly traditional service channels cannot be eliminated still, because of the non-adopters of online services (Lee and Rao, 2009). Furthermore, even with the rapid digitisation of major public services, there is also the issue of the gaps in the adoption of these services by the citizens (Horst et al., 2007).The lower levels of user acceptance of the e-Services are recognized as a prevalent problem for government policy makers, government agencies and e-Government services providers (Hung et al., 2006; Lee et al., 2011). This has resulted in many studies which have examined to test citizens' adoption of e-Government services (Doong et al., 2010). According to Shalini (2009), the take-up of online services depends upon both rational and emotional arguments. The rational motives include apprehensions over the time and money spent in comparison to traditional services, and trust in terms of privacy, data protection and information security. On the other hand, emotional arguments vary among different groups of users, where for example senior citizens may not use online services as they may prefer to talk to civil servants and have a face to face meeting. Moreover, a study by Carter and Belanger (2005) highlighted that compatibility; trustworthiness and perceived ease of use of e-Government services are all positively correlated towards citizens' intention to use the online services. In addition, there are also concerns over the e-Services offered by government agencies which have fallen short of being citizen-centric due to the lack of representative user involvement in the design process (van Velsen et al., 2009).

Nevertheless, the issues that reflect on the provision of e-Services and the low level usage of these services should not discourage the policy makers and government agencies but inspire

them to show their firm commitment into investigating the issues. Hence, there is now a need for governments to offer more value in terms of online benefits to persuade citizens to forgo the same amount of offline benefits. It is also important for governments to constantly evaluate the online public services offered to citizens in order to understand the development situation of a citizen-centric e-Government (Zhao, 2010).

2.2.3 Exploring the e-Administration dimension of e-Government

An efficient and effective public administration is widely seen as an essential prerequisite for economic and social development (Schuppan, 2009). The exploitation of ICT extends the operational potential and reliability of modern public administration thus helping to achieve progress, development and good governance (Bhuiyan, 2011). Electronic administration (e-Administration) has therefore become a key enabler for e-Government (Saxena, 2005), and there is a growing consensus among governments worldwide to rejuvenate public administration and introduce innovations in their organizational structure, practices, and capacities (United Nations, 2008; Bhuiyan, 2011). Torres et al. (2005) refer to e-Administration as the automation and computerization of back office operations supporting the management and administrative functions of public agencies. For example, some of these operations compromise of data and information management, the flow of information between different departments and the maintenance of electronic records. According to Munoz-Canavate and Hipola (2011), reduced public budgets, the revolution of technologies and political pressure from international organisations such as the Organisation for Economic Co-operation and Development (OECD) have all been some of the important drivers for the development of e-Administration.

e-Administration offers many potential benefits to enhance the traditional back-office operations. It offers solutions for the adaptation and integration of back-office processes for the development of new means of service delivery (Torres et al., 2005). A study by Monga (2008) highlights the change in the governmental services and information to the public by using electronic means over traditional approaches which has brought about a revolution in the quality of service delivery to the citizens. This change has, in particular, resulted in improved transparency in the administrative process, simplification of procedures, saving time due to single window service provisions using the Web, improved office and record

management, and also improvement in the attitude and behaviour of civil servants. However, in some instances, fears were expressed that e-Government would allow state officials to be less responsive due to the loss of personal contact with citizens (Al-Fakhri et al., 2008; Basu, 2004). On balance, the impact has been positive and, for example, Munoz-Canavate and Hipola (2011) states that e-Administration can also provide for the introduction of tools that make it easier to fight corruption. For example, the study highlights a case where the online publication of plans for the development of a number of Spanish municipalities' reduced corruption (Muñoz-Cañavate and Hípola, 2011). However, Heeks (1998) offers several case studies in which ICT-implemented systems did not completely avoid corrupt practices by modernising public administration. An example by Heeks highlights that in a public sector railway system, the implementation of ICT system did not manage to completely eliminate corruption practices and some booking staff were still accepting bribes to provide tickets to passengers. Hence, it is clear that if public administration corruption practices are to be fought, then unethical organisation practices need to be dealt with initially.

There are also instances where using e-Administrative services for greater monetary savings. A fitting example was discussed by Muñoz-Cañavate and Hípola (2011), where the discontinuation of an official Spanish state paper bulletin would result in savings of 6.3 million euros as well as having an environmental benefit in the 3,500 tonnes of paper previously used each year. In comparison, the costs related to renovation of systems, certification of electronic signature and servers and the new system of production was less than 200,000 euros.

There are, however, challenges that arise in the transition from traditional back-office operation to automated and computerised operations. One of the main challenges that needs to be addressed is the public institution's readiness to implement new technologies. As Heeks (2001) highlights, the lack of electronic readiness (e-Readiness) contributes to the lack and potential failure of e-Government initiatives such as e-Administration. Parrado (2002) presented several elements that could be included in an e-Readiness gap analysis for governments and below is an extrapolation of some of the key elements:

- Readiness of technological infrastructure. For example, the required computing and telecommunication facilities
- Readiness of financial resources for initial investments

- Readiness of human capital in terms of employee skills to launch government on line strategies

It is therefore essential for any public organisation to evaluate these gaps before completely shifting towards e-Administration. In short, if e-Administration is to be a success in the public institutions, the emphasis should be placed on the combined use of ICT's with organisational changes so as to bringing a holistic improvement in public services, democratic processes and public policy (Muñoz-Cañavate and Hípola, 2011).

Alongside the synthesis of the fundamental dimensions of e-Government, the next section will help further sharpen the notion of e-Government by analysing the on-going global developments within this domain.

2.3 Global e-Government developments

The development of various e-Government solutions has become a trend across many countries and is now far more widespread at all government levels – national and local (Hajdin and Vrček, 2010; Huang, 2007). Several countries (e.g. United States, Canada, Holland, etc.) showed an early commitment to the potential transformative power of e-Government in enhancing the public administration and management, empowering citizen-centric services and enabling a transparent and accountable government (United Nations, 2012). On the other hand, countries (e.g. Ethiopia, Gambia, Afghanistan, etc.) that have been slow or struggle to embrace e-Government tend to remain mired in providing ordinary supply-driven services and procedures, remoteness between government and citizen, and inefficient decision-making processes (*ibid*).

e-Government is a trend that is driven both by the advances in ICT and the government services demanded by its stakeholders (Khalil, 2011). Nonetheless, governments' responses to these demands vary across nations. The international popularity of the topic of e-Government has led to various studies being conducted across countries assessing the on-going developments, the readiness and the impact of e-Government by scholars (Schuppan, 2009; Kassen, 2010; Gauld et al., 2010), international organisations such as United Nations (UN) and private consulting firms (Smith, 2010; Lörincz et al., 2010; Capgemini, 2009). The

United Nations E-Government Survey is an empirical study carried out on a regular basis by the UN Department of Economics and Social Affairs across its 192 member states that (United Nations, 2012) brought to light the on-going global developments in e-Government over the last few years (Khan et al., 2010). The study uses survey information gathered on availability of e-Government online services, telecommunication infrastructure and human capital component of the member countries as a measuring index to produce its e-Government rankings and analysis. The analysis and synthesis of various studies from the normative literature and the latest UN benchmark report have led to an overview of the general on-going global e-Government trends and the technological progresses in this domain which has been categorised by UN regions in table 2.2.

Region	E-government Trends	References
American (includes Canada and Caribbean islands)	▪ United States is leading the way forward in e-Government development closely followed by Canada. Haiti has been at the bottom of the leader board within the American region. ▪ Citizen interaction with government in US are moving beyond the website where increasing number of online adults are using platforms such as blogs, social networking sites, emails, online video or text messaging to access government information. ▪ Government agencies are now resorting to online crowdsourcing techniques to support transparent and open government initiatives. Crowdsourcing is an online, distributed problem-solving and production model especially through the use of Web 2.0 technologies	▪ (United Nations, 2012 p.20) ▪ (Smith, 2010; Bertot et al., 2010) ▪ (Schindler et al., 2010) ▪ (Brabham, 2008)
European ▪ *UK*	▪ The majority of the e-Government development worldwide has been by the European countries and UK has been the leader among the European region followed by Netherlands. At the bottom of the rankings in the region is Albania. ▪ The performance of Europe's e-Government has greatly come together in geographic terms among both its old and new Member States. Recent efforts in EU have been in activities and projects related to citizen empowerment primarily focusing on citizen participation processes. ▪ Emergence of modern ICT in the public sector is no longer a new phenomenon among the European countries. The European Commission and several member states are considering to move towards the creation of a cloud-based, common infrastructure or commonly known as cloud-computing for use by public organisations and government agencies.	▪ (United Nations, 2012 p.30) ▪ (Lörincz et al., 2010; Schindler et al., 2010) ▪ (Wlyd, 2009)
Asian (includes middle eastern countries)	▪ Republic of Korea has been at the forefront of e-Government development in the Asian region as well as globally. Singapore has been closely following Korea and Afghanistan is at the bottom of the Asian countries. ▪ The industrialised Asian countries (e.g. Republic of Korea, Japan) are now focusing to provide more environment-friendly e-Government services. Moreover, there is also developments towards facilitating green integrated government computing centre which is done by promoting the purchase of equipment that have been certified as environment-friendly and developing virtual server technology to save energy. ▪ Some governments in the southern Asian region (e.g. Bangladesh, Nepal) are still struggling to provide digital government service delivery due to various socio-economic problems, as these governments have to prioritise and concentrate on other basic problems like food and humanity, inflation etc. However, the rapid growth of cellular mobile networks in the Asian region (e.g. China, Bangladesh) is seen as a potential channel for public service delivery, especially for rural people.	▪ (United Nations, 2012 p.23) ▪ (National Information Society Agency (NIA), 2011) ▪ (Bhuiyan, 2010; Misuraca, 2009; Millard, 2010)
African	▪ Tunisia leads Africa in e-Government development followed by Mauritius, and Niger is at the bottom of the rankings. ▪ The state of development and implementation of e-Government is well underdeveloped in the sub-Saharan Africa with the exception of South Africa. Internet infrastructure is still in its infancy stage and internet connection purchasing cost is still beyond the capacity of mass citizens. ▪ In spite of the difficulties that many African countries are facing, e-Government has the potential to offer improvements in the provision of public services, financial and tax management systems and public participation and enactment	▪ (United Nations, 2012 p.15) ▪ (United Nations, 2010; Schuppan, 2009) ▪ (Schuppan, 2009)
Oceania (includes Australia, New Zealand and Pacific islands)	▪ Australia is leading the Oceania region with New Zealand in the second position in the e-Government development. Papua New Guinea has been with the least development on the e-Government front. ▪ There is increasing preference to use the internet or telephone as a communication channel rather than in person or mail by Australian and New Zealand citizens to access government information highlighting the potential in e-government growth within these countries. ▪ The issue of digital-divide with regards to old aged users in e-Government within Australia is slowly subsiding, as these users increasingly using internet along with other communication technologies such as email, SMS (short messaging services) and social networking sites to contact government.	▪ (United Nations, 2012 p.33) ▪ (AGIMO, 2009; Gauld et al., 2010) ▪ (AGIMO, 2009; Gauld et al., 2010)

Table 2.2: Global trends in e-Government Development

Even though some of the above studies have their own limitations in particular as benchmarking often faces methodical difficulties (Schuppan, 2009; Bannister, 2007), it does provide a general global overview of the state of development in e-Government. The United Nations (United Nations, 2012) has created a e-Government readiness index in an attempt to allow comparison between states. This is built up of three sub-measures: web-measure (available of e-services); telecommunications infrastructure (such as spread of broad band and available of PCs); and, human capital (adult literacy). The result is allocate each state a score between 0 and 1 (1 is the highest). In 2012, the Republic of Korea had the highest score (0.9283) and Somalia the lowest (0.064) of the states for which data was available. The following list presents an analysis of the emerging trends across the global e-Government domain:

- **Increased e-Government development among developing nations:** majority of the global e-Government development has been by developed nations such as Republic of Korea, United States, Canada, and European countries. This is however not surprising to find as these countries have additional resources to inject into e-Government development due to their stronger economies and democratic political structure when compared to the emerging and least developed countries (United Nations, 2012).

- **Advancements and better accessibility to technology**: the potential of the ever expanding broadband access in the developed nations and the mobile cellular networks in developing countries can facilitate these countries to gain from the technological developments to progress ahead in the delivery of digital government services (Misuraca, 2009; United Nations, 2012). Furthermore, modern emerging technologies (e.g. semantic web, Web 2.0 such as social networking sites, smart phones, geographical localisation tools, cloud computing, etc.) can also support the e-Government development by empowering users to become active participants in designing, delivering and personalising services which they themselves consume (Wlyd, 2009; Millard, 2010; Bertot et al., 2010; National Information Society Agency (NIA), 2011).

- **Sustainable e-Government**: there are also developments in providing environmentally sustainable e-Government services also referred to as “Green e-Government” especially among some of the Western and industrialised Asian

countries such as Republic of Korea and Japan (Schindler et al., 2010; National Information Society Agency (NIA), 2011).

- **Implementation of legislations and strategies**: the judicious implementation of effective strategies and legal frameworks can benefit the least developed countries [e.g. electronic education in Bangladesh and Ethiopia and mobile health in Rwanda] (United Nations, 2012).

- **Substandard use of e-Government in developed nations**: the take up of e-Government services is slow in the Western and developed nations especially among European countries, even though there has been an increase in the availability of these services. One of the reasons for this may have been due to countries adopting a generic approach in delivering e-Government services rather than segmenting and personalising the services according to user needs (Lörincz et al., 2010). Hence, some European countries (e.g. Finland, Spain, Malta, etc.) are now moving away from the "one-size-fits-all" generic approach to more customised e-Government services. For instance, Spain segments its e-services by user demographics such as elderly, women and youth (*ibid*).

- **Lack of human capital and infrastructure in developing nations**: a major obstacle for the e-Government development across countries is present in the form of availability of human capital and telecommunication infrastructure. In terms of human capital there remains a lack of ICT professionals among middle and low income countries and with regards to telecommunication, some African and Asian countries still lack broadband access (Schuppan, 2009; Bhuiyan, 2010).

- **Socio-economic problems hindering e-Government progress:** Some governments in the southern Asian region (e.g. Bangladesh, Nepal) are still struggling to provide digital government service delivery due to various socio-economic problems, as these governments have to prioritise and concentrate on other basic problems like food and humanity, inflation, etc. However, the rapid growth of cellular mobile networks in the Asian region (e.g. China, Bangladesh) is seen as a potential channel for public service delivery, especially for rural people (Bhuiyan, 2010; Misuraca, 2009; Millard, 2010).

The global e-Government trends indicate that despite hindrances, the government agencies around the world are exploring new frontiers. There is great effort by these governments to connect with their stakeholders through novel technologies thereby further promoting e-Government developments. Consequently, citizens around the world are benefiting from more advanced e-Service delivery, better access to information, more efficient government management and improved interactions with governments (Assar et al., 2011).

The literature tends to stress that e-Government is much more complex than any previous efforts of IT-induced change experienced in the public sector (Irani et al., 2009; Weerakkody et al., 2007) and these problems have not ended now that the basic idea has become widely accepted (Assar et al., 2011). Hence, further research is needed to explore barriers to effective e-Government, particularly in countries where there are already improved developments in e-Government. This is particularly true in the European region, where although there have been significant progresses in e-Government over the last few years, research shows that most of the countries still face challenges in encouraging citizens to use the available e-Services (Denvir et al., 2011). UK faces a similar situation and therefore for the purpose of this study, the context of this research will focus on e-Government in United Kingdom (UK). Although there are many issues on e-Government from around the world, it will be not feasible and practical to perform a study on a global context. This study will therefore only focus on UK e-Government and will facilitate as a benchmark study for researchers and practitioners who can help apply to other similar nations facing similar problems.

2.4 United Kingdom's developments and issues in e-Government

Over the last few decades, the UK government has steadily progressed in the e-Government domain (Margetts, 2006; Irani et al., 2007). Since the Modernising Government action plan in UK (Cabinet Office, 1999), there has been a focused effort to get relevant government services online. The public sector's provision of e-Services has come a long way since the 1999 report. A study released by the European Commission (EC) in 2010 revealed several key findings of the UK's electronic delivery of public services (Lörincz et al., 2010), some of which are outlined below:

- UK e-Government usage by individuals is 48% and 67% by enterprises as compared to the European Union (EU) country averages of 41% and 75% respectively.

- UK is ranked 7th out of 32 EU countries surveyed in terms of online availability of e-Government services (with a 98% score, the UK's full online availability is above the EU average of 82%).

- UK is placed 9th out of 32 EU countries surveyed in terms of "online sophistication", the extent to which government services allow for interaction and/or transaction between the administration and citizens or businesses.

- "Data.gov.uk" a recent UK government website initiative was praised for its contribution to the UK's ability to personalise e-services beyond simple levels of general availability.

The findings from the study highlight the emphasis the UK government places on its e-Government initiatives (Sivarajah and Irani, 2012). This is further supported by the government's heavy investments in terms of financial and organisational resources to improve its e-Government initiatives (Margetts, 2006; Irani et al., 2007; Kamal et al., 2011). The reasoning behind these significant investments as with all ICT projects is for improvements in efficiency through reducing errors and improving the consistency of outcomes by automating operational tasks which leads to potential cost savings (Gilbert et al., 2004; Sivarajah and Irani, 2012). However, as Irani et al. (2006) highlights it is not merely the reduced cost that justifies the adoption of e-Government projects. It also facilitates creation of new services, improvement in business processes as well as enabling quicker transactions, thus aiding organisations to provide high quality services within both government and public sectors. Despite these investments towards e-Government and the benefits it provides, there are still some concerns around e-Government which have been outlined below:

- **Poor take-up of e-Government services**: Although there has been huge success in UK e-Government matching international standards in terms of the supply side or the online availability of its services, there is still disappointment over the substandard take up by the UK citizens for the widely available services especially among the younger generations (Denvir et al., 2011; Kenrick, 2009).

- **Poor e-Government website accessibility:** There are concerns over the level of accessibility issues within the e-Government sector especially for the elderly and disabled users of the e-services. This is specifically due to vast number of UK members of Parliament (MP) websites' not adhering to legal mandates and accessibility guidelines (Kuzma, 2010b).

- **Lack of public trust:** There is severe lack of public trust in e-government services due to the failure of large-scale technology-led projects which have often failed to deliver their technical promise, service objectives or project savings [e.g. UK benefits cards, ID cards, Child Support Agency and doctors recruitment] (Kinder, 2010).

- **Difficulties in measuring efficiency gains:** There are concerns over the measurement of efficiency gains resulting from implementing e-Government services which often exist in addition to traditional services. This means that multiple channels have to be maintained (for instance to avoid exclusion, to provide full coverage, or due to legal constraints), thus creating additional cost (Schindler et al., 2010; Lörincz et al., 2010)

Even though the issues highlighted above are not a broad list, they are some of the pivotal concerns, especially the poor usage of the e-Government services. As highlighted by Ferro and Molinari (2010), the reasons leading to the lack of usage and participation are due to public administrations expecting citizens to make the initial step to participate in public debates. Additionally, the widely available e-Government services were largely unknown to the general public due to high cost of promotion and slow pace of dissemination. Nonetheless, the recent widespread use of Web 2.0 technologies by internet users has been seen by many as a potential turning point where a developing change in the role of the average web user was evident; one who was just as involved in service delivery as with service usage (Osimo, 2008; Ferro and Molinari, 2010).

The adoption of Web 2.0 technologies has been extraordinary among both those considered Generation "X" (i.e. people born after World War II) and "Y" (i.e. people born between the mid-1970s and early 2000s) and the fastest growing segment on Facebook is among 55–65 year-old females (Missingham, 2011). Web 2.0 tools now have a much more global reach

becoming the backbone of most organisations (Tucker, 2011). For example, Twitter generates over 200 million "tweets" (short messages of no more than 140 characters by the user) and 1.6 billion search queries every day. In addition, "Google +", a social networking website similar to Facebook has accrued over 25 million users within just four weeks of launch even with a limited invitation programme (*ibid*). These facts clearly highlight the sheer power of Web 2.0 technologies in connecting people and the opportunity it provides for any organisation to engage with their stakeholders. Furthermore, these developments have led to a greater interest in ways in which governments can use these tools and sites to reach a variety of users with diverse goals (Kuzma, 2010a). However, simply creating a presence using Facebook, or similar is not enough (Hofmann et al., 2013) as the quality of implementation is critical in meeting the goal of political participation (Osimo, 2008). Against this backdrop, it is now essential for the public sector especially in the governmental context to evaluate the impact of Web 2.0 tools in order to identify the challenges and the value added when adopting these technologies for the delivery of e-Government services (Oliveira and Welch, 2013). Figure 2.2 developed by the researcher presents a graphical illustration of the issues highlighted above that are faced by UK e-Government.

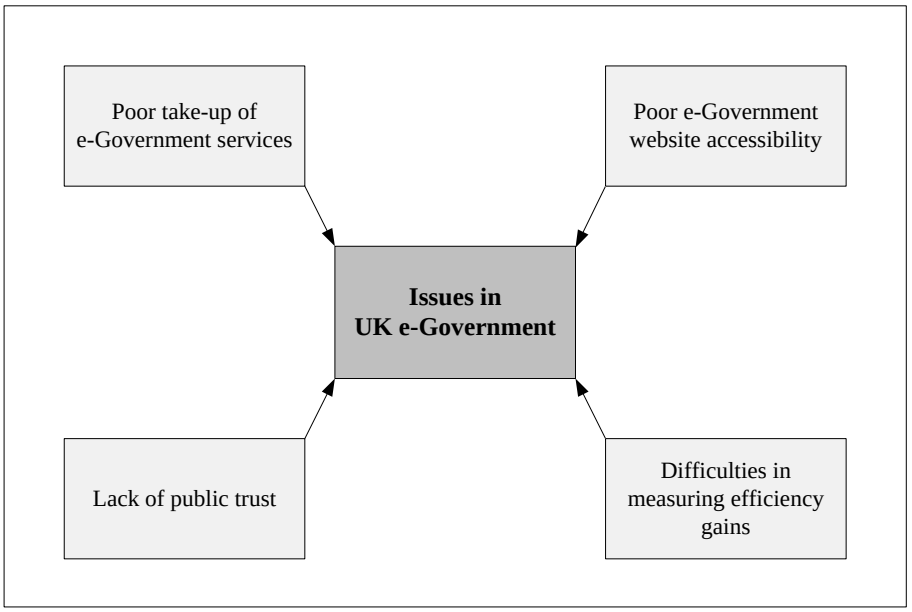

Figure 2.2: Issues in UK e-Government

2.5 Defining Web 2.0 and its Key Characteristics

One problem in discussing the notion of Web 2.0 is the lack of consensus on the definition and the justification for using the concept of Web 2.0 (Chong and Xie, 2011). Constantinides and Fountain (2007) argue that although the term Web 2.0 has been around for many years and has been open to many different interpretations, it still lacks a clear and articulate definition. Mrkwicka et al. (2009), state that Web 2.0 is an enabling platform that allows user participation, maximising collective intelligence and dynamic information sharing and creation. Kim et al. (2009) nominate the key characteristics of Web 2.0 as collaboration, participation, social networking, rich user experience, interactivity and semantics. Business researchers such as Cooke and Buckley (2008) view Web 2.0 as a beneficial social computing tool because it allows the development of user communities, while Stone (2009) explains Web 2.0 as a provider of open-ended channels for picking up sensitive issues and gathering feedback. Nevertheless, as Chong and Xie (2011) highlight though there are still disagreements on the definition of Web 2.0, some consensus can be found among researchers across different disciplines towards the characteristics of Web 2.0.The following are some of the key characteristics of Web 2.0:

- **The concept of Web as a platform:** this is a widely accepted key distinction between Web 2.0 and Web 1.0 where Web 2.0 facilitated a “participation platform” and an “information source” for users of the Web (Musser and O'Reilly, 2006).

- **Active participation and user initiative:** is a significant element to Web 2.0, where Cormode and Krishnamurthy (2008) argue that Web 2.0 enables any participant of the Web to be a content creator as a result of the development of numerous technological aids to exploit the potential for content creation.

- **Collective intelligence and content as core:** refers to the attempt to reach to a higher level of consensus decision making by exploiting the intelligence (i.e. content) emerging from a group rather than an individual (Bughin, 2007). Levy (2009) highlights that the key for leading the market in the Web 2.0 arena is dominating the Web through its collective intelligence.

- **Simplicity:** Web 2.0 technologies are commonly attributed to being user-friendly and simple to use from a user's standpoint. This is mainly due to easier user interfaces that are customisable, applications offering a limited number of features and the value proposition for the user to be easily recognisable (Constantinides and Fountain, 2007).

- **Rich User Experiences:** In conjunction to simplicity of Web 2.0 technologies, they also facilitate Web users with a rich user experience (O'Reilly, 2007). This is typically the combination of greater GUI applications and multimedia content in order to create the similar experience of computer-based software for the Web users (e.g. YouTube, Flickr).

2.6 Exploring the Web 2.0 phenomenon in the Government context

As citizens become more technology and internet-savvy and experience more efficient e-services from the private sector, they now expect better targeted, more responsive and equally efficient services from the public sector (Weerakkody et al., 2011). The application of internet, especially the Web, has been recognised as a key facilitator in providing enhanced public services to the citizens (Deakins et al., 2010; Ancarani, 2005). In the past, electronic communication systems such as discussion forums were examples of early forms of e-Democracy which now reflect the ideas behind Web 2.0 (Anttiroiko, 2010). Likewise, feedback channels, user evaluations and participatory forums and Web services have also been used during mid-1990s. Nonetheless, the advent of Web 2.0 which once appeared as a trend amongst young people has exploded to a phenomenon that runs a plethora of different organisations and notably is having a considerate impact on government agencies (Adams and Smith, 2010).

There have been many discussions emerging in the normative literature on the potential of Web 2.0 technologies for transforming governments (Meijer and Thaens, 2010). Terms such as "e-Government 2.0", "Government 2.0" and "eGov. 2.0" have been used to describe a new government paradigm which challenges the traditional governments and governance by incorporating Web 2.0 fundamentals in e-Government environments (Drogkaris et al., 2010; Johannessen, 2010). Mergel et al. (2009) asserts that the recent explosion of these Web 2.0 technologies has the potential for by the public institutions to create real transformative

opportunities in relation to their key issues of transparency, accountability, communication and collaboration and to promote civic engagement. These tools have empowered government organisations to create, distribute and gather information outside the customary hierarchical information flow. Chadwick (2009) argues that the deployment of Web 2.0 for more participation of government policy-making can revitalise dialogue between citizens and government and promote better participation by isolated citizens as they use these technologies to educate others about political issues in their communities. Similarly, Cole (2009) highlights that governments can adopt social media as it can also be powerful tools to help revive civic engagement. According to Danis et al. (2009), by using social media sites local government can help manage resources and local knowledge, monitor and resolve issues in communities and engage with constituents in their own environment.

Although the literature explores how governments may leverage Web 2.0 mainly for communication, collaboration and information dissemination, the normative literature is sparse regarding the impact of Web 2.0 on e-Government in UK. The rapid adoption of these technologies by citizens has meant that the governments have gradually started to use the sites to reach these Internet audiences, but there still appears to be little consistent organised effort (Kuzma, 2010b). The next section aims to provide an insight on the use of Web 2.0 technologies in the public sector specifically by the government organisations and highlight the uses of Web 2.0 to better facilitate e-Government.

2.6.1 Application of Web 2.0 technologies in Government Organisations

The uptake of Web 2.0 technologies in the public sector is no longer a new phenomenon despite the private sector being quicker to adopt these technologies to enhance their businesses (Chang and Kanna, 2008). Not surprisingly practitioners and consultants have been the first to encourage the use of these emerging Web technologies in public administrations (Klischewski, 2010). There has been an increasing urge by public sector organisations to deliver services online and pay greater attention to Web 2.0 technologies due to the ever-increasing trend in the use of online environments by citizens and the rise in adult and younger generations involved in social networking and virtual community activities (Randall, 2010). Nevertheless, this is not the only reason for the growing interest in Web 2.0 technologies by these organisations. Web 2.0 facilitates the public services institutions with a

key platform for citizen engagement and collaboration with the community to improve transparency and accountability (Accenture, 2009b; Johnston et al., 2008). This new form of technology-enabled participation is becoming more accustomed as governments are heavily investing in these technologies to enable more effective communication with their stakeholders. In effect, Web 2.0 approaches allow local government to gather feedback from citizens on the priorities and effective organisation of public services. In some respects this is more than simply about service provision and instead accepts a view of accountability and discussion about the appropriate allocation of public resources (Accenture, 2009a). Furthermore, these means of digital communication is now facilitating government organisations to reach and engage with traditionally hard-to-reach audiences such as the younger generation and people in remote locations (Tsui et al., 2010b). The other key reason for the public sector organisations to embrace these technologies is a result of the older employees moving towards their retirement age. Hence, there is an increasing need for the employers to recruit the next generation workforce. The emerging workforce includes the younger generation who are more exposed to Web 2.0 tools and take it for granted that their workplace will make these tools available (Dovey and Eggers, 2009). However, an important part of the process is to convince potential users that using such systems will actually have an impact on the policy process (Ferro et al., 2013).

Governments and officials at every level are leveraging Web 2.0 technologies for various purposes (Adams and Smith, 2010). The use of Web 2.0 tools in the government organisations can be categorised to two main areas of application; (a) internal use and (b) external use (Osimo, 2008; Anttiroiko, 2010). The internal uses of these technologies facilitate government agencies and its employees to network and share internal organization and work processes using Web 2.0 technologies. Some of the internal uses of Web 2.0 tools are as follows:

- **Internal staff and cross-agency collaboration:** The use of Web 2.0 technologies such as internal wikis and other collaboration tool for data sharing among their colleagues and storing work materials using sites such as DropBox (Chun et al., 2010).In addition, Web 2.0 tools is also being used for collaboration between institutional levels, agencies, departments in order to increase efficiency and time-saving.

- **Knowledge Management:** Though traditional knowledge management systems are applied to structured knowledge, Web 2.0 applications (social software, folksonomies, and wiki) are particularly effective in enabling the sharing of informal and tacit knowledge internally, among employees (Osimo, 2008).

- **Facilitating policymaking:** policy makers have launched Web 2.0 applications such as YouTube channels and other applications to communicate with its constituency and facilitate a platform to encourage citizens to participate in policymaking (Chun et al., 2010). This kind of engagement enhances the government's effectiveness and improves the quality of its decisions.

On the other hand, the external uses of Web 2.0 tools by the governments have been to better facilitate better service provision, external governance and stakeholder relations (Anttiroiko, 2010). Some government organisations are developing a presence on Web 2.0 applications recognising its interactive potential in order to strengthen the relationship with citizens and solicit their feedback (Tsui et al., 2010a). The following is a list of the external uses of these technologies:

- **Local reporting and problem solving:** government agencies especially local councils facilitating the citizens who want to engage or report issues that affect their neighbourhood, community, region, or county by either adopting or partnering with Web 2.0 integrated websites such as FixMyStreet.com (e.g. road repair, graffiti removal, traffic concerns, etc.) Web 2.0 technologies such as Twitter, Facebook and other similar applications make this possible with unprecedented speed and efficiency (Bertot et al., 2010).

- **Political participation:** the most drastic change in the government organisations occurring is the utilisation of social networking for the purpose of elections. Through the use of applications such as Facebook, YouTube, Blogs and various other tools; Web 2.0 has been actively used for political campaigns and debates especially during the times of elections for all emerging public officials (Adams and Smith, 2010). In this respect, convincing potential users that note will be taken of electronic interaction in terms of policy formulation is important (Ferro et al., 2013) or there is a risk of cynicism undermining any engagement.

- **Public relations:** the most prevalent Web 2.0 tools adopted by among government agencies have been communication and information sharing tools, such as Twitter and RSS feed which facilitate quick communication or short messaging for keeping the general public constantly informed with its activities (Anttiroiko, 2010).

The list of uses is not comprehensive by any means as Web 2.0 philosophy is far from mature, and its future development and adoption is difficult to envisage (Osimo, 2008). However, they do indicate the key uses of these technologies in government organisations. Nonetheless, it is important to recognise that the success in any online services depends on strategic use of ICT together with an organisation's ability to reorganise its back-office and internal processes effectively (Commission of the European Communities, 2002). Therefore, the use of Web 2.0 technologies for public service delivery by the organisations requires not only technological innovation but also organisational, legal and social innovation in order to successfully embrace and reap the benefits from these technologies (Dovey and Eggers, 2009). The aforementioned uses of Web 2.0 technologies in government organisations are graphically illustrated in figure 2.3.

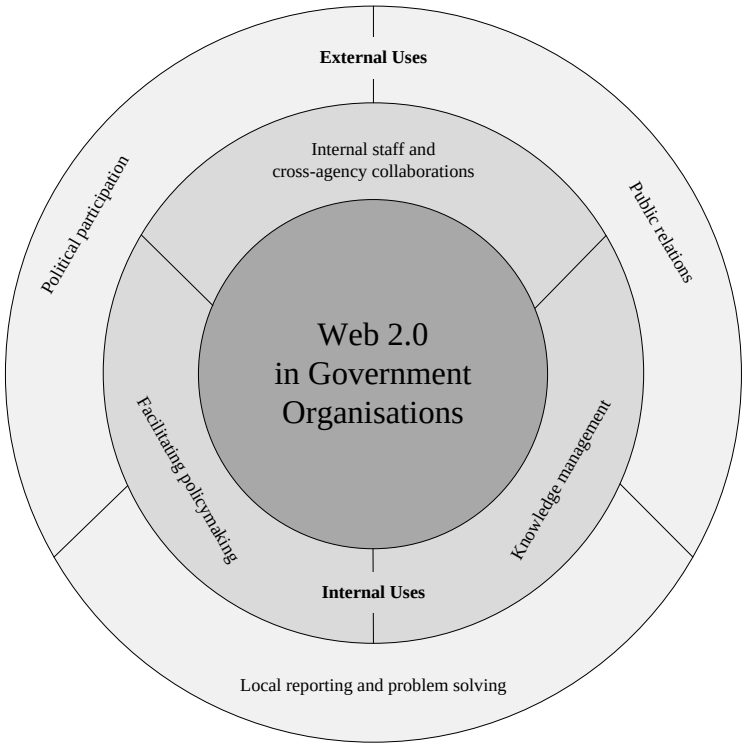

Figure 2.3: External and Internal uses of Web 2.0 technologies in Government Organisations

2.6.2 The Significance of Web 2.0 technologies in e-Government

e-Government environments have seen significant transformation over the last decade and currently, they continue to develop by embracing technologies such as Web 2.0 and methodologies that will not only enhance participation, transparency and integration but also speed up the pace of innovation (Drogkaris et al., 2010; Sivarajah et al., 2014). In effect, governments are not far behind in understanding the importance of these technologies and the current citizen usage trends as is sometimes argued. The philosophy of Web 2.0 is to facilitate citizen-government collaboration and the most potential for Web 2.0 in e-Government is the shift from service-oriented architectures (SOAs) to Web-oriented architectures (WOAs), which has a substantial impact on the ability to transform government operations and services (Tsui et al., 2010b). This means that unlike the traditional e-Government portal systems where the government institutions expected citizens to visit and engage in their own systems, the integration of Web 2.0 applications drives the government to a genuine engagement with the public in their own environment (Accenture, 2009b). The integration of interactive features such as innovative online consultation mechanisms (e.g. live chat) and web comment forms has enabled governments to gather the views of the public on policy options and to gather feedback on proposals by setting up simple forms that can be completed improving the capacity to gather feedback (West, 2008). As both the technology and expectations change, it is likely that the demand for interaction e-Government provision will increase.

Much government activity is now focused on Web 2.0, and social media has become a central component of e-Government in a very short period of time (Bertot et al., 2010). In this respect, social media are applications that enable the sharing of information including wikis, blogs and social networks (Bonsón et al., 2012). Apart from social media applications, cloud computing service model such as Software as Service (SaaS) platforms have also been rushed into adoption by government organisations (Foster et al., 2008). Web 2.0 technologies have been a key enabler for cloud computing (Wang et al., 2008) especially for the provision of SaaS platforms. As these platforms are forms of Web 2.0 technologies and rely on these technologies for its service delivery (O'Reilly, 2008; Ivanova and Ivanov, 2010). In this respect, SaaS is a software distribution model and is one of the three different types of cloud computing service models (Zissis and Lekkas, 2011; Sultan, 2011). It is a method of software deployment where an application is hosted as a service and provided to customers across the

Internet (Kulkarni et al., 2011). This type of cloud service offers a complete application functionality that ranges from productivity applications (e.g., word processing, spreadsheets, etc.) to programs such as those for Customer Relationship Management (CRM) or Enterprise-Resource Management (ERM). In the governmental context, cloud computing is used as a tool to facilitate information sharing, applications processing, and as a cost saving measure from traditional technological architectures (Paquette et al., 2010; K.Mukherjee and G.Sahoo, 2010). For example, the London borough of Hillingdon, a local government authority has announced plans to use SaaS platforms such as Google Apps for Business (Guardian, 2011). According to the council this shift into cloud computing is expected to improve its internal collaboration and productivity, giving it the scope to develop new means of working, and produce cost savings of nearly £3 million in the coming years (*ibid*).

Outside the UK, there are other innovative examples of using Web 2.0 technologies for facilitating e-Government could be found in several examples in the public sector. The Web 2.0 initiatives such as NASA's internal social networks and virtual worlds, and the U.S. intelligence community's "intellipedia" are just a few of the recent efforts launched within central government. Normative literature (Dadashzadeh, 2010; Klischewski, 2010) mainly presents a list of Web 2.0 tools used by government organisations as technical processes as opposed to mapping them within a specific structure as presented in table 2.3. The table 2.3 presents these examples in a systematic manner by first highlighting the government organisation and at which level (i.e. central, regional and local) these tools are being utilised within. Secondly, the type of Web 2.0 technologies adopted is mapped against these organisations and finally, an application scenario of a Web 2.0 technology used by the organisation is presented.

	Web 2.0 Technologies												
Government Organisation *(Domain)*	**Blogs**	**Microblogging**	**Wikis**	**Social Networking**	**Social Bookmarking**	**Video Sharing Sites**	**Picture Sharing Sites**	**RSS**	**Virtual Worlds**	**Mashup**	**SaaS Platforms**	**Example Web 2.0 Application Scenario**	**Reference(s)**
Her Majesty's Armed Forces *(UK – Central Government)*	✓	✓		✓		✓						British army utilises Facebook to provide latest news and other information (i.e. photos, videos etc.) to the public.	(HM Armed Forces, 2011) www.facebook.com /britisharmy
Department for International Development *(UK – Central Government)*	✓	✓		✓		✓	✓					The organisation has set up a group blog managed by its front-office staff members to provide information to citizens on the departments working processes and the problems it's trying to tackle.	(Johnston et al., 2008) http://blogs.dfid.gov.uk/
Westminster City Council *(UK – Local Government)*		✓				✓		✓		✓	✓	The council uses YouTube channel to raise awareness of services and shape policy developments	(Charlton, 2011) www.youtube.com/ user/Westminstercc
Hillingdon *(UK – Local Government)*		✓		✓		✓	✓	✓			✓	The London borough of Hillingdon a local government authority has plans to use Google Apps for Business which includes email, calendar, documents, word processing, etc.	(Guardian, 2011) http://www.hillingdon.gov.uk/index.jsp ?articleid=15656
Central Intelligent Agency *(US - Central Government)*			✓			✓	✓	✓				Uses wiki system for collaborative data sharing among the US Intelligence Community (e.g.Intellipedia)	(Chun et al., 2010)
Washington State Department of Transportation *(US - Regional Government)*	✓	✓		✓		✓	✓	✓				Utilises Twitter to broadcast up-to-date urgent news feeds and other relevant information of the department to the public.	(Dadashzadeh, 2010) https://twitter.com/#!/wsdot
Data.gov *(US - Central Government)*								✓		✓		Data.gov utilises mashup techniques to provides citizens access to congressional calendars and voting records, political district maps, etc.	(Schweik et al., 2011) http://www.data.gov/
State of Virginia *(US - Regional Government)*		✓		✓	✓	✓	✓	✓		✓		State of Virginia uses RSS feeds not only for alerts, but also as a monitoring service that keeps citizens informed of new resources and services added to the portal	(Anttiroiko, 2010)
Sweden Embassy *(Sweden – Central Government)*	✓								✓			This organisation uses Second Life, a virtual world environment to provide health-related information to users visiting the online world.	(Anttiroiko, 2010) www.sweden.se/
Front National (French Political Party) *(France – Central Government)*		✓		✓		✓	✓	✓	✓			Front national Party set up virtual headquarters in SecondLife for promoting their presidential campaigns	(Osimo, 2008 p.31) www.frontnational.com/

Table 2.3: Government organisations adopting Web 2.0 Technologies

These examples highlight the popularity of Web 2.0 tools amongst the government organisations across countries and the willingness of these organisations to engage with citizens. As illustrated by table 2.3, the most popular Web 2.0 tools that has been adopted by the government organisations have been social networking sites (i.e. Facebook), Microblogging (i.e. Twitter), online video and photo sharing sites (i.e. Youtube and Flickr) and RSS feeds. The United States have exploited Web 2.0 technologies due to their innovative New Public Management (NPM) oriented reforms and greater access to Web 2.0 developers and individuals who are familiar with these tools (Anttiroiko, 2010). European countries such as Sweden have been able to successfully leverage Web 2.0 technologies in the e-Government domain due to their transparent and citizen-centric traditions. Finally, in the UK, social networking and micro blogging is said to be the most popular phenomenon when compared with their European neighbours. Some LGAs are also leveraging cloud computing services (e.g. Google Apps for business) in an effort to provide public services while using fewer resources, reducing carbon emissions, and thus producing financial savings for the organisations (Guardian, 2011; Zissis and Lekkas, 2011). Yet, in all aforementioned cases, the use of Web 2.0 technologies is still a novel and challenging idea that it is not an integral part of the official governance policy of any government (Anttiroiko, 2010).

Although the table 2.3 presents a clear idea of the significant role of Web 2.0 in e-Government, it is too early to deduce the importance of these technologies by only reviewing the Web 2.0 experiences in the government organisations. Therefore, to fully understand the real value of these technologies in e-Government, it is necessary to evaluate and articulate the implications of Web 2.0 in the e-Government domain. The next section presents a comprehensive analysis of the benefits, costs and risks of adopting Web 2.0 technologies in e-Government. This will help governments understand Web 2.0 and its potential so that the organisations can harness the technology effectively in the context of e-Government.

2.7 Benefits, Costs and Risks of Web 2.0 in e-Government

In any consideration of adopting new technology, attention must be paid to the benefits and costs of such adoption (Freeman and Loo, 2009).The emergence of Web 2.0 and the rise of social networks have opened up both new perspectives and challenges for the public institutions (Assar et al., 2011). Web 2.0 technologies are being increasingly embraced in the

e-Government domain not simply to meet the demands of citizen expectations and provide them a social web experience but also due to other benefits that these technologies have to offer to the government organisations (Sander, 2008). Nevertheless, cutting edge digital communication comes filled with both potential opportunities and risks. Therefore, the implications of these new digital frontiers and opportunities from the perspective of e-Government are now also on the governmental agenda (Klischewski, 2010).

The review of the current literature mainly presents a few ambiguous arguments on Web 2.0 technologies' benefits and drawbacks for e-Government (de Kool and van Wamelen, 2008; Dadashzadeh, 2010). Mostly, in the normative literature, the potential opportunities provided by Web 2.0 technologies for government organisations are considered to relate to strategic objectives such as making government simpler and citizen-oriented, participative and inclusive, joined-up and networked, as well as transparent and accountable (Klischewski, 2010; Traunmuller, 2010). On the other hand the challenges presented often relate to the risks of Web 2.0 with particular relevance to government's institutional role and service provision. These account for the risks of poor quality user contribution, content manipulation by extremist parties, loss of control due to excessive transparency, abusive and destructive behaviour by users, participation restricted to an elite group of users, low level of participation and privacy issues (Anttiroiko, 2010; Ferro and Molinari, 2010). Although these discussions present a general assessment of these tools, very few studies articulate a systematic evaluation that will aid government organisations in decision-making processes to adopt these applications. Furthermore, there is also a lack of scholarly literature evaluating the impact of these tools in the e-Government context, as the study of Web 2.0 technologies in the governments is still at its early stages and is an emerging phenomenon (Dixon, 2010).

The following sections therefore present a comprehensive evaluation of the potential benefits, costs and risks that the Web 2.0 technologies have to offer in e-Government. In developing this argument, consideration is given to some conventional IS evaluation methods and these are applied to evaluate the Web 2.0 applications in e-Government. By adopting this approach, the goal is to extend the current literature to analyse the potential blockages limiting Web 2.0 adoptions in e-Government. This more structured evaluation approach also has the advantage of practical value and one goal is to argue that there is a strong business case for the deployment of these tools.

2.7.1 Evaluation of Benefits, Costs and Risks Taxonomies

Government leaders and officials are increasingly aware of the potential of e-Government to improve the performance of government organisations and provide potential benefits to their citizens and business partners (Ebrahim and Irani, 2005). Nevertheless, IT managers in government agencies have found it increasingly difficult to justify an expansion in ICT spending (Ghoneim, 2007). They are under increasing pressure to find a way to measure the contribution of their organizations' ICT investments to enhance performance, as well as to find reliable ways to ensure that the value from these investments are actually realized (Lin and Pervan, 2003; Smith et al., 2004). This can be mainly due to a lack of understanding of the impact of ICT investment in most of the organizations (Roztocki et al., 2004; Zhu et al., 2004) . Therefore, it is important for managers to understand better the impact of IS on organisational performance, in particular understanding the benefits, costs and risks related with the financial and social capital investments in developing such infrastructures (Irani and Love, 2008). Failure of such understanding can lead to disastrous consequences such as inappropriate resource allocation (Farbey et al., 1993). However, if managers' can better understand this, it can then help an organisation to better utilise its resources and improve its overall efficiency.

In modern public administration, the development and management of e-Government systems are an essential element (Torres et al., 2005) of service delivery. As per Gupta and Jana (2003), if one is to ensure that e-Government systems are a success, it is then important to assess the effectiveness of these systems and take necessary action based on these assessments. Similarly, like any other IT investment, social media investments in government organisations also need to be planned as they require organisational change to culture, people, structure and processes to be managed in order to obtain effective results (Dadashzadeh, 2010).Therefore, a systematic evaluative approach is necessary prior to placing government information and providing services online using Web 2.0 technologies as the integration of these technologies in e-Government should not be done arbitrarily. With this in mind, a critical review of the benefits, cost and risk taxonomies is undertaken to establish an understanding of the various existing models and to extrapolate their factors. Thus, in summarising the normative literature in the area of IT/IS evaluation, table 2.4 presents a summary of benefits, costs and risks dimensions in the form of taxonomy to help analyse the adoption of Web 2.0 in e-Government in the latter sections.

Classification	Dimensions	Description	References
Benefits	▪ Efficiency Benefits ▪ Effectiveness Benefits ▪ Performance Benefits	Framework provides three distinctive types of benefits based on the principle that benefits realisation must be managed by: planning for strategic alignment and business-driven exploitation, managing the process of predicting benefits, and by measuring resulting benefits after a system or innovation is implemented.	(Andresen et al., 2000)
	▪ Strategic Benefits ▪ Tactical Benefits ▪ Operational Benefits	Classifies three main benefits as a frame of reference for decision makers that embrace *ex-ante* information systems evaluation.	(Irani and Love, 2001)
	▪ Operational ▪ Managerial ▪ Strategic ▪ IT infrastructure ▪ Organisational	The model identifies an extensive list of benefits dimensions suitable for assessing the benefits of an enterprise system post implementation.	(Shang and Seddon, 2002)
Costs	▪ Financial Activities ▪ Non-financial Activities	These costs are classified according to the activities causing them, thus emphasising a causal relationship. Hence, reactive in nature	(Kusters and Renkema, 1996)
	▪ Acquisition Costs ▪ Administration Costs o Control o Operations	Identifies set of cost factors that constitute Total Cost of Ownership of information technology	(David et al., 2002)
	▪ Direct Costs ▪ Indirect Costs o Indirect human costs o Indirect organizational costs	The direct cost element is assigned to the information technology component, whereas the indirect element relates to the effect of the information systems on the organization and the people	(Irani and Love, 2001)
Risks	▪ Organisational fit ▪ Skill mix ▪ Management structure and strategy ▪ Software systems design ▪ User involvement and training ▪ Technology planning/integration	These risk factors identified aid the evaluation of implementing management information systems projects.	(Sumner, 2000)
	▪ Firm-specific risks ▪ Competitive risks ▪ Market risks	Firm-specific risks apply to all kinds of IT investments, and they affect both the expected payoffs and expected costs. competition risks and market risks, apply especially to strategic IT investments and, therefore, they impact the variability of payoffs more than the variability of costs	(Benaroch, 2002)
	▪ External uncertainties ▪ Internal uncertainties	External uncertainties refer to risks that are posed for a business from outside the organization (e.g. market extinction) and internal uncertainties which are risks that occur within a company (e.g. risk of IS design change)	(Wu and Ong, 2008)

Table 2.4: Benefits, Costs and Risks Taxonomies

There are number of different models such as those proposed by Ward et al.(1996), Wilderman (1999) and Ross and Vitale (2000), that exist in the academic literature to classify the evaluation of benefits of information systems. Mostly these studies report the organisational benefits ranging from operational improvements through decision-making enhancements for organisations to support their strategic goals. However, the IS benefits discussed in most studies tend to vary from either depicting a very specific perspective or a very general overview of IS benefits and additionally lack the long-term perspective of benefits needed for a rigorous IS evaluation. With this in mind, the benefits taxonomies presented in the above table provide a list of dimensions to categorise the benefit of IT systems in organisations. An evaluation framework grounded on a systematic overall approach for realising IT benefits in an organisation is presented by Andresen et al. (2000).

Irani and Love (2001) report that benefits of IS can be mapped on to three corresponding planning levels; strategic, tactical and operational. While the strategic dimension relates to the benefits that are intangible and non-financial in nature (e.g. improved market share), the operational dimension often reflects the benefits that are tangible and financial in nature (e.g. reduced labour costs). On the other hand tactical dimension compromises of both tangible and intangible benefits such as improved teamwork and reduced delivery lead-times. Similarly, building on the existing research into IT benefits, Shang and Seddon (2002) propose a five dimension benefit framework for assessing enterprise systems in a more broad and objective manner. In addition to dimensions such as operational, managerial and strategic efficiency, the value of IT infrastructure and organizational benefits are also identified as important factors that can contribute to an organisation.

While it is important to assess and recognise the benefits of an IT system, in order to complete a robust IS evaluation, it is equally important to understand the cost implications of an IS project (Irani et al., 2003). The cost taxonomies identified above offer a variety of cost classification perspectives. Kusters and Renkema (1996) classify the costs associated with IT/IS projects as being either financial or non-financial activities. The financial activities are related to direct costs (e.g. systems development, implementation, operations, etc.) that directly induce cost and can be easily identified and traced in monetary terms. In contrast, the non-financial activities are a set of set of activities that are related to the human and organizational aspects of developing, and implementing a new system. These activities indirectly induce costs and are challenging to quantify, estimate or even possibly trace to the

information system. Furthermore, to achieve control over IT expenditure and help reduce information technology costs, David et al. (2002) use a total cost of ownership (TCO) approach to identify the costs associated with owning and maintaining a personal computer or workstation within an organization. As organizational spending on IT adoption is both a necessity and fairly large proportion of turnover, TCO is used as a measure to assess the effectiveness of an organizations IT expenditure. Although many cost taxonomies include direct quantifiable costs associated with IT investments, the majority fail to identify in depth the indirect costs apart from Irani and Love (2001). According to Irani and Love, (2001) the cost associated with the adoption of IT/IS can be classified as having direct and indirect (human and organizational) characteristics. The direct cost components are those which can be attributed to the implementation and operation of new technology, and as a result are those most considered by decision-makers during the use of traditional appraisal techniques (e.g. hardware and software costs, installation and configuration etc.). Indirect costs however, are those that cannot be readily identified, managed and controlled (e.g. management time, productivity loss etc.). In short, the analysis of the cost taxonomies highlight while there is a resemblance between cost classifications, there are cost factors that differentiate each from one another leaving a lack of any single agreed cost taxonomy.

As IS projects are noted for their high failure rate, it is important for organisations to improve their ability to manage their IS risks so that projects can be delivered against the objectives with which they were justified (Irani and Love, 2008). The risk taxonomies identified in table 2.4 deal with risk factors in IS projects ranging from issues that relate to specific internal organisational risks to external factors. Factors such as organizational fit, skill mix, management structure and strategy, software systems design, user involvement and training and technology planning have been highlighted by Sumner (2000). For example, the "organisational fit" dimension reflects on risk factors such as failure to redesign business processes and follow an enterprise-wide design which supports data integration which are significant when implementing IS. On the other hand, Benaroch (2002) offers a high-level synthesis of IT investment risks placed into three categories, namely: firm-specific risks, competition risks and market risks. Firm-specific risks are due to uncertain internal factors which for example could be the result of uncertainty about the ability of the firm to fully fund a long-term capital-intensive investment. Competition risks are the result of uncertainty about whether a competitor will make a pre-emptive move, or simply copy the investment and improve on it. Finally, market risks are due to uncertain external factors that affect every firm

considering the same investment. Similarly, in a more general approach Wu and Ong (2008) report two kinds of uncertainty in the dynamic environment of information technology investment. While ‘‘external uncertainty’’ comes from outside the organization such as market extinction (i.e. a revolution in which a whole market disappears, such as when typewriters became obsolete due to the invention of computers), “internal uncertainties” occur within a company (e.g. uncertainty about budget over spent or the future usage demand of a particular system).

In short, table 2.4 summarises the different benefit, costs, and risk dimensions listed in the various taxonomies and indicates the authors that mentioned each of the elements thus, making it possible to identify the similarities and differences that exist. This taxonomy will also aid the analysis of the adoption of Web 2.0 in e-Government.

2.7.2 Benefits of Web 2.0 technologies in e-Government

One way to evaluate Web 2.0 technologies is to consider them to be a ‘disruptive technology’ for government, creating ‘disruptive innovation’ in the digital government as well as augmenting digital government with better services and management (Chun et al., 2010). Implications of these new technologies and opportunities from the perspective of administrations are now also on the governmental agenda (Klischewski, 2010) especially as there is the potential for Web 2.0 tools to create a change in public sector processes. The following is a list of some of the benefits that Web 2.0 technologies have to offer in the e-Government domain:

- **Revive civic engagement**: Web 2.0 tools such as social networking sites can be powerful tools that the governments can deploy to help revive civic engagement and harness the wisdom of crowds. The government can especially enlist important niche audiences, leverage their insights for policymaking and improve the citizen-government relationship (Huijboom et al., 2009).

- **Enhance external transparency**: Web 2.0 applications can help improve external transparency for government organisations. The integration of online collaboration tools and interactive maps into e-government websites can enable governments to

become more inclusive and responsive to individual citizens throughout the policy life cycle resulting in improved policy outcomes (Meijer and Thaens, 2010).

- **Rapid dissemination of information**: The viral nature of Web 2.0 tools such as Microblogging and social networking sites can help disseminate information over the internet much faster compared to traditional methods (e.g. postal letters, pamphlets, static websites etc.) of information delivery (Buchanan and Luck, 2008). This can draw a larger pool of audience and promote awareness of existing e-government services to the public.

- **Efficient gathering of collective intelligence**: Gathering wisdom from the citizens for crowdsourcing has revolutionarily changed with the use of some Web 2.0 technologies such as Wikis (Nam, 2012). It has enabled the government organisations efficient and effective collection of geographically dispersed collective intelligence from the citizens with less effort in comparison to traditional crowd-sourcing methods such as public forums and workshops.

- **Lower IT costs:** As the model of Web 2.0 at times requires the use of intermediaries especially *mashup* applications, these intermediaries can enable governments to provide enhanced, customized services to their citizens at much lower costs than the e-government's centralized provision of service (Chang and Kanna, 2008). In addition, they provide a means for public service organizations to disseminate information about public services, to educate citizens about matters that affect their quality of life, to solicit people's feedback and to enrol them as co-producers in a timely and cost effective way (Tsui et al., 2010a)

- **Streamline internal operations**: The collaboration tools such as *wikis* can streamline internal operations within government agencies especially among disparate teams and across agencies enabling individuals to engage in open discussions leading to a potential build-up of knowledgebase (Accenture, 2009b).

It seems that the advent of the emerging web technologies creates an unexpected dilemma for governments. On one hand, governments seek to use the new opportunities to deliver services but on the other hand governments have significant problems embracing these emerging web

technologies due to many challenges and risks. The next section will explore the costs of adopting these tools in e-Government.

2.7.3 Costs of Web 2.0 technologies in e-Government

Despite the potential benefits of Web 2.0 not all government agencies have explored the possibilities of these technologies (Meijer and Thaens, 2010; Eggers, 2007). As per Meijer (2010), countries such as Denmark, Germany, The Netherlands and United Kingdom all place a great emphasis on ICT to play a key role in modernizing their governments have also been slow to adopt these technologies. Most public services organisations find it difficult to overcome the perception that some Web 2.0 technologies such as social networking sites (e.g. Facebook, MySpace) have limited business value and are more a distraction to employees than a means to deliver e-Government (Sander, 2008). Moreover, government models for leveraging internet technologies is rather different from that of commercial enterprises (Freeman and Loo, 2009), especially as government agencies are more cautious and slow in adopting new emerging technologies in comparison to commercial organisations. The following list is a set of costs of adopting Web 2.0 applications in the e-Government context:

- **Development of new service model:** As the Web 2.0 model requires the use of external platforms (e.g. Facebook, YouTube and Twitter), it can prove as a challenge to develop a new service model that integrates these Web 2.0 platforms with existing e-Government systems in a manner that is secure and improves the quality of services to citizens (Freeman and Loo, 2009).

- **Additional Staff:** Once Web 2.0 tools such as blogs have been adopted by government organisations, it may require some level of moderation to ensure that comments and contributions do not turn out to be a platform where the public discussions are monopolised by a vocal minority or extremist activists groups. This level of moderation may be costly in terms of time and effort spent by the organisations where additional staff might be required to be moderators of content (Freeman and Loo, 2009).

- **Loss of control:** Government organisations can face loss of control due to excessive transparency using Web 2.0 applications such as blogs. For instance, blogging by ministers and civil servants has led to release of sensitive information in an incorrect and sometimes illegal manner (Osimo et al., 2009 p.43). In addition, the technique of application mashups and content syndication on to existing e-Government platforms can also be an issue leading to loss of ownership control and authenticity of the final products.

- **Restricted user participation:** The investment on Web 2.0 applications on the e-Government front can potentially result in restriction to exclusive user participation. Web 2.0 applications are mostly used by well-educated young and adult generation in the developed part of the world which can lead to wider societal divides by giving more voice to those that already have it or use it (de Kool and van Wamelen, 2008). In addition there is also the risk of older people not likely to participate in Web 2.0 because of the lack of Web 2.0 confidence or because of the lack of technical ability (Blank and Reisdorf, 2012).

2.7.4 Risks of Web 2.0 technologies in e-Government

Although Web 2.0 provides a lot of opportunities, it may also pose risks that organisations should be aware of in order to attain its full potential in a responsible and sustainable manner (Anttiroiko, 2010). Apart from the generally held view of the vagueness of the concept of Web 2.0, there are a lot of social and political criticisms about it too. On the other hand, others have pointed to the potential undemocratic features of Web 2.0 and the regressive nature of wisdom of crowds captured by Web 2.0 (Carr, 2005; Wilson, 2008). Additionally, there have been uncertainties and concerns among experts, public managers and politicians about the risks of too deep involvement in the Web 2.0 trend in the public sector due to the privacy and security risks and capacity problems of public administration (Sternstein, 2006) . The following list is a set of potential risks that the managers may need to be aware of when using Web 2.0 applications in the e-Government context:

- **Social isolation:** Though Web 2.0 can stimulate social interactions and communication between different individuals, there is also the risk of people isolating

themselves from the real world as they become too addicted the use of internet (de Kool and van Wamelen, 2008).

- **Risk of information overload and reliability**: There is a risk of information overload and poor quality of content shared by public users when using some Web 2.0 applications such as blogs and wikis, as concerns can be raised against their reliability, accuracy and authority of information (Huijboom et al., 2009).

- **Security and Privacy threat:** The open nature of Web 2.0 presents significant challenges to the traditional enterprise approach to controlling intellectual property over information shared and surety of these applications. The increase in functionality and interactivity has increased the ways in which an application can be attacked successfully by hackers and viruses and therefore proves to be a security concern for organisations. There are also risks when sharing information using social networking sites where it could lead to possible abuse of personal information, hacking and stalking. Security and privacy is for that reason an important point of concern when using Web 2.0 applications as most individuals share a lot of personal information on the internet (Bin Al-Tameem et al., 2008).

- **Threat of cyber extremisms:** These new, interactive, multimedia-rich forms of communication provide effective means for extremists to promote their ideas, share resources, and communicate among each other (Chen et al., 2008).

- **Critical reviews:** While the advent of Web 2.0 technologies has played an important role in the providing people with useful assessments of products and services, it has also meant that there is now a greater risk of these assessments damaging the image of people and organisations without a fair reason. This is because it is difficult to find out of assessment are fair or the result of the personal resentment (de Kool and van Wamelen, 2008).

It is clear that there are real costs and risks associated with Web 2.0 in terms of public administration. Thus gathering a range of unmediated opinions can be a powerful tool to open up a debate and allow various viewpoints to be heard, but, there is a risk that it can become a means by which a given debate is monopolised by a small range of shrill voices. On balance, Web 2.0 per se will not accelerate the development e-Government, unless there

is also an understanding of the required cultural changes. In spite of the abovementioned challenges, some government agencies still want to harness the collaborative power of Web 2.0 and many scholars believe the opportunities that the Web 2.0 developments can offer cannot be ignored by the public sector as it can take the evolution of e-Government in new directions (Traunmuller, 2010; Dixon, 2010; Mergel et al., 2009). As per Kuzma (2010a), instead of avoiding these new technologies, governments should develop an overall strategic plan for agencies at all levels to participate in social networks, and develop a coordinated effort to develop and implement these tools.

In this context, being clear why Web 2.0 is being introduced is important. This clarity will help ensure that any development meets a stated goal and this will assist in ensuring a successful adoption across the organisation (Baxter et al., 2010). More importantly, whether governments are initiating small-scale pilot projects or contemplating a larger roll-out of Web 2.0 technologies, it is essential for them to be aware of the impact of these tools in order for successful implementation (Chang and Kanna, 2008). The next section will therefore contribute to a greater understanding of the impact of the Web 2.0 phenomenon, the implications it may have in e-Government and the ensuing risks and opportunities. This provides a lead for policy makers to seize the opportunities of Web 2.0 technologies but also to mitigate any undesirable effects.

2.8 Organisational, Technological and Social Impact of Web 2.0 in e-Government

Web 2.0 technologies have spread steadily and the Oxford Internet Survey (OxIS) which highlights that 60% of all Internet users in Britain now participate in Web 2.0 applications such as social networks, a major increase from 49% in 2009 and 17% in 2007 (Dutton and Blank, 2011). However, as above, Web 2.0 is potentially disruptive. By its varied nature, Web 2.0 technologies allow unpredictable interactions between unexpected stakeholders producing unplanned results, none of which offer comfort to the typical government agency (Mintz, 2008). It is therefore vital for these authorities to understand the consequences of the effects of these technologies on e-Government. However, since the development of this kind of technology is very recent, research about the impact of Web 2.0 on the public sector is still highly tentative and exploratory (European Commission, 2009). Studies such as these will be

invaluable to governments as they aim at determining the level of use of these technologies by municipalities and assess if they are relevant and necessary in order to propose areas for improvement and future action plans (Bonsón et al., 2012). Though there are few practitioner reports addressing the implications of Web 2.0 in the governmental context (Chang and Kanna, 2008; Huijboom et al., 2009), there is still little academic research that has been done in this domain (Wilson et al., 2011). Additionally, as per Huijboom et al., (2009) literature in the area of Web 2.0 impact on the public sector lacks consistent theory building and sound evidence. For example, studies commissioned by the Institute for Prospective and Technological Studies (IPTS) (Huijboom et al., 2009) have focused on the impact of Web 2.0 technologies on the public sector by providing a broad scope of analysis within all the public-service clusters (i.e. education, health, inclusion and government). However, the reports fail to deliver any conceptual frameworks to stimulate a more coherent approach to research in the broad area of Web 2.0 impact. There is a need to focus on specific sector impact study rather than a broad analysis to provide a comprehensive insight into the specific clusters of public sector.

In terms of the impact of Web 2.0 in e-Government, the lessons for LGAs are often no different than for any organisation. Drawing on literature from information systems and public sector, there are some key factors that need to be taken into account. These factors have been systematically categorised into three classifications: (1) Organisational, (2) Technological and (3) Social. These three categories have been classed as important antecedents of IS success and have been envisaged to contribute greatly to the IS success of an organization by many scholars (DiMaggio et al., 2001; Delone and McLean, 2003; Seddon, 1997). While additional "impact" categorisations such as consumer impacts (Brynjolfsson, 1996), environmental impact (Plepys, 2002), work group impacts (Myers et al., 1997) and inter-organisational impact (Clemons and Row, 1993), have been suggested by scholars, it is important to choose the impacts depending on the system that is to be evaluated and its specific purposes. While such finer granularity may be appropriate for some studies, this is not directly relevant to this research. The main focus within this study is the use of Web 2.0 for local governments and to facilitate their internal operations and therefore the chosen three classifications were considered most relevant to articulate the implications of such technology. This has been main motivator and rationale for systematically categorising the Web 2.0 impact factors within these classifications.

2.8.1 Organisational Impact of Web 2.0 technologies in e-Government

Web 2.0 technologies can have significant effects on the existing organisational and procedural elements of any kind of organisation. Web 2.0 provides a new set of technologies to the government organisations, but at the same time it brings about a change to the existing organisational culture of participation, openness and transparency (Balutis, 2009).

The nature of Web 2.0 interaction is it removes the obvious hierarchy of Web 1.0 interactions between public administration and citizens. In Web 1.0, the provider decided what information to make available (usually forms or information for download) and how the user would interact with the services (payments, application for services etc). However, there is potentially a major divergence of culture as many online communities stress open interaction instead of closed, hierarchical interactions and the informal instead of formal communications (Huijboom et al., 2009). In addition, within the organisation, Web 2.0 facilitates a more collaborate less hierarchical style of interaction (Parycek and Sachs, 2010; Schweik et al., 2011). In combination, this can place pressure on a local authority to adopt a more interactive, and open style of communication and to be more responsive to the views of outsiders for greater transparency (Bonsón et al., 2012; Bertot et al., 2010).

Such interactions lie at the core of meeting growing government demands to improve communications, enhance collaboration and encourage innovation throughout the organization (Osimo, 2008). In essence, Web 2.0 requires organisations to adapt to different ways of thinking and new organisational norms (Kobza, 2008). In particular, there is a need to ensure that the openness that results from Web 2.0 is managed so as to minimise the risks of loss of confidentiality (data protection) and that all resulting communications meet set standards in terms of tone and content (Meijer and Thaens, 2010).

The adoption of knowledge sharing tools such as wikis can assist in the collation and collection of information (Traunmuller, 2010; Osimo, 2008) and again break down existing hierarchies (Schweik et al., 2011). This process implies a substantial staff training need to ensure that key skills in terms of managing social media and moderating of inputs are available (Mintz, 2008).

2.8.2 Technological Impact of Web 2.0 technologies in e-Government

The technological implications refers to the delivery of Web 2.0 technologies has been driven by the widespread development of web programming languages such as Ajax (Asynchronous Javascript and XML) and Application programming interface (API) (Anderson, 2007). These key technical Web 2.0 features results in technological implications in development of e-Government. They have enabled Web 2.0 technologies to be developed rapidly, interoperable and have facilitated the creation of mash-ups of data from various sources allowing for new presentations of information.

Critical issues in this regard include the need to ensure the security and privacy of some data and processes (Osimo, 2008; Chen et al., 2008). The openness that is an essential part of Web 2.0 can leave other systems more vulnerable to hacking. However, most technological issues connected with Web 2.0 represent gains over other approaches. Key tools such as RSS allow for interoperability across various platforms including mobile phones (Osimo, 2008).In addition the underpinning for Web 2.0 technologies, such as SaaS (O'Reilly, 2008) allow for operations to be scaled up as they expand rather than demanding a major capital outlay at the first stage.

2.8.3 Social Impact of Web 2.0 technologies in e-Government

This category encompasses factors that are associated with the societal implications of Web 2.0 use in facilitating e-Government services by the government authorities. One of the main features of Web 2.0 is that it allows for user generated content and this is often perceived to have a major social implication (OECD, 2007). Key advantages in this respect lie in the co-production of services as it is easier to draw in a wide range of expertise (Bertot et al., 2010). This can lead to greater participation and engagement with the public both over service delivery and policy development. In addition, such an approach can help to build trust with users who come to see local government as interactive and responsive to their interests (Grabner-Krauter, 2009).

As highlighted above Web 2.0 technologies can have a significant impact on transforming organisations. It is therefore useful to consider the impact of such issues in terms of the organisation, technology and social elements in order to ensure an evaluation of Web 2.0 takes account of all potential variables. Despite this, there still seems to be little focus and

understanding among managers and academic knowledge about how Web 2.0 technologies can impact an organisation. These three themes are discussed in this section so as to draw together the existing literature. In turn the detailed list and a summary of the evaluation and impact factors of Web 2.0 that form the conceptual model developed in this study are presented in chapter 3.

2.9 Evaluation of Theory Development in e-Government

A number of studies (Anderson and Henriksen, 2005; Heeks and Bailur, 2007; Yildiz, 2007) have argued that research in the e-Government domain lacks theoretical and methodological thoroughness (Rana et al. 2012). According to Coursey and Norris (2008), there has been limited theory development and testing in e-Government with the arguable exception of models predicting individual user adoption, such as the technology acceptance model (TAM: Davis, 1989), or those from institutional and policy perspectives (e.g., Fountain, 2001).

In order to understand the use and development of theory in the field of e-Government, table 2.5 presents a list of theories used in this domain in the form of a taxonomy. These were drawn from Association for Information Systems' (AIS) list of 54 theories' used in IS research (Schneberger and Wade, 2007). Although AIS's theory list presented detailed information on each of the theories in IS research, it still lacked a definitive goal as it adapted a broad perspective reflecting on the whole of IS literature. In comparison, table 2.5 maps the theories used in e-Government in a systematic and defined manner by drawing example studies from the literature and presenting the application domain respectively. This was a key rationale underpinning the development of the taxonomy and to somewhat address the weakness of AIS's list of theory use in IS research.

It is clear from table 2.5 that 18 theoretical approaches have been applied in studies in the e-Government domain but there is a lack of an overarching theory within the e-Government literature. However, there has been extensive use of some models such as ANT, diffusion of innovation, institutional theory, stakeholder theory, TAM and UTAUT within the e-Government literature. Beyond the scholarly literature, the e-Government field also contains models published in reports (Hiller and Bélanger, 2001) and by prominent consulting groups (Baum and Maio, 2000).

Information Systems theory	Example e-Government Studies	e-Government Domain
1. Actor Network Theory (ANT)	(Heeks and Stanforth, 2007) (Stanforth, 2006) (Hardy and Williams, 2008) (Gronlund, 2005)	e-Government services Implementation e-Procurement Governance
2. Chaos Theory	(Brewer et al., 2006)	Design and Implementation
3. Cognitive Dissonance Theory (CDT)	(Moynihan and Lavertu, 2012)	Public Administration / e-Voting
4. Contingency theory	(Jun and Weare, 2008)	Adoption
5. Diffusion of innovations theory (DOI) / Innovation Diffusion Theory (IDT)	(Hussein et al., 2011) (Dimitrova and Chen, 2006) (Gilbert et al., 2004) (Carter and Bélanger, 2005)	Adoption Adoption Adoption Adoption/Diffusion
6. Dynamic Capabilities (DC)	(Klievink and Janssen, 2009) (Janssen and Joha, 2007)	Transformation Governance
7. Institutional Theory (INT)	(Jun and Weare, 2008) (Gronlund, 2005) (Gil-Garcia and Martinez-Moyano, 2007)	Adoption Governance e-Government evolution
8. Knowledge-based theory of the firm	(Dzhumalieva and Helfert, 2008)	Interoperability
9. Media Richness Theory	(Barth and Veit, 2011) (Ebbers et al., 2008)	e-Service Multichannel management
10. Resource Dependency Theory (RDT)	(Jun and Weare, 2008) (Homburg and Bekkers, 2002)	Adoption Managerial
11. Resource-based view of the firm	(Dzhumalieva and Helfert, 2008)	Interoperability
12. SERVQUAL	(Parent et al., 2005)	Citizen trust
13. Social Cognitive Theory	(Verdegem et al., 2010)	Benchmarking
14. Stakeholder Theory	(Scholl, 2002) (Tan et al., 2005) (Zhang et al., 2005) (Lim et al., 2007)	e-Government services e-Governance Knowledge Sharing Implementation
15. Structuration Theory	(Devadoss et al., 2003) (Gronlund, 2005)	Transformation Governance
16. Technology Acceptance Model (TAM)	(Hussein et al., 2011) (Hu et al., 2011) (Carter and Bélanger, 2005) (Colesca and Dobrica, 2008) (Dimitrova and Chen, 2006) (Gilbert et al., 2004)	Adoption Adoption Adoption/Diffusion Citizen's Adoption Adoption Adoption
17. Theory of Planned Behavior (TPB)	(Hung et al., 2006) (Lu et al., 2010)	User Acceptance Adoption
18. Unified Theory of Acceptance and Use of Technology (UTAUT)	(Carter et al., 2011) (Gupta et al., 2008) (Loo et al., 2009)	Adoption Adoption User Acceptance

Table 2.5: Information Systems Theory used in e-Government

These models are a mix of being descriptive, predictive or normative (Coursey and Norris, 2008). However, it can be asserted that some, like those published by the Gartner Group (Baum and Maio, 2000), may be more designed to promote sales of e-Government services rather than unbiased theory building. It is to be noted that these theoretical structures are not

formally applied in this research as the primary focus was on identifying the approaches to improve the evaluation and implementation of Web 2.0 in e-Government. Also, none of these directly address the specific issues of Web 2.0 and help evaluate Web 2.0 technologies application in the e-Government.

The gap in terms of theory linking adoption, implementation and impact of e-Government is a significant issue. It has meant that many studies have tended to report what happens in a particular instance rather than considering if there are common causal factors that may explain either adoption or implementation. This is particularly important as the possibilities of Web 2.0 expand both the scope and risks of e-Government. As discussed in the introduction, one goal in this thesis is to create, test and refine a conceptual model using the benefits, costs and risks and organisational, technological and social impact factors in e-Government, that can be used by scholars and practitioners as an implementation guideline and assist with the wider task of theory building in the e-Government domain.

2.10 Gaps in the literature

As discussed in this chapter, Web 2.0 has become the focus of a number of research studies, but these were originally in terms of its impact on organisations in the private sector (Fischer and Reuber, 2011; Hughes, 2010; Stone, 2009; Cooke and Buckley, 2008). More recently, there are also an increasing number of studies emerging on the implications of Web 2.0 technologies on various public sector domains from politics to health (Anfinnsen et al., 2011; Wattal et al., 2010; Hughes et al., 2009; Ajjan and Hartshorne, 2008).

However, the review of the academic literature indicates that the studies within the e-Government context only present an arbitrary list of application domains of Web 2.0 tools adopted and lack empirical research. This is not universal as there have been significant interests and contributions from practitioners in the form of studies, reports and articles on Web 2.0 tools and its importance for governments (Osimo, 2008; Huijboom et al., 2009). White papers and reports have also been published by various well-known professional services and technology organisations such as Accenture, Deloitte, IBM, Cisco on how governments can leverage Web 2.0 technologies by presenting strategic recommendations and frameworks (Accenture, 2009b; Chang and Kanna, 2008; Johnston et al., 2008; Dovey

and Eggers, 2009). This undoubtedly brings to light the importance practitioners place on these tools for the enhancement of e-Government and public services. Table 2.6 below presents a summary of some of the Web 2.0 studies within the public sector domain.

Domain	Reference	Study Focus	Study Outcome
Politics	Wattal et al., (2010)	▪ Investigates the contingent impact of related Information Systems (IS) and Web 2.0 technologies in the field of politics especially the campaigning process	▪ A research agenda highlighting where IS can contribute to the academic discourse on e-politics
Higher Education / Library	Ajjan & Hartshorne, (2008)	▪ A study to assess a university faculty's awareness of the benefits of Web 2.0 to supplement in class learning and better understand the faculty's decisions to adopt these tools using decomposed theory of planned behaviour (DTPB) model	▪ Demonstrating the usefulness of DTPB model and a number of implications highlighting the usefulness of Web 2.0 in a university classroom environment
	Anfinnsen et al., (2011)	▪ Studies the use of folksonomies, a Web 2.0 tool in a University Library by developing a Web 2.0 system based on the requirements of the library stakeholders	▪ The development and the evaluation of a Web 2.0 based library portal system. Findings highlight that the folksonomies have a beneficial effect on user involvement as an active library user participant
Health Services	Giordano and Giordano (2011)	▪ Health professions students' use of social media	▪ Results indicate that students prefer online media as their primary source of information and the majority of students were using Facebook, and very few were using Twitter or LinkedIn or other social networking sites.
	Hughes et al., (2009)	▪ Examines the use of Web 2.0 based clinical information being used by junior physicians in a clinical environment to understand their impact on medical practice	▪ Presents a set of motivators to use Web 2.0 or traditional medical sites and mainly highlights the implications for Web 2.0 use in informational seeking and medical education.
e-Government	Dadashzadeh, (2010)	▪ Studies a number of Web 2.0 technologies and its applications in the US government with the aid of Accenture's Public Service Value Governance framework	▪ Presents issues arising when adopting social media technologies and a guideline for evaluating social media initiatives which allow for strategic transition from e-Government to web-based participatory government.
	De Kool & van Wamelen, (2008)	▪ Explores the concept of E-Government and Web 2.0 and discusses these notions in the broader context of societal and technological developments	▪ A framework to classify Web 2.0 applications adoption using examples from Netherlands
	Dixon, (2010)	▪ Examines the literature for evidence and best practices on the adoption and the use to date of Web 2.0 technologies in government	▪ Presents a classification of articles which are mostly US examples using Moon's (2002) Stages of E-government and suggests a "path" that highlights the impact of as well as developing best practices for using Web 2.0 technologies to improve government services and public administration
	Osimo, (2008)	▪ An empirical study focusing on the implementation of Web 2.0 projects in e-Government within EU	▪ Presents the results of the empirical findings illustrating the implications of Web 2.0 in a set of e-Government domain and by presenting 6 cases. In addition the study provides a cross-analysis of the detailed results.

Table 2.6: Web 2.0 studies in Public Sector

Although various studies and reports have been presented by scholars and practitioners on the use of Web 2.0 technologies to enhance public service delivery, there still remains a void in the normative literature of a full-fledged evaluation of Web 2.0 technologies in the e-Government especially in the context of local government. Moreover, as highlighted by Adams (2010), the trends of online communities and Web 2.0 platforms have proliferated so rapidly that researchers did not foresee the significant role that it would play in the public sector. Hence, there has been a lack of extensive research on how these social networking platforms can play a role in e-Government (*ibid*). The following list presents the gaps in the literature and figure 2.4 helps illustrate the research focus of this study:

- There is a need for the development of advanced effective practices and of appropriate frameworks for evaluating Web 2.0 technologies use by government agencies (Bertot et al., 2012; Chun and Luna Reyes, 2012).

- Though most studies present anecdotal evidence of positive impact in individual Web 2.0 projects for governments, there still remains a weak body of evidence and no fully-fledged impact assessment has been carried out, as these projects are still in their early stages (Dixon, 2010; Osimo, 2008).

- Review of the literature clearly highlights the lack of extensive use of empirical data and the substandard input from multidisciplinary group of users from the public sector adopting these tools to evaluate its impact on e-Government (de Kool and van Wamelen, 2008; Dadashzadeh, 2010).

- Moreover, the literature review indicates that the majority of Web 2.0 studies on e-Government to-date have focused on central government levels, with relatively little systematic research having been undertaken at the local level, even though this is often the main point of contact for the delivery of services and national programmes.

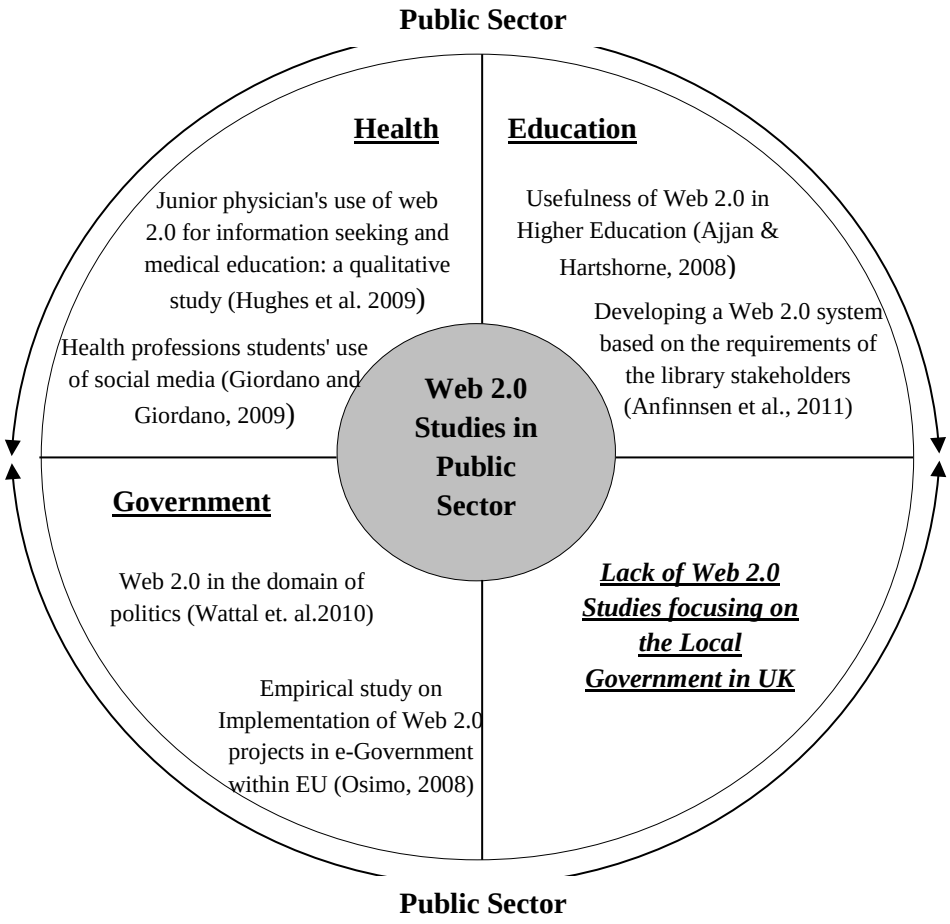

Figure 2.4: Research Focus

Against this backdrop, it is now essential for the public sector especially in the governmental context to evaluate and understand the impact of Web 2.0 tools in order to identify the challenges and the value added when leveraging these technologies for the delivery of e-Government services. Addressing this issue is the focus of chapter 3 where a conceptual model linking these themes is constructed. In turn, chapter 5 presents the research data that in turn is used in chapter 6 to refine the model.

2.11 Conclusions

This chapter has drawn together the literature on e-Government in general with a particular focus on discussions on the significance of Web 2.0 use in e-Government. Within the public sector, Web 2.0 technologies can potentially facilitate many interpersonal functions such as internal teaming, problem solving, collaboration, as well as knowledge management and

transfer. The pressure to address these areas reflects the increasing pressure for government officials to improve communications, enhance collaboration and encourage innovation throughout the organization. However, Web 2.0 technologies represents almost unknown territory for most government organisations, used to many years of tight, top-down hierarchical control, and the implementation implies significant challenges for government leadership. With a culture that depends on control and security to protect information, the freedom inherent in Web 2.0 will be especially challenging to information security officers and others inside the public administration responsible for sensitive information or compliance demands of freedom and innovation against the necessary controls and restraint will be the key to successful social computing deployment for government organisations.

The original focus of research on e-Government adoption has been on implementation by the provider or take up by the citizen (Bussell, 2011; Shareef et al., 2009; Strejcek and Theil, 2003; Titah and Barki, 2006; Venkatesh et al., 2011; Wangpipatwong et al., 2008). The latter has tended to dominate and usually has seen e-Government as essentially a technological process rather than considering both the public administration and social aspects. At the moment, there is a lack of research specifically on the implications of Web 2.0 in terms of e-Government from an internal organisational perspective. Adoption by citizens remains valuable lines of research but Web 2.0 brings significant new challenges for providers of e-Government. In particular, the need to take account of the interactive nature and the extent that this clashes with the conventional model of public service provision (Dulle & Minishi-Majanja, 2011; OECD, 2009).

The literature review highlighted that e-Government can be usefully divided into three related fields (i.e. e-Participation, e-Service, e-Administration). e-Participation is concerned with the interaction between the citizen and state at the level of the political process. This can include voting systems, feedback on policy proposals and interaction around budgetary and service priorities. e-Services are the provision of services to citizens and capture interactions such as payment of bills, accessing benefits and applying for items such as passports and driving licences. Finally e-Administration is more concerned with the internal workings of public administration but can also involve interaction between government and the private sector (such as procurement).

Web 2.0 can potentially affect all of these aspects. In particular it can allow a shift in terms of e-Participation from the simple provision of information and receipt of feedback to allow far greater interaction between service users and providers. So far, at least in the UK (section 2.4), there is evidence that Web 2.0 are increasingly being used in terms of e-Administration and that take up has been tentative and patchy. It is suggested (and this is the main theme in chapter three) that one way to both increase take up and ensure Web 2.0 is effective is to combine aspects of the traditional IS evaluation approach (section 2.7) with a consideration of the impact on the organisation (section 2.8). This means there is a need to base any evaluation around:

- Benefits;
- Costs;
- Risks;

In turn there is also a need to consider the implications of the technology to the organisation in terms of:

- Organisational impact;
- Technological impact;
- Social impact;

The importance of each of these issues has been discussed in this chapter. Overall, Web 2.0 requires a shift of attitudes from seeing Government about providing information or access to services to one where information flows to and from service providers. In effect, Web 2.0 is partly about technological change and partly about attitudinal change. The discussion in this chapter has identified the advantages and the costs and risks to meeting this transformation. Additionally, the impact of these tools from an internal organisational perspective has been also reported. Baxter et al. (2010) stress the importance of clarity as to why Web 2.0 is being implemented. In effect, if the benefits are to outweigh the costs and risks, then effective development and implementation is critical. This means that research needs to take account of the practical challenges facing practitioners and to pay careful attention to understanding the internal organisational perspective in terms of effective Web 2.0 implementation. Thus the conceptual model in chapter 3 has a dual role. It is designed to provide a template for practitioners as well as to construct an outline model that can be used for theory development in this field.

Chapter 3

Developing a Conceptual Model: Web 2.0 Application in e-Government

3. Developing a Conceptual Model: Web 2.0 Application in e-Government

3.1 Introduction

The review of the literature in chapter 2 has identified the need for further evaluation to understand the impact of Web 2.0 technologies in the context of e-Government. As previously discussed, e-Government represents a more complex phenomenon than any previous efforts of IT-induced change experienced in the public sector (Irani et al., 2009; Weerakkody et al., 2007). In consequence, implementation of e-Government poses a challenging task due to several factors such as the variability of its target audience and the bureaucratic and political considerations that influence the provision of public services. Coupled with this, the rapidly changing nature of the internet means that new technologies such as Web 2.0 are constantly being developed and it is easy for organisations to be carried away in the hype in an attempt to stay current. It is therefore important to assess the real value of these technologies through evaluation followed by a clear consideration of the impact these have on government organisations when leveraging these tools.

The literature in particular suggests that it is important for managers to evaluate information systems, in particular understanding the benefits, costs and risks related with the financial and social capital investments in developing such infrastructures (Irani and Love, 2008). Failure of such understanding can lead to disastrous consequences such as inappropriate resource allocation (Farbey et al., 1993). However, if managers' can understand this, it can then help an organisation to utilise better its resources and improve its overall efficiency. Equally important is having an understanding of the potential impact that emerging technologies could have for these organisations. By its varied nature, Web 2.0 technologies allow unpredictable interactions between unexpected stakeholders producing unplanned results, none of which offer comfort to the typical government agency (Mintz, 2008). It is therefore vital for these authorities to understand the effects of these technologies to facilitate e-Government.

The following sections thereby aims to contribute towards this research need by developing a conceptual model that underpins IS evaluation models and systematically categorises impact factors for Web 2.0 application in e-Government. The goal in developing this model is to

utilise the existing taxonomies of benefits, costs and risks of Web 2.0 and link this to consideration of the organisational, technological and social impact. The intention in this chapter is to create the first stage of such a model, use this to evaluate the empirical work reported in chapter 5 and, in turn, use those findings to present a revised version in chapter 6.

3.2 Conceptual model Evolution

This section provides a roadmap to the evolution of the conceptual model (refer to figure 3.1, p.71) discussed in this research. The proposed model is presented through the amalgamation of these two segments reflecting the conceptual model for Web 2.0 application in e-Government presented in the figure 3.1. The model is segmented into two key areas in order to meet the aim of the research. The first segment comprises of three IS evaluation approaches namely benefits, costs and risks. The reasoning behind the choice of these approaches and the chosen taxonomies is looked at in further detail in section 3.4. Subsequently section 3.5 looks at the second segment of the model which articulates the impact factors of Web 2.0 which have been categorised into organisational, technological and social that makes novel contribution at a conceptual level. These constructs are a combination of common factors identified from previous studies on the impact of Web 2.0 technologies on organisations (Osimo, 2008; Wattal et al., 2010) and with other specific factors from public sector domain (Meijer and Thaens, 2010). Once again, the categorisation process and the individual factors are discussed in more detail in section 3.5.

3.3 The conceptual model - Web 2.0 Application in e-Government

Theory development within research on the subject of use of Web 2.0 in e-Government is somewhat fragmented (Wilson et al., 2011; Dixon, 2010). This has been one of the main motivators towards development of a conceptual model that incorporates many significant factors from the normative literature using the prior research available on IS evaluation approaches and Web 2.0 impact factors. As an entirety, the conceptual framework seeks to aid the effective application of Web 2.0 technologies in e-Government, more specifically in LGA's. It uses a holistic approach to culminate all the disparate research studies which have

been seen in isolation and brings them together in a single model. The proposed model depicted below (figure 3.1) consists of:

A review of the existing literature as presented in Chapter 2 on e-Government and IS highlights that there is a lack of a comprehensive model on the application of Web 2.0 in e-Government (see section 2.10). According to Wilson et al. (2011), Dixon (2010) and Sivarajah and Irani (2013) the development of theory on this subject is also quite disjointed. Taking these findings into consideration, this research study presents a novel conceptual model which incorporates significant factors derived from existing research on IS evaluation approaches and Web 2.0 impact factors.

Figure 3.1 depicts the proposed model which consists of two key segments:

- *Evaluation of Web 2.0 on Local Government* - An evaluation of Web 2.0 using traditional IS evaluation approaches highlighting the benefits, costs and risks of Web 2.0 for LGAs.

- *Impact of Web 2.0 on Local Government* - A set of Web 2.0 impact factors that have been categorised into organisational, technological and social implications.

Figure 3.1 is set out below to indicate the full range of the conceptual model that is developed in the rest of this chapter. The balance of the chapter breaks down the component parts and links their development to the literature review in chapter 2. For example, the material on the benefits, costs and risks in Web 2.0 developments is set out in sections 3.4.1, 3.4.2 and 3.4.3 respectively and follow from the summary of main themes in section 2.7 in chapter 2.

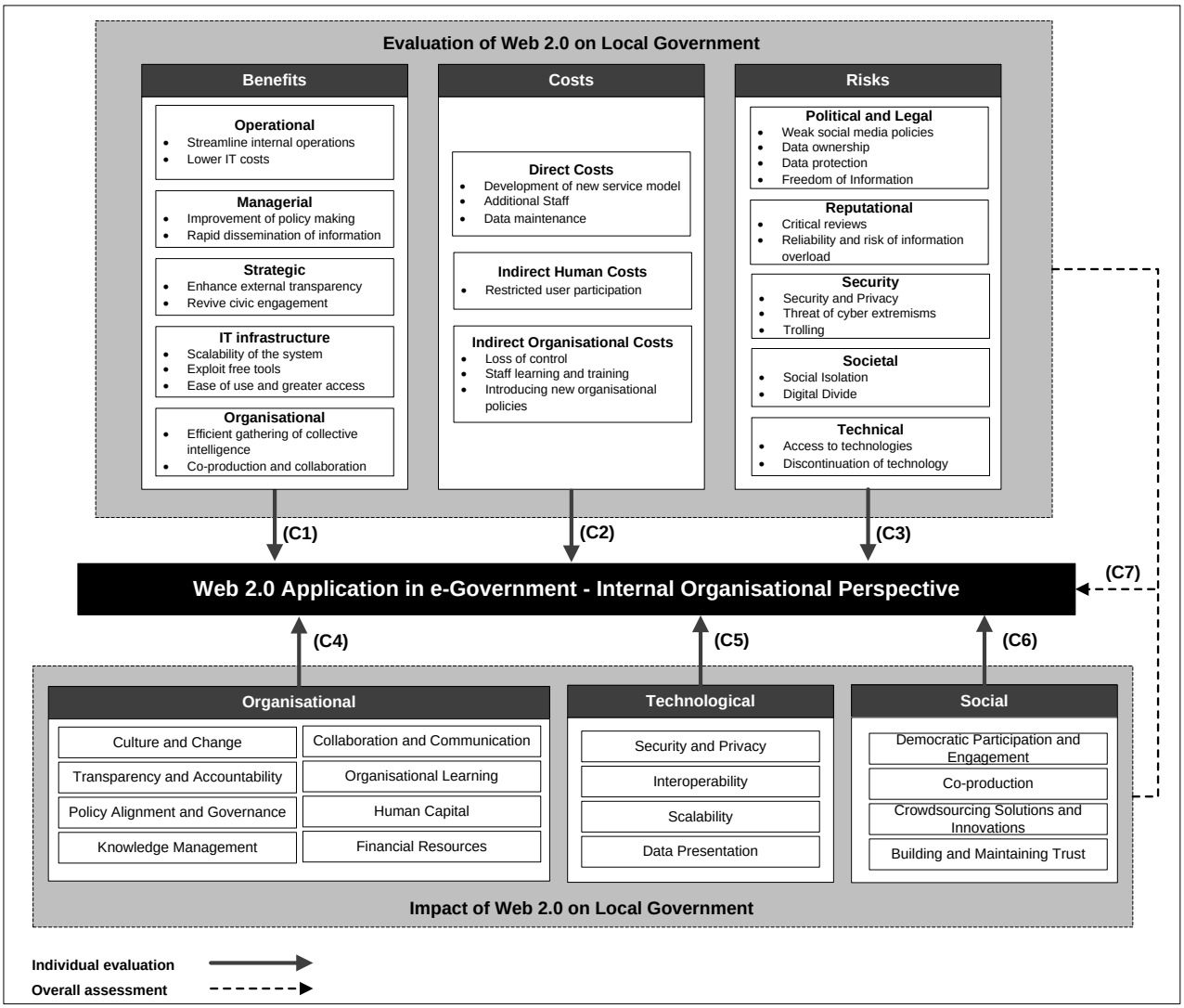

Figure 3.1: Proposed Conceptual model for Web 2.0 Application in e-Government

As illustrated in the conceptual model, this research presents seven conjectures to study the application of Web 2.0 in an e-Government setting, with the aim of testing this model in the practical arena. The research conjectures are as follows:

- **(C1, C2, C3):** Evaluating the benefits (C1), costs (C2), and risks (C3) of Web 2.0 will aid the effective application of Web 2.0 in the e-Government context.

- **(C4, C5, C6):** Exploring the organisational (C4), technological (C5), and social (C6) impact of Web 2.0 will aid the effective application of Web 2.0 in the e-Government context.

- **(C7):** Evaluating Web 2.0 and exploring the impact of Web 2.0 together will provide a cohesive tool to aid the effective application of Web 2.0 in e-Government.

The conceptual model presents itself as a frame of reference that articulates descriptive evaluation and impact factors that may need to be considered when adopting Web 2.0 technologies to facilitate e-Government. The goal is to produce a model that is of particular relevance to government organisations such as LGAs and seeks to provide them with a deeper understanding of factors that may encumber or encourage adoption of Web 2.0 technologies. It will not only provide them with a decision-making tool for implementation of such technologies but will also help facilitate formulation of reasonable and scientific strategies for the development of e-Government. Furthermore, it may help government officials to understand the real value that these tools have to offer to the government organisations to engage with their stakeholders.

3.4 IS Evaluation: A Web 2.0 Perspective

In any consideration of adopting new technology, attention must be paid to the benefits and costs of such adoption (Freeman and Loo, 2009). The emergence of Web 2.0 and the rise of social networks have opened up new perspectives and challenges for the public institutions. These institutions have become more attentive to the possibilities of taking advantages of these tools in the context of e-Government (Assar et al., 2011). Web 2.0 technologies are being rapidly embraced in the e-Government domain not only to meet the demands of citizen expectations and provide them a social web experience, but also for other benefits that these technologies offer to the internal operations of government organisations (Sander, 2008). Nevertheless, cutting edge digital communication comes filled with both potential opportunities and risks. Therefore, the implications of such new digital frontiers and opportunities from the perspective of e-Government are now on the governmental agenda (Klischewski, 2010).

In order to evaluate these technologies, some of the IS evaluation frameworks are analysed and the appropriate factors that can be used to evaluate the Web 2.0 tools are presented. This approach will help to deliver more objective and robust arguments towards the implications of Web 2.0 use in e-Government and also enable organisations to build a strong business case

for the deployment of these tools. Additionally, the factor(s) may provide a deeper understanding of Web 2.0 tools which then in turn may have an influence on the decision making process for Web 2.0 application in e-Government.

The analysis of various IS evaluation taxonomies such as benefits (Andresen et al., 2000; Irani and Love, 2001; Shang and Seddon, 2002), costs (Kusters and Renkema, 1996; David et al., 2002; Irani and Love, 2002) and risks (Sumner, 2000; Benaroch, 2002; Wu and Ong, 2008) was initially undertaken to establish an understanding of the existing IS evaluation models. A critical review of these taxonomies resulted in the extrapolation of appropriate factors to help form the foundation of the conceptual model. Consequently, the three chosen IS evaluation approaches consisted of benefits, costs and risks factors proposed by Shang and Seddon (2002), Irani and Love (2001), Benaroch (2002) respectively. These three taxonomies' form the IS Evaluation criteria segment of the conceptual model as illustrated in figure 3.2 (this is a portion of the full model already set out as figure 3.1) and may be used as a tool to evaluate Web 2.0 applications prior to its implementation by the government organisations. The rationale and descriptions of the chosen factors are set out below.

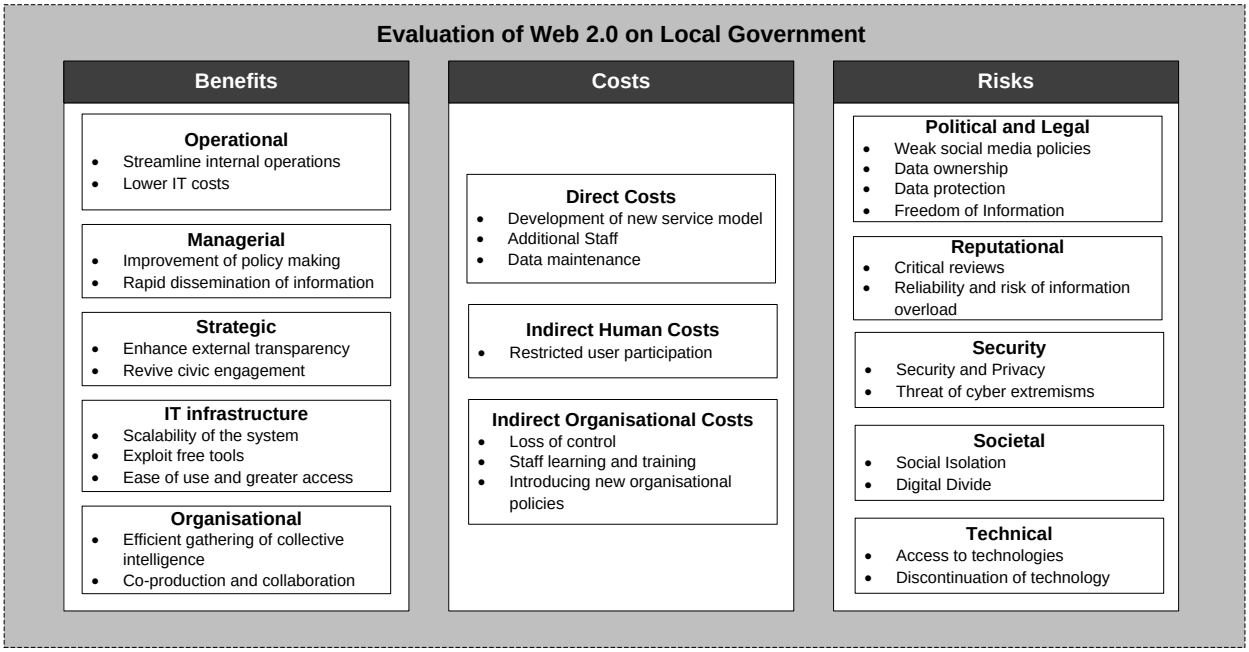

Figure 3.2: IS Evaluation – A Web 2.0 Perspective

3.4.1 Benefits of Web 2.0 in e-Government

There are several different models such as those proposed by Ward et al. (1996), Wilderman (1999) and Ross and Vitale (2000) that exist in the academic literature to classify the evaluation of benefits of information systems. Mostly these studies concentrate on the organisational benefits ranging from operational improvements through decision-making enhancements for organisations to support their strategic goals. However, building on the existing research into IT benefits, Shang and Seddon (2002) propose a five dimension benefit framework for assessing enterprise systems in a more broad and objective manner. In addition to identifying dimensions such as operational, managerial and strategic efficiency, the value of IT infrastructure and organizational benefits were identified as important factors that could contribute to an organisation. This framework was used as it was best suited to this research due to the continuous validation made in many studies, thus making it reliable.

The main categories for the 'benefits' strand of figure 3.2 have been developed from the existing literature. Five major classifications of benefits have been identified and each is subdivided into two or more 'factors' that set out one way in which Web 2.0 can benefit an organisation. The first dimension; operational *benefits* reflects the positive impact that a technology has on organisational operational activities that are usually repeated periodically. These benefits could consist of streamlining and automation of processes that could result in cost reduction, improved productivity and better customer service. The second dimension - *managerial benefits* explores the benefits of IS on activities involving allocation and control of an organisation's resources and facilitating strategic decisions. For example, benefits such as the ability of an IS to provide real time information may help an organisation to achieve better resource management and improved decision making and planning. Next, s*trategic benefits* deal with the potential of IS allowing for achieving strategic benefits such as business growth, alliance, innovation, differentiation etc. The *IT infrastructure* dimension presents the use of technology to allow for sharable and reusable IT resources that provide a foundation for present and future business applications. Finally, *organisational* dimension entails benefits such as focus, cohesion, learning and execution of strategies for an organisation by the use of an information system. The benefits of Web 2.0 are summarised in table 3.1 below as a taxonomy.

Classification	Factors	Description	References
Operational	▪ Streamline internal operations	▪ The collaboration tools such as wikis can streamline internal operations within government agencies especially among disparate teams and across agencies enabling individuals to engage in open discussions leading to a potential build-up of knowledgebase	(Accenture, 2009b)
	▪ Lower IT costs	▪ As the model of Web 2.0 at times requires the use of intermediaries especially mashup applications, these intermediaries can enable governments to provide enhanced, customized services to their citizens at much lower costs than the e-government's centralized provision of service.	(Chang and Kanna, 2008)
Managerial	▪ Improvement of policy making	▪ The tools and practices of Web 2.0 can help improve policy making by integrating online collaboration tools and interactive maps into e-government websites. This can enable governments to become more inclusive and responsive to individual citizens throughout the policy life cycle resulting in improved policy outcomes.	(Dixon, 2010; Bonsón et al., 2012)
	▪ Rapid dissemination of information	▪ The viral nature of Web 2.0 tools such as Microblogging and social networking sites can help disseminate information over the internet much faster compared to traditional methods (e.g. postal letters, pamphlets, static websites etc.) of information delivery.	(Buchanan and Luck, 2008)
Strategic	▪ Enhance external transparency	▪ Web 2.0 applications can help improve external transparency for government organisations by enriching government interactions with external stakeholders and enhancing internal knowledge management	(Meijer and Thaens, 2010; Bonsón et al., 2012)
	▪ Revive civic engagement	▪ Web 2.0 tools such as social networking sites can be powerful tools that the governments can deploy to help revive civic engagement and harness the wisdom of crowds. The government can especially enlist important niche audiences, leverage their insights for policymaking and improve the citizen-government relationship	(Huijboom et al., 2009; Bertot et al., 2012)
IT infrastructure	▪ Scalability of the system	▪ Web 2.0 applications are mostly scalable allowing to handle a growing amount of work in a capable manner	(O'Reilly, 2008; Picazo-Vela et al., 2012)
	▪ Exploit free tools	▪ As most major Web 2.0 applications such as Facebook and twitter are free to use, the government organisations can exploit these tools to benefit their own services.	(Picazo-Vela et al., 2012)
	▪ Ease of use and greater access	▪ Web 2.0 technologies are usually quick and easy to learn and use. It can also be accessed from multiple devices as long it is connected to the internet allowing for greater access to these technologies.	(O'Reilly, 2008)
Organisational	▪ Efficient gathering of collective intelligence	▪ Gathering wisdom from the citizens for crowdsourcing has revolutionarily changed with the use of some Web 2.0 technologies such as Wikis. It has enabled the government organisations efficient and effective collection of geographically dispersed collective intelligence from the citizens with less effort in comparison to traditional crowd-sourcing methods such as public forums and workshops.	(Nam, 2012; Bertot et al., 2012)
	▪ Co-production and collaboration	▪ Governments and the public jointly develop, design, and deliver government services to improve service quality, delivery, and responsiveness.	(Linders, 2012; Bertot et al., 2010)

Table 3.1: Benefits of Web 2.0 in e-Government

3.4.2 Costs of Web 2.0 in e-Government

As in section 3.4.1, this section uses the existing literature to identify potential costs of Web 2.0 in an e-Government context. These are broadly divided into direct costs, indirect human costs and indirect organisational costs and, as with table 3.3 a number of more specific factors are identified within each category.

The identification of the full range of costs of an information system is essential in order to complete a robust IS evaluation (Irani et al., 2003). According to Hochstrasser (1992), the real costs of an IT/IS deployment can often be divided into direct and indirect cost factors. Although many cost taxonomies include direct quantifiable costs associated with IT investments, the majority fail to identify the indirect costs apart from Irani and Love (2001). Indirect costs are difficult to quantify in monetary terms, possibly explaining their limited presence in the various cost taxonomies. However Irani and Love (2002) explains that indirect costs cannot be avoided as their effect would appear once the implementation of the project is initiated. Hence, managers who choose to ignore the indirect costs by not including them in the overall cost portfolio are only delaying the effect of those costs and are not eliminating them. Accounting for both direct and indirect costs, the taxonomy presented by Irani and Love (2001) makes it the most robust and appropriate for this research. The authors highlight that the cost associated with the adoption of IT/IS can be classified as having direct and indirect (human and organizational) characteristics.

The *direct cost* components are those which can be attributed to the implementation and operation of new technology, and as a result are those most considered by decision-makers during the use of traditional appraisal techniques (e.g. hardware and software costs, installation and configuration etc.). *Indirect costs* however, are those that cannot be readily identified, managed and controlled (e.g. management time, productivity loss etc.).

Classification	Factors	Description	References
Direct Costs	▪ Development of new service model	▪ As the Web 2.0 model requires the use of external platforms (e.g. Facebook, YouTube and Twitter), it can prove as a challenge to develop a new service model that integrates these Web 2.0 platforms with existing e-Government systems in a manner that is secure and improves the quality of services to citizens	(Freeman and Loo, 2009)
	▪ Additional Staff	▪ The need for additional staff to develop, manage and be moderators of Web 2.0 tools	(Freeman and Loo, 2009)
	▪ Data maintenance	▪ Costs related to the maintenance of content generated in Web 2.0 tools as the amount of information created will be high in Web 2.0 applications	(Kavanaugh et al., 2012)
Indirect Human Costs	▪ Restricted user participation	▪ The investment on Web 2.0 applications on the e-Government front can potentially result in restriction to exclusive user participation.	(de Kool and van Wamelen, 2008; Blank and Reisdorf, 2012)
Indirect Organisational Costs	▪ Loss of control	▪ Government organisations can face loss of control due to excessive transparency using Web 2.0 applications such as blogs. For instance, blogging by ministers and civil servants has led to release of sensitive information in an incorrect and sometimes illegal manner).	(Osimo et al., 2009)
	▪ Staff learning and training	▪ Existing staff will require education and training to use and moderate Web 2.0 applications to be in line with the organisations policy. This can often require lot of management time and can prove to be a significant indirect cost.	(Kavanaugh et al., 2012)
	▪ Introducing new organisational policies	▪ Many social media services are hosted outside government websites (e.g., Facebook, Twitter, YouTube). Therefore it is important for government agencies to establish and enforce explicit agency-wide linking policies. This can be time consuming and costly for organisations.	(Bertot et al., 2012)

Table 3.2: Costs of Web 2.0 in e-Government

3.4.3 Risks of Web 2.0 in e-Government

This completes the detailed analysis underpinning figure 3.2 by identifying the risks of adopting Web 2.0. Although there is some overlap to the concept of cost, risk captures a range of non-financial factors that could either undermine the particular project or harm the overall organisation. Thus failure of a system to operate as planned can be a cost (possibly

requiring more investment or to abandon existing investment) but also has a reputational risk in terms of the perceived ability to manage public funds.

IS projects are renowned for their high failure rate and, it is important for organisations to improve their ability to manage their IS risks so that projects can be delivered against the objectives with which they were justified (Irani and Love, 2008). Risk factors in IS projects ranging from issues that relate to specific internal organisational risks to external factors. Factors such as organizational fit, skill mix, management structure and strategy, software systems design, user involvement and training and technology planning have been highlighted by Sumner (2000). On the other hand, Wu and Ong (2008) present two kinds of uncertainty factors that address risks in the dynamic environment of information technology investment. While "external uncertainty" comes from outside the organization such as market *extinction*, "internal uncertainties" occur within a company (e.g. uncertainty about budget over spent). Essentially, the IS investment risks identified are present in two streams of IS research. The first includes risks arising in software development and the second stream focuses on IT investment risks arising outside the scope of software development. There is a lack of research that has incorporated both these aspects together apart from Benaroch (2002). The author offers a high-level synthesis of IT investment risks identified by both research streams making it suited for this research. It splits these risks into three main categories, namely: firm-specific risks, competition risks and market risks.

Firm-specific risks are due to uncertain internal factors which for example could be the result of uncertainty about the ability of the firm to fully fund a long-term capital-intensive investment. *Competition risks* are the result of uncertainty about whether a competitor will make a pre-emptive move, or simply copy the investment and improve on it. Finally, *market risks* are due to uncertain external factors that affect every firm considering the same investment.

The above criteria provides a synthesis of previous research involving IS evaluation turning it into a more coherent body of knowledge and acts as tool that will facilitate the analysis of Web 2.0 technologies prior to its implementation in more public sector organisations. The next section will discuss the second segment of the proposed of the model. Table 3.3 summarises the main themes and relevant literature.

Classification	Factors	Description	References
Political and Legal	▪ Weak social media policies	▪ As Web 2.0 is an emerging phenomenon in government organisations some of the organisational policies governing the use of social media applications may still be at its infancy. The immature policies might prove to be a risk for governmental organisations.	(Bertot et al., 2012)
	▪ Data ownership	▪ The technique of application mashups and content syndication on to existing e-Government platforms can also be an issue leading to loss of ownership control and authenticity of the final products.	(Osimo et al., 2009)
	▪ Data protection	▪ Rise in responsibility for government organisations to handle more personal information about individuals as most Web 2.0 technologies require this information to use the tools.	(Osimo, 2008)
	▪ Freedom of information	▪ The use of Web 2.0 technologies can present challenges in appropriately responding to Freedom of Information legalities. It can raise significant complexities for an organisation with regards to open access and the publishing of information.	(Huijboom et al., 2009)
Reputational	▪ Critical reviews	▪ While the advent of Web 2.0 technologies has played an important role in the providing people with useful assessments of products and services, it has also meant that there is now a greater risk of these assessments damaging the image of people and organisations without a fair reason. This is because it is difficult to find out of assessment are fair or the result of the personal resentment	(de Kool and van Wamelen, 2008)
	▪ Risk of information overload and reliability	▪ There is a risk of information overload and poor quality of content shared by public users when using some Web 2.0 applications such as blogs and wikis, as concerns can be raised against their reliability, accuracy and authority of information	(Huijboom et al., 2009)
Security	▪ Security and Privacy	▪ The open nature of Web 2.0 presents significant challenges to the traditional enterprise approach to controlling intellectual property over information shared and surety of these applications.	(Bin Al-Tameem et al., 2008)
	▪ Threat of cyber extremisms	▪ These new, interactive, multimedia-rich forms of communication provide effective means for extremists to promote their ideas, share resources, and communicate among each other	(Chen et al., 2008)
Societal Risks	▪ Social isolation	▪ Though Web 2.0 can stimulate social interactions and communication between different individuals, there is also the risk of people isolating themselves from the real world as they become too addicted the use of internet	(de Kool and van Wamelen, 2008)
	▪ Digital Divide	▪ There could be a risk of inequality between different group of users in terms of access to, use of or knowledge of Web 2.0 tools. Some users may be hesitant of using Web 2.0 technologies and may not be interested in using the tools at all. This could indirectly result in the exclusion of these users and not allowing for equity of access.	(Osimo et al., 2009)
Technical	▪ Access to the technologies	▪ The need for minimum requirements such as a device and internet access at a speed sufficient to support social media content	(Bertot et al., 2012)
	▪ Discontinuation of technology	▪ The risk of the continuity of existing Web 2.0 tools. For example Yahoo announced the discontinuation of its delicious ▪ tagging service.	(Bertot et al., 2012)

Table 3.3: Risks of Web 2.0 in e-Government

3.4.4 Summary

Section 3.4 has taken the top portion of figure 3.1 (repeated as figure 3.2) to set out the logic behind the proposed categories of benefits, costs and risks. Each of these has been drawn from the literature (tables 3.1, 3.2 and 3.3) in order to create a taxonomy that can be embedded in the model. The distinction between costs and risks is important. Identifying the full range of costs (especially indirect) can be difficult but it is harder for organisations to take into account the full range of risks, especially at an early development phase.

3.5 Web 2 .0 Impact Factors

This section develops the lower portion of figure 3.1 on a similar basis to section 3.4 above. The intention here is to concentrate on the potential impact of Web 2.0 on the organisation and follows the same pattern as section 3.4. Three main ways in which Web 2.0 can affect the organisation (Organisational, Technological, Social) are identified (see figure 3.3) and then each is broken down into the main factors and specific issues drawn from the literature (set out in detail in table 3.4) in the rest of this section.

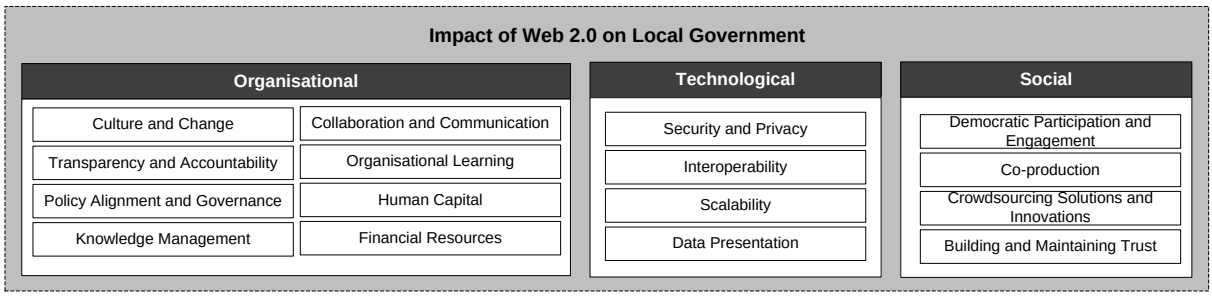

Figure 3.3 Web 2.0 Impact Factors

The influence of Web 2.0 is potentially disruptive as well as providing the means to alter the nature of e-Government (Mintz, 2008). However, since the development of this kind of technology is very recent, research about the impact of Web 2.0 on the public sector is still highly tentative and exploratory (Huijboom et al., 2009). Hence, studies such as this research

will be invaluable to government organisations as they aim to determine the level of use of these technologies by municipalities and assess if they are relevant and necessary to their digital strategy. This will help identify areas for improvement and future action plans (Bonsón et al., 2012). The model (figure 3.1) therefore identifies impact factors that will enable the creation of a wider understanding of the potential impact of Web 2.0 technologies.

One important issue in this respect is to argue that the lessons for LGAs, in terms of Web 2.0 adoption, are no different to any other organisation. This allows use to be made of the wider body of literature on information systems and public sector research, in order to build up the conceptual model. The proposed constructs are a combination of common factors identified from previous studies on the impact of Web 2.0 technologies on organisations (Osimo, 2008; Wattal et al., 2010) and with other specific factors from the public sector domain (Meijer and Thaens, 2010). These works have been extended and adapted to the use of Web 2.0 in the area of the LGAs, thus, resulting in the conception of three main categories (i.e. organisational, technological and social) with factors within these categories influencing Web 2.0 application in e-Government.

Organisational, technological and social factors are argued to be important antecedents of IS success (DiMaggio et al., 2001; Delone and McLean, 2003; Seddon, 1997). Other research has identified additional factors such as consumer impacts (Brynjolfsson, 1996), environmental impact (Plepys, 2002), work group impacts (Myers et al., 1997) and inter-organisational impact (Clemons and Row, 1993). There is, however, a risk in simply producing a long list of potential factors and not addressing the question of which, most likely in combination, are important in a particular instance. However, since, as discussed in chapter 4, this study is a single case study undertaken at a stage when there is lack of theoretical research, then the main focus within this study is to study the use of Web 2.0 for local governments. For this purpose, it was argued that the three common classifications are the most relevant to articulate the implications of such technology. This taxonomy is used to construct table 3.5 with specific issues captured as the organisational, technological and social Web 2.0 impact factors extrapolated from the existing literature.

Classification	Factors	Description	References
Organisational	▪ Culture and Change	▪ The adoption and implementation of Web 2.0 technologies requires government organisations to embrace innovation, transparency, collaboration, open communication and user generated content. They need to be open to the changes this brings and adapt to a Web 2.0 friendly working culture thus leading to an open government culture.	(Parycek and Sachs, 2010)
	▪ Transparency and accountability	▪ Web 2.0 applications can make citizen demands and government products and processes more transparent thus increasing accountability of the same.	(Bonsón et al., 2012; Bertot et al., 2010)
	▪ Policy Alignment and Governance	▪ As authorities move towards more democratic and open government practices with the use of Web 2.0 technologies, there is a need for organisations to tightly align policies against practice to minimise risk from issues such as confidentiality, propriety etc.	(Meijer and Thaens, 2010)
	▪ Knowledge Management	▪ Web 2.0 technologies allow for effective knowledge management. It facilitates collection of both implicit and explicit knowledge in order to create a knowledge base which can then be used by organisations.	(Traunmuller, 2010; Osimo, 2008)
	▪ Collaboration and Communication	▪ The internal and external collaboration and communication within an organisation is better facilitated by Web 2.0 tools. Collaborative editing tools such as Wiki's make the process of collection and sharing of information more efficient. It also improves communication by breaking down the traditional organisation hierarchy.	(Schweik et al., 2011)
	▪ Organisational learning	▪ Web 2.0 tools such as blog's and wiki's facilitate information sharing thus assisting social learning within organisations.	(Baxter et al., 2010)
	▪ Human Capital	▪ Organisations will need to train existing staff or hire new personnel (e.g. social media managers) who have the skills and capabilities to operate and manage Web 2.0 tools. This will pose as a necessary investment in Human capital.	(Mintz, 2008)
	▪ Financial Resources	▪ Cloud computing and Web 2.0 technologies such as SaaS platforms can bring about financial savings to organisations as the need for specific software and infrastructure is reduced.	(Paquette et al., 2010; Marston et al., 2011)
Technological	▪ Security and Privacy	▪ Government organisations will need to be aware of security and privacy concerns as Web 2.0 technologies leave organisations more vulnerable to issues such as loss of information, hacking and cyber extremism etc. However a balance between tight security without stifling creativity and communication needs to be achieved.	(Osimo, 2008; Chen et al., 2008)
	▪ Interoperability	▪ Web 2.0 tools (e.g. RSS) allow for interoperability wherein the government can publish information and services over different platforms including mobile phones thus giving them a wider reach.	(Osimo, 2008)
	▪ Scalability	▪ Web 2.0 technologies, particularly in the form of SaaS platforms, provide a scalable system such that it can cope and accommodate growth of the organisations.	(O'Reilly, 2008)
	▪ Data Presentation	▪ Information can be shared and presented in a variety of new ways beyond traditional methods with the aid of Web 2.0 tools. For example, mashup's allow the presentation of Google maps, knowledge maps and presentation of videos on YouTube on a single platform.	(Meijer and Thaens, 2010)
Social	▪ Participation and engagement	▪ Social media technologies within Web 2.0 allow the government organisations to interact with the public by engaging them in dialogue over issues such as policy development and implementation.	(Bertot et al., 2012)
	▪ Co-production	▪ Government organisations can use Web 2.0 tools work with the public to get their involvement in design, development and delivery of their services thus building a two way relationship.	(Bertot et al., 2010)
	▪ Innovations and Crowdsourcing solutions	▪ Web 2.0 technologies pave the way for innovation through sharing of knowledge. It facilitates crowdsourcing, thus allowing the government to share information internally as well as with the public thus providing a base platform off which innovation can occur.	(Bertot et al., 2010)
	▪ Building and Maintaining Trust	▪ The role of trust in Web 2.0 suggests that continuous interactions and positive experience in social networking sites will enhance the initial trust of the user. This factor highlights the impact that Web 2.0 technologies such as social networking sites can have on trust among its users in government organisations	(Grabner-Krauter, 2009)

Table 3.4: Organisational, Technological and Social Impact of Web 2.0

3.5.1 Organisational impact of Web 2.0

Information technology in general and the Internet in particular are having a dramatic impact on organisations (Delone and McLean, 2003). In addition, Web 2.0 technologies are causing significant effects on the existing operational and procedural elements of many organisations. Web 2.0 provides a new set of technologies to government organisations, but at the same time it brings about a change to the existing organisational culture of participation, openness and transparency (Balutis, 2009). It is fundamentally different from the traditional government bureaucracy in that online communities providing public value are open instead of closed, horizontal instead of hierarchical and informal instead of formal (Huijboom et al., 2009). Within the organisation, Web 2.0 facilitates many interpersonal functions with implications, such as internal teaming, problem solving, collaboration, and knowledge management and transfer (Parycek and Sachs, 2010; Schweik et al., 2011). Such interactions lie at the core of meeting growing government demands to improve communications, enhance collaboration and encourage innovation throughout the organization (Osimo, 2008).

Within the organisational dimension, there are various factors such as *culture and change, transparency and accountability, policy alignment, etc.* (Parycek and Sachs, 2010; Bonsón et al., 2012; Meijer and Thaens, 2010). These highlight the effects of Web 2.0 technologies on the internal operations and process of a government organisation. For example, *culture and change* indicates that the adoption of Web 2.0 technologies requires government organisations to be ready to embrace changes that these technologies may bring and adapt to a Web 2.0 friendly working culture. In essence, it compels organisation leaders to swiftly adapt to such changes and embrace innovation (Kobza, 2008).

3.5.2 Technological impact of Web 2.0

As ICT rapidly develops, it is important for organisations to understand the technical implications of these developments (Delone and McLean, 2003; Myers et al., 1997). The delivery of Web 2.0 technologies has been driven by the widespread development of web programming languages such as Ajax (Asynchronous Javascript and XML) and Application programming interface (Anderson, 2007) . Key technical Web 2.0 features such as these, has

resulted in various technological implications for the delivery of e-Government. They have enabled Web 2.0 technologies to be developed rapidly, interoperable and have facilitated the creation of mash-ups of data from various sources allowing for new presentations of information (O'Reilly, 2007). The technological aspect therefore reflects the influences of Web 2.0 tools on the technical front of a government organisation.

This dimension includes factors such *security and privacy, interoperability, scalability and data presentation* (Osimo, 2008; O'Reilly, 2007; Meijer and Thaens, 2010). For example, the *security and privacy* factor highlights the need for government organisations be aware of security and privacy concerns as Web 2.0 technologies leave organisations more vulnerable to issues such as loss of information, hacking and cyber extremism to name a few (Osimo,2008; Chen et al., 2008). However, there is also a need for a balance between tight security without stifling creativity and communication by these organisations if they are to fully exploit these technologies.

3.5.3 Social impact of Web 2.0

Changes in technology often affect society (DiMaggio et al., 2001). Technology and any change in the same impacts on individuals extending to aspects such as jobs, education, governments and social interactions within a community. This impact can be beneficial in that it can lower prices and better products and services, or detrimental due to issues such as loss of privacy, depersonalisation and changing incentives and motivations (*ibid*). One of the main features of Web 2.0 is that it allows for user generated content and this is often perceived to have a major social implication in view of the social responsibilities associated with the implementation of such technologies (OECD, 2007). This category encompasses factors that reflect the societal implications of Web 2.0 use in e-Government for the government authorities.

The social dimension compromises factors such as, *participation and engagement, co-production ,innovations and crowdsourcing solutions* and *building and maintaining trust* (Bertot et al., 2012). For example, the *innovations and crowdsourcing solutions* factor discusses the use of Web 2.0 tools to spark innovation through sharing of knowledge. As Web 2.0 tools helps support crowdsourcing (i.e. distributed problem solving and production

model outsourced to group of people), it allows for the government to share information internally as well as with the public providing a base platform off which innovation can occur (Bertot et al., 2012). Moreover, the *building and maintaining trust* factor highlights the impact that Web 2.0 technologies such as social networking sites can have on trust among its users in government organisations. A study by Grabner-Krauter (2009) on the role of trust in Web 2.0 suggests that continuous interactions and positive experience in social networking sites will enhance the initial trust of the user. As social networking sites provide an ideal platform for participation to occur among employees and public, government organisations need to be mindful that the user's first impressions and experience in these platforms can have a significant impact on building and maintaining trust (Grabner-Krauter, 2009).

3.5.4 Summary

This section has developed the rationale for the lower portion of figure 3.1 (shown above as figure 3.3). Table 3.4 links the themes identified back to the literature review in chapter two to justify the taxonomy used in the model. The logic in this case is to highlight that it's useful to take into account each of the evaluation issues (costs, benefits and risks) as well as the organisational, technological and social impact if a complete evaluation is to take place.

3.6 Contribution of the conceptual model

The proposed model (see figure 3.1) highlights that the IS evaluation criteria segment has a potential impact on the decision-making process of using Web 2.0 in e-Government. Thus, signifying the importance of a systematic analysis of these emerging technologies by using thorough IS evaluative approaches. This in turn facilitates government organisations in developing a business case that can be used when deciding to adopt Web 2.0 technologies for enhancing e-Government services.

Similarly, the proposed Web 2.0 impact factor segment also has a potential impact on Web 2.0 application in e-Government and this segment will help organisations to understand the implications of such a technology on government organisations. Nevertheless, these factors

have yet to be evaluated in the practical arena. In doing so, the proposed factors may: (a) extend the current research in Web 2.0 in public sector, (b) enhance the level of Web 2.0 impact assessment and (c) support LGA decision makers when choosing the application of Web 2.0 tools.

The holistic model proposed in this research study makes an important contribution to the emerging literature of e-Government and Web 2.0 by presenting a synthesis of factors from the normative literature. The incorporation of these factors together in one model seeks to contribute to new knowledge by:

- combining in one model the IS evaluation factors that was studied and observed to be important in a number of disparate research studies

- providing a comparative evaluation of the impact factors of Web 2.0 found to be significant in a number of different studies and literature

Formulation of this model is important because there have not been clear articulation of the implications of Web 2.0 technologies in e-Government present in the literature. At this stage the main contribution of the model is to identify how to integrate the traditional IS tools to evaluate a technology such as Web 2.0 with consideration of the impact of Web 2.0 in order to bring these two themes together. The conceptual model (figure 3.1) in turn has two purposes. One is to draw together the substantial research on particular aspects of this problem (in effect sections 3.4 and 3.5) and the second is to create a checklist that can used to understand the implementation process.

This model was tested using the empirical data collected (chapter 5). This evaluation both allowed the model to be refined and the development of a deeper understanding of how the various parts link together. In turn, this revision was designed to assist those facing the practical challenge of introducing Web 2.0 in local government, and, to start the process of addressing the relative lack of theory on the adoption and consequences of e-Government in the academic literature.

3.7 Conclusions

This chapter has taken the literature review in chapter 2 to develop a conceptual model that links the traditional IS evaluation framework with a consideration of the impact of Web 2.0 technology in e-Government. Figure 3.1 identifies three main issues for evaluation – benefits, costs and risks – and three ways in which Web 2.0 can have an impact on local government – organisational, technological and social.

In terms of evaluating Web 2.0 the key issues are identified as the benefits, costs and risks. A number of benefits have been identified including improvements to the policy making process (Dixon, 2010; Bonsón et al., 2012), in terms of public administration (Nam, 2012; Bertot et al., 2012) and that Web 2.0 applications can exploit free tools (Picazo-Vela et al., 2012) with this helping in terms of increasing the scope of a project as it develops. The costs are those that fall on the organisation such as the need for staff to fill new roles (Freeman and Loo, 2009) of new ways of working (Bertot et al., 2012) and for staff training (Kavanaugh et al., 2012). In addition, a hidden cost may be that Web 2.0 increases the digital divide between those citizens able (or willing) to use such an approach and those who may be excluded. Some of the risks are related to these costs but others include the potential damage to reputation (if a system fails or if care is not taking around initiatives such as blogs, wikis and twitter) or if a third party technology is subsequently no longer available.

It is particularly important that its best not to see Web 2.0 as just a technological issue but that any evaluation has to take into account the organisational, technological and social implications. Web 2.0 can be argued to differ from Web 1.0 in its implication for e-Government in various ways, including:

- It is easier to set up and use by front line staff as it often relies on easy to use, widely accessed, software systems;
- Other benefits flow from this, in particular relative cheapness of platforms and the ability to easily share information;
- On the other hand, maintaining such systems can be a significant burden for IT departments and there are longer term implications around ensuring correct information is available, moderating and creating protocols for staff who wish to blog;

- It is more interactive than Web 1.0 allowing a greater range of user interaction;
- It is disruptive of traditional hierarchies in public administration and in particular creates a need to supply information in a form that suits the users not the providers;

This does suggest that there is a risk in the early stage of Web 2.0 adoption that an organisation may concentrate on the relative low cost and ease of set up without consideration to the full implications. Web 2.0 is easily scalable, in other words can be started as a small localised experiment, and then expanded. This is potentially invaluable compared to the classic software and hardware procurement that Web 1.0 approaches require but does carry a risk of commencing the introduction of Web 2.0 without full evaluation. As such, this supports the need for a detailed evaluation approach.

At this stage, the conceptual model presented in this chapter rests on the existing literature. However, an overview of the interactions of the various parts as well as how the various factors contribute to the effective application of Web 2.0 technologies in e-Government is currently missing. Addressing this gap informed the choice of research approach. This is discussed in chapter 4 but in this case observation of a real world instance was an important part of gathering the data required to refine the conceptual model.

Chapter 4

Research Methodology: A Qualitative Case Study Approach

4. Research Methodology: A Qualitative Case Study Approach

4.1 Introduction

In chapter 3, the conceptual model for Web 2.0 application in e-Government was set out. In this chapter, the researcher describes how research issues concerned with testing this model will be resolved and how the aim and objectives will be achieved.

One of the main objectives of this research study is to increase the IS evaluation and impact analysis body of knowledge in the e-Government context by specifically focusing on Web 2.0 technologies. Therefore, a range of institutional and personnel factors that feed into the decision making process of Web 2.0 adoption will be noted. These factors will then be folded into a putative model that could be deployed by local government authorities when adopting Web 2.0 technologies in the e-Government context.

Nevertheless, it is important to ground this model with empirical data. As a result, it is important to both gather and analyse data and use it to test the conjectures laid out in the third chapter. In doing so there is a presupposition that updates will need to be made to the putative model in figure 3.1. It is now important for the proposed research methodology in this chapter to address a range of factors that might have an impact upon the research process, and subsequently a justification for their inclusion or omission.

4.2 Choosing an Appropriate Research Approach

The selection of an appropriate research approach is the critical task of the research design process as per Walsham (1995). Selecting a research framework within the wider IS domain is not always be a straightforward task, since the discipline is both highly specialised and intersects with other academic fields (Cavaye, 1996). As such, there is a methodological pluralism within the wider discipline, and therefore selections must be made carefully (Galliers, 1994) . This is further complicated by the fact that IS practitioners draw from a

range of philosophical traditions, and so the manner in which they conceive of the subject being researched varies greatly (Orlikowski and Baroudi, 1991). Thus, following Galliers (1985), selecting a research approach is not a simple process of balancing pros and cons, but a more fundamental process of understanding the research environment.

4.2.1 Epistemology: Philosophical Underpinnings

The first step in developing a research approach is to demonstrate a comprehensive understanding of the different philosophical approaches that might be applied to it, in order to provide the strongest possible case for the methodology eventually selected. Guba and Lincoln (1994) proposed that there were four distinct tranches, or paradigms, for qualitative research: positivism (the scientific method), critical theory, post-positivism and constructivism (interpretivism).

The overarching research philosophy is the underpinning assumptions that determine how research about a particular topic will be framed and appropriate data gathered and used. It is important to distinguish between an epistemology, how things are known to be true, and a doxology, where things are believed to be true. The purpose of the scientific method, and to an extent interpetivism, is to move from a doxology to an epistemology, that is, to take things from being believed to be true to being known to be true via the testing of hypotheses (Galliers, 1991).

The extent that any approach can be held to reveal the underlying reality is one of the main areas of contention in the philosophy of science. While some empiricists would claim a well-designed enquiry does reveal reality others adopt the idea that each enquiry moves knowledge towards an ‘approximate truth’ (Psillos, 1999). Within the modernist tradition, a distinction is often drawn between the object of enquiry (which has its own reality, if only it could be identified) and the subjective process of enquiry that imposes a language of interpretation that reflects the assumptions and background of the researcher (Bem and Looren de Jong, 2006). Finally post-modernists would argue that both the object of an enquiry and the interpretation process are both constructed moving completely away from the idea of an abstract reality that can be uncovered in the research process (Creswell, 2008).

4.2.1.1 Choosing a Positivist or an Interpretivist Approach

The chosen methodology of a case study is drawn from the interpretivist tradition, such that the researcher approaches the research environment with a comprehensive understanding of relevant literatures and the case study offers a means of collecting data and understanding the phenomena at hand. In the context of this thesis, the project is to understand the nature, practices and assumptions of IS, using a situated hermeneutic approach. This approach is closely associated with Walsham (1995), and calls for an acknowledgement of the subjectivity of both the interpreter and interpretation in the final thesis. As discussed above, there is an important distinction as to the impact of this subjectivity between the various philosophies of science (Creswell, 2008):

- The positivist approach holds there is an abstract reality and that this can be understood through an appropriately rigorous enquiry. This usually relies on a degree of experimental control and certainly the elimination of unforeseen variables. Thus differences in outcome can be assumed to be related to variances in the key independent variables (Creswell, 2008; Easterby-Smith et al., 2008). As discussed above, some positivist approaches would accept the idea of an 'approximate' truth with each new enquiry moving the state of knowledge closer to a full understanding (or rejection) of the original assumptions (Psillos, 1999);

- A modernist approach stresses the difficulty of interpretation. In particular, any interpretation process is done by individuals with their own existing belief systems and social norms. However, a common concept in modernist philosophies is to accept, as with empiricism, that there is an abstract reality, just that the means used to describe it are a product of norms and beliefs;

- The post-modernist tradition rejects the idea of an abstract reality, stressing instead the constructed nature of reality (Bem and Looren de Jong, 2006).

In terms of research design, empiricists will accept the value of non-experimental work when, for example, the goal is to explore a new field. In effect, while not allowing firm conclusions, in this approach, a case study can be useful as a means to identify dynamics that then can be used in creating a fully empirical enquiry (Bem and Looren de Jong, 2006; Yin, 2009). In an

interpretivist approach it is possible to move from observation to theory but this requires particular care (Collier et al., 2002; Ernst Van Aken, 2005; George and Bennett, 2005; Goertz, 2006). Different approaches exist but one that is useful for case studies is Yin's (2009) concept of Pattern Matching. This requires use of the existing literature to build a predictive model that is in turn used to evaluate the findings. The extent of confirmation, and how any differences can be explained, allows the process of building up a model that has wider application than simply describing the observations of a particular case (or group of cases).

This approach calls for a particular focus on the internal reliability of the study, in regard to the quality and richness of the material, rather than methodological rigour, as would be found with the scientific method (Yin, 2009). All scientific methods stress the ability to replicate, generalise, control and formalise data results (Cavaye, 1996), whereas interpretivism focuses more on being able to articulate an understanding of why the observed results happen (Jones and Hughes, 2001).

4.2.1.2 Justification of the use of Qualitative research methods

Broadly speaking, qualitative and quantitative research are the two main styles of research; they have developed in parallel, and have some elements of standardisation to them (Flick, 2009). As per Galliers and Huang (2012), the field of IS continues to be dominated by the positivist paradigm and the use of quantitative methods. The authors highlight that this is in spite of the variety of research methods available, the rise of an interpretivist tradition, and some isolated examples of methodological pluralism (Galliers and Huang, 2012).This research draws on the qualitative style, interpreted by Creswell (1998 p.15) as "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem [where] the researcher builds a complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting". There are a variety of techniques that can be deployed as part of a qualitative approach, such as participant observation, grounded theory, semiotic analysis, discourse analysis or hermeneutics (Myers, 2009). Artefacts that might be collected include observations records, documents, pictures, notes or individual thoughts. In this thesis, the qualitative approach is

intended to aid understanding the people's perceptions, processes and assumptions of using Web 2.0 within a specific organisational context.

There are a number of reasons that the qualitative approach works best for this thesis:

- The core research questions utilise words such as 'how' or 'what' which are best addressed by qualitative rather than quantitative methods (Yin, 2009).
- Qualitative research works well with research environments that require some exploration (Creswell, 1998), or where the research agenda is as yet nascent, and there are limited comparable pieces of research.
- Qualitative research is also suitable where the focus is one in-depth study, rather than a more abstract piece of research (Dyer and Wilkins, 1991).
- Qualitative research affords the ability to contextualise theory (Myers, 2009), such that in this case, the theory of Web 2.0 application in the context of e-Government can be contextualised within an actual real-world environment.
- Finally, qualitative research makes no claim to objectivity, and the researcher is accepted as a participant observer, or indeed observant participant (Myers, 2009).

Therefore, this research adopted a qualitative analysis as it was the most suitable approach in this case. A single approach, interviews, was adopted as the main data gathering tool with some use of gathering and analysing documentary evidence.

4.3 Choosing an Appropriate Research Strategy

Galliers (1992) defines a research strategy as the means of how research is actually done; the style and methods of collecting data. There are a number of core considerations when thinking through research strategies, summarised by Yin (2009) as:

- Defining the type of research questions to be addressed.
- The extent to which the researcher can control the research environment.
- How much of the research regards contemporary or historical events.

However, these were not the only considerations taken into account when approaching this dissertation. A number of subsidiary factors were taken into account concerning the specifics

of the local government landscape. Notably, these included the need to empirically test the research questions, the complexity of the expected answers, the need to study the phenomenon in its natural setting, the need to do the research within the constraints of time, budget and access to data, and most importantly the need for 'rich' primary data. This is not an exhaustive list of factors, but alongside the initial three drawn from Yin (2009), present ample justification for a case study approach. In effect, a case study approach was adopted as it allowed access to the type of real life data essentially for this enquiry (Creswell, 2008; Easterby-Smith et al., 2008). Relevance was also an important part of the choice of approach (*ibid*).

4.4 Case Study Research Strategy

Depending on the type of research question to be addressed, the style of each case study might fall into either an exploratory, descriptive or explanatory mode (Yin, 2009). In the case of exploratory research, Saunders et al. (2000) argue that it presents an opportunity to search for new ways of approaching topics or ways of approaching new topics. The generally accepted methodology for doing so is to begin with a broad literature search and then focus the inquiry through discussions with experts in the field. Descriptive case studies are often employed as an adjunct or extension to exploratory studies. In addition, some disciplines in the wider social sciences (George and Bennett, 2005) would argue that real world case studies allow explanatory theories to be developed.

This study follows the exploratory style of case study research; the research focuses on ‘how’ and ‘why’ questions of factors for Web 2.0 adoption within local government authorities. The exploratory research in this process offers a means of sketching out a future research agenda, something advocated by Roethlisberger (1977) as a fundamental advantage of case study research with nascent areas of study. Chapters 1, 2 and 3 noted that there is only limited study of Web 2.0 application models from an internal organisational perspective within the local government context, and therefore this meets the criteria for being a nascent area to be explored.

4.4.1 Case Study Objective: Theory Testing

There are various justifications for choosing a case study strategy. The case study approach can be used to describe a phenomenon, build theory, test theoretical concepts and relationships, or be used for all three (Remenyi, 1991). In particular, case studies are often seen as appropriate where the goals are description or theory building, and Remenyi (1991) advocates their use in this context as they lend themselves to an inductive interpretation of the findings (Irani, 1998). In this case, the capacity to use a case study to explore an ill-defined theoretical area was attractive.

However, in addition, a case study is also a suitable strategy for testing theoretical propositions. In this instance, there is a need to use a deductive interpretation where the research conjectures are tested by comparing the emerging data with previous research and hypothesised links between the identified factors and outcomes. This deductive use of a case study for testing theory is strongly advocated by Benbasat et al., (1987; 1988) and Yin (2009) as a valid use of a case study strategy. This research adopts a case study strategy in order to describe a phenomenon (i.e. Web 2.0 adoption in local government authorities) and test theoretical concepts or relationships (i.e. proposed seven research conjectures in chapter 3).

4.4.2 Case Study Approach: Single versus Multiple Case Study Research

Having decided to use a case study approach, there are then further considerations; foremost among which is a decision as to whether to use one or multiple case studies. This is a consideration that should be undertaken prior to any data collection, and care should be taken to properly define the case study, and to understand the difference between what is actually being studied and the context that it is located in (Benbasat et al., 1987).

Single case studies can be divided into several different rationales, as listed by Benbasat et al., (1987):

- Critical case – a critical test for a significant theory
- Extreme or unique case – documenting the precise nature of a phenomenon not well understood

- Representative or typical case – capturing the conditions of a commonplace situation
- Revelatory case – previously non-accessible phenomenon
- Longitudinal case – establishing change over time, causal mechanisms, patterns of transition, etc.

Yin (2009) notes that single case studies tend to be more appropriate at the outset of theory generation and testing, because they allow the researcher the opportunity to settle into the research and begin to understand the environment, jargon and contingencies of the context that they are setting out to research; something akin to Bonoma's drift stage (Benbasat et al., 1987). Moreover, single case studies are often used as precursors to a programme of multiple case studies, so it is not a question of definitively choosing one or the other.

In addition, pragmatism is an important part of any research design, especially one that requires access to a real world organisation (Easterby-Smith et al., 2008; Yin, 2009). The problems of negotiating access and taking up the time of interviewees often limit the practical approach that can be adopted. Furthermore, given that a key goal in this case is to create a conceptual model that can be applied then it is important to balance relevance of the findings for other practitioners with the rigour of the research approach (Bluhm et al., 2011; Ernst Van Aken, 2005; Hodgkinson and Rousseau, 2009; Kieser and Leiner, 2009).

There are those that argue that conclusions derived from multiple case studies are inherently more reliable than those derived from a single case study (Herriott and Firestone, 1983), on the basis that having data from multiple sites makes the study more reliable and replicable. However, there are problems in finding more than one suitable example and a number of researchers argue that the depth of knowledge that can be derived from a single case study compensates for any lack of comparison across multiple case (Gerring, 2007; Mahoney, 2000). In this, Yin's (2009) pattern matching is important as it ensures the results of a single case are compared to the wider literature.

Multiple cases studies allow for variations across individual studies to be compared with each other and against constants, and thus allow for some element of checking and cross referencing. However, the exact number of case studies to be used, or perhaps more accurately the optimum number to be used, is not set out clearly and is left to the intuition of the researcher; Gable (1994) suggests a maximum of ten case studies, whereas Eisenhardt (1989) suggests a range of four to ten. Considerations for this might include the expected

outcomes of the case studies and the information expected to be gained, as well as the simple practicalities of organising them all (Dyer and Wilkins, 1991).

4.4.3 Developing Insights from a Single Case Study against Multiple Case Studies

The use of Web 2.0 technologies by LGAs for work purposes is still not extensive among local government authorities in the UK. These tools are mainly used in the local authorities to engage with citizens as highlighted in the literature review and this interaction is not the focus of my study. Therefore access to organisations using these tools for the same purpose was very limited. Even the current case study fairly restricts access to these tools in the organisation during work time.

Yin (1994) argued that single case studies can play a role in building and testing theories in nascent disciplines. In his approach, pattern matching is a key tool, where the findings are related to the existing literature using a conceptual model (as set out in chapter 3). He also argues, along with Sammaddar and Kadiyala (2006), that a theoretical understanding can be built up by comparing the research findings from one case study to those revealed in early studies. This process of repetition, with careful attention to factors that are common or different, can set up an efficient process of improving understanding of the underlying causal factors.

Multiple case advocates (e.g. Eisenhardt, (1989) , Gable (1994)) highlight that the use of several case studies allows for the process of comparing case study results which is not always possible in a single case. However, even in a single case, it is sometimes possible to segment the findings by time (as a project develops) or place (multiple sites, sub-projects or organisational sub-units). Eisenhardt (1989) in particular advocates a minimum of four case studies in a research project, because with fewer than this, it is difficult to endow the research findings with any wider explanatory power. However, Dyer and Wilkins (1991) argue that this clearly flies in the face of much of the lineage of social science, which has long venerated certain key case studies (e.g. Kanter, (1977), Gouldner, (1954)) that have generally been sole case studies. According to the authors, by any measure, these studies advanced their respective disciplines and social sciences as a whole, and continue to shape them today (Dyer and Wilkins, 1991). Therefore, it might seem simplistic to follow Eisenhardt (1989) without

critical thought; clearly a single case study can offer genuine insight into a research environment, and as stated earlier, may act as a precursor to multiple further case studies; but caution should always be exercised as to how much explanatory power is invested in one case study.

In part the debate around the value of single or multiple cases is somewhat abstract. Advocates of a single study often take a pragmatic view that this design will yield information that will improve our understanding and perhaps reflects the difficulty of access to potential examples. As above, one argument is that a single study will seek to generalise its findings by drawing heavily on other reported studies. A second advantage to a single study is the focus yields the richness of detail that defines good case study research (Dyer and Wilkins, 1991).

Dyer and Wilkins (1991) propose that findings from a single study can be more useful than those where multiple studies were used approach. A single case study prioritises richness of data over the ability to compare multiple instances and wide explanatory power. There is no definitive answer on the number of case studies to be used, as so much is dependent on the discipline and research environment. Einsenhardt (1989) and Gable (1994) are prescriptive, to the point of their prescriptions seeming entirely arbitrary. Therefore, this dissertation follows the work of Dyer & Wilkins (1991) in the way that it selects the research approach and case study. As a result, a single in-depth case approach was pursued.

This case study addresses a research issue that is not commonly addressed in academic literature. As already discussed, most studies look at Web 2.0 application in e-Government from a citizen-engagement or political participation. The research model, supported by the empirical findings, will significantly contribute to the normative literature and help academics and decision-makers achieve a better understanding of the use of these tools by employees from an internal organisational perspective within LGAs. This will undoubtedly provide valuable future research directions in this research area.

However, the case used for the research was not systematically sampled, therefore it is not possible to generalise the findings to a wider population of local government authorities. On the other hand, it will allow others to draw parallels and contrast themselves against the benefits, costs and risks of using Web 2.0 and the impact of these tools identified through the single unique case. Analytical generalisations from the findings are, however, drawn and

technology management taxonomies for evaluation purposes are propagated for use by others to allow parallels to be drawn against constants in process and outcome.

Overall, considering the nascent character of Web 2.0 specifically its application in local government authorities, a case study approach was selected; see, for example, Hakim (1987); Galliers, (1992); Yin, (1994). Given that this research study sought to identify the application of Web 2.0 technologies in UK LGAs which is still an emerging phenomenon, leading to the development of a conceptual model, it was felt that a broad, rich exploratory approach was needed.

4.5 Empirical Research Methodology

Following on from the justification of factors for the use of qualitative case study approach and its appropriateness for this research, the author now integrates these factors into the empirical research methodology adopted for this study. The empirical methodology process is illustrated in detail in figure 4.1.

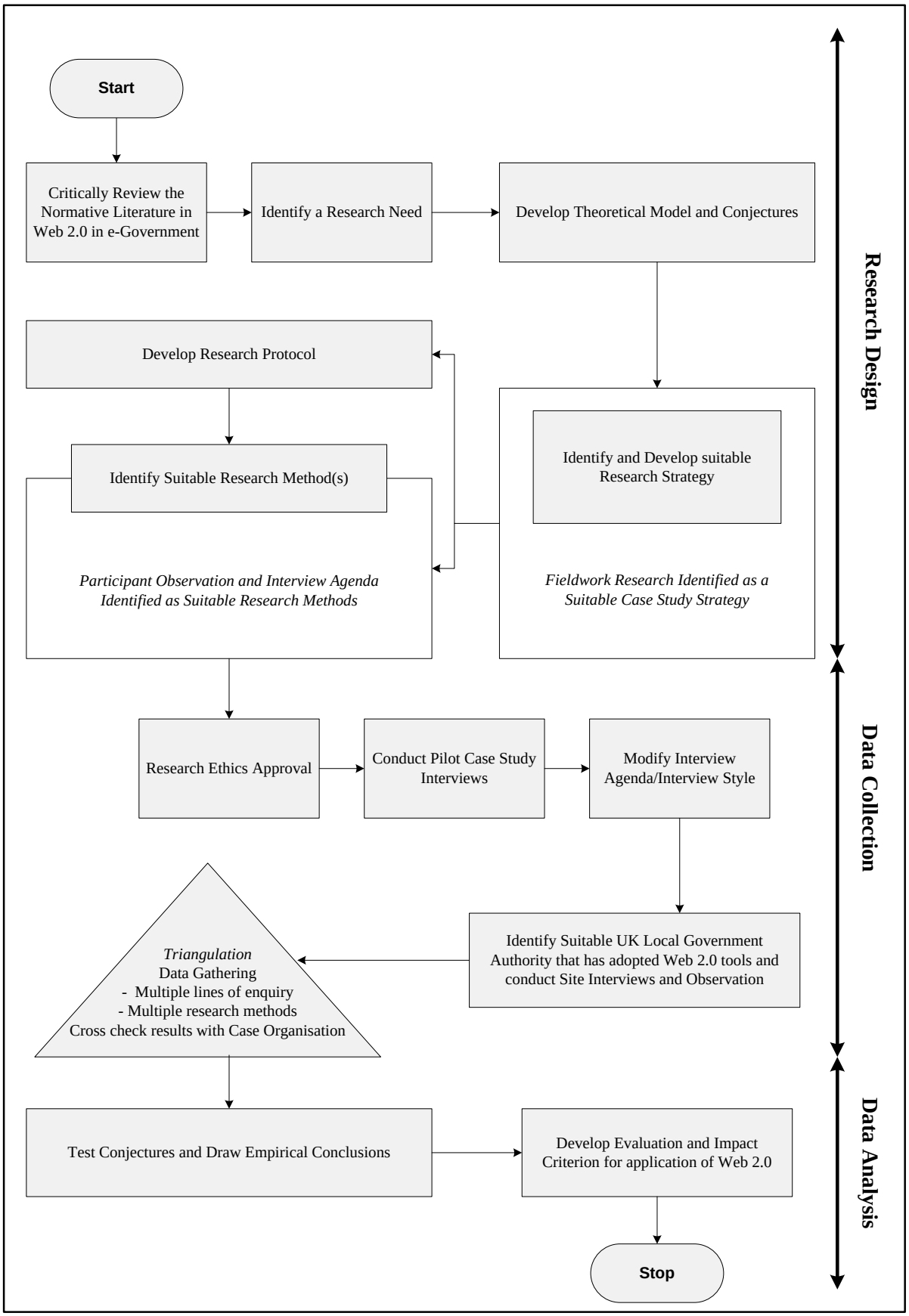

Figure 4.1: Empirical Research Methodology Process

4.5.1 Research Design

Research design was the initial phase of the empirical research methodology. The research design adopted is based on an interpretivist framework. A key part to the research design was to use the existing literature to both identify a research question and develop a conceptual model that could be tested. Using this review, a number of research conjectures have been developed that will assist in interpreting the results. Given the nature of this field (Web 2.0 usage in the context of e-Government specifically in local councils) an in-depth single case study design was adopted. This section sets out the actual research protocol (Friedman, 1987) adopted in order to conduct the field work.

A comprehensive interview agenda was developed as part of the qualitative research method. This interview structure was used during the formal interview process and is presented in Appendix B. In view of the nature of this research, the choice of method was influenced specifically by the rapid evolution and prominence of the use of Web 2.0 technologies by government organisations and the need to capture rich contextual information to answer the underlying research questions in a nascent domain. Additionally, research into the adoption of new technologies highlights the need to consider a plethora of factors that broadly fall into human, organisational and technological categories. Therefore, this prompted the need to consider the involvement and participation of government organisations and their staff so that their experiences and knowledge on the adoption of Web 2.0 technologies can be exploited. Given the nature of the study (in a single authority) alternative data collection tools such as questionnaires were seen to be of little value. Section 4.5.2 below, sets out the rationale for the interviews and the selection of key individuals.

4.5.2 Case Study Data Collection

Data collection formed the second phase of the research methodology. In the context of this research, the data relating to the issues under investigation were soft, confidential and subjective. Drawing on the discussion at the start of this chapter, the need is to capture these views in context (Yin, 2009). Therefore, the research methods needed to be able to account

for such factors in light of different government organisations being guided by individualised circumstances.

Empirical data was primarily gathered by conducting in-depth semi-structured interviews with a local government authority and participant observation (Atkinson and Hammersley, 1994; Myers et al., 1997). In doing so, their insights into the use of Web 2.0 technologies and its impact on the authority in the context of e-Government were also gathered. The reliability of the research methods were established through a pilot case study. This pilot study was initially conducted with a senior manager from another UK LGA that helped improve the quality of the research, as issues such as ambiguity and vagueness represented in the interview agenda, could be addressed. It is to be noted that the LGA that was used for the pilot study were very early adopters of Web 2.0 technologies and it was found that these technologies were not used by employees for work purposes within the authority. So the results of the pilot study were not used in this study. This again highlighted the lack of LGAs in UK adopting Web 2.0 technologies for employees to use within the organisations for work purposes.

However, the pilot study did allow for the improvement of the interview agenda that was then used with the suitably chosen LGA to facilitate the collection of rich relevant case study data, by allowing the researcher to steer the interview process, and ask standardised questions. However, it also allowed the interviewee to have sufficient freedom to discuss related issues. The case organisation used for this research was suitably selected only because the employees of the LGA had been extensively using various Web 2.0 technologies for work purposes for a considerable amount of time. However, as previously highlighted the case chosen was not systematically sampled, and this creates challenges in generalising to a wider population of LGAs. In this respect, the literature review and the outline model already developed are important tools to place the specific findings of this enquiry in a wider context. Despite this limitation, this study provides a significant contribution towards analysing the IS evaluation criteria and the impact of the use of Web 2.0 technologies by LGAs.

Additional data gathering research methods and lines of enquiry included obtaining porting evidence through informal conversations; policy documents; IT corporate strategy report and risk reports; minutes from meetings and consultancy reports. Table 4.1 presents a collection of the extensive list of data sources used in this study. The use of multiple methods ensured

data triangulation, thus contributing towards the reliability and validity of the findings for this study. These findings were also crosschecked with the LGA chosen for the case study during the re-visits as part of the triangulation process to further validate the results.

Empirical materials	Media	Explanation
Meeting minutes	Electronic/paper	▪ Meetings of IT Corporate Plan Group and IT Strategy group ▪ Meetings with Web 2.0 groups and sub-groups
Interview transcripts	Electronic/paper	▪ Final interviews with senior IT managers and head of ICT department ▪ Final informal interviews with senior managers from non-IT departments
Documents	Electronic/paper	▪ Social Media Policy ▪ IT Corporate Strategy ▪ IT Risk Register ▪ Communications Strategy ▪ Written on the same or following day based on field notes. ▪ Reflections from participation in activities.
Emails	Electronic documents	▪ Meeting agendas ▪ Time schedules and Web 2.0 project plans ▪ Comments on draft reports and minutes

Table 4.1: Empirical materials used in the case study

Additionally, the interview protocol underwent the standard university process to obtain ethical approval for data collection methods and mode of collection. The author took much care to ensure the data collection process was not contaminated by data bias. As part of the research design, an approach similar to that used by Molla et al. (2006) was used for data collection, analysis and checking while conducting the initial exploratory research.

4.5.3 Interview Process

Interviews were conducted using a formal interview agenda (Appendix B) and the questionnaire mainly consisted of open-ended questions. However, to ensure that all the factors identified in the conceptual model were considered, the interview was supplemented by a questionnaire using a 7 point Likert scale to measure the validity of the factors presented in the conceptual model. A Likert scale is useful when the goal is to capture attitudes such as the degree of agreement with a particular statement (Sudman and Bradburn, 1982). The choice between offering a five point or a seven point scale (with the middle point being 'neither agree nor disagree') is pragmatic rather than driven by any particular theoretical underpinning. The larger scale allows for more subtle responses but there are instances where the respondents probably do not really have sufficient understanding for a longer scale to yield particularly valuable information (Kothari, 2009).

The interviews were conducted with the more senior and experienced users of Web 2.0 technologies. The job functions of the interview participants (to elicit data) were Head of ICT (SJ); Corporate e-Government Manager (SD); Website Manager (RSJ); IT Systems Manager (RJB); IT Services Manager (PU) and IT Support Manager (NP). The duration of each of these interviews was approximately one hour and thirty minutes, where every interview was conducted on a 'one-to-one' basis so as to stimulate conversation and break down any barriers that may have existed between the interviewer and interviewee.

Apart from this, four informal interviews (refer to Appendix D for set of questions asked) were also conducted as part of secondary lines of enquiry. These participants were also users of Web 2.0 technologies and their job functions were, Finance Manager; Social Services Information Manager and Service Improvement Manager. The duration of each of these interviews were approximately thirty minutes and was also conducted on a 'one-to-one' basis. All of the abovementioned interviews took place in a bookable meeting room, which was away from the normal office environment with no disruption. The verbal and non-verbal responses of the respondents during the interview were also taken into account as part of the feedback.

Table 4.2 summarises the list of both formal and informal interview participants from the case study (UKLGA). Due to confidentiality reasons, the case organisation in this study is referred to as "UKLGA".

Who	Where	How
Head of ICT (SJ)	UKLGA IT Department	**Formal Interview** - semi-structured Interview Agenda (refer to Appendix B) - 90 minutes (approximately) each participant - one-to-one basis
Corporate e-Government Manager (SD)		
Website Manager (RSJ)		
IT Systems Manager (RJB)		
IT Services Manager (PU)		
IT Support Manager (NP)		
Finance Manager (FM)	UKLGA Finance Department	**Informal Interview** - open-ended questions (refer to Appendix D for the sample set of questions) - 30 minutes (approximately) each participant - one-to-one basis
Social Services Information Manager (SSIM)	UKLGA Social Services Department	
Service Improvement Manager (SIM)	UKLGA Community Services Department	

Table 4.2: List of Interview Participants from the Case Study (UKLGA)

4.5.4 Case Study Validity

There was a need to address internal validity to ensure the robustness of the findings due to the use of interviews, documentary sources, and observation in this study. Therefore, each interview was digitally recorded and subsequently transcribed. These were then sent back to the interview participants to check and resolve any discrepancies that may have arisen and to eliminate interviewer bias. Additionally, great care was undertaken by the authors to ensure that the collected data converged around similar facts rather than emotion due to the array of evidence collected in this research. The procedures used in conducting the study and the use of triangulation for data collection (see, for example, Jick,(1979)) contributed to the reliability and validity of the study, while complying with the recommendations of Pan and Tan, (2011). Therefore, the researcher has full confidence in the accuracy of the research process and the findings.

4.5.5 Case Study Data Analysis

Data analysis and testing of the research conjectures formed the final phase of the research methodology. The data derived from the case study was triangulated and then analysed to draw empirical conclusions. This study adopted a qualitative data analysis technique and used NVivo software (Qualitative analytical tool) to support the development of the manual coding system used for data analysis. Technically use was made of the NVivo software for storage and retrieval purposes of the interview transcripts for the multi-stage coding process. The process of data analysis involved examining the meaning of peoples' words and actions in the case of interviews (e.g. Ramanath, (2009)). In effect, data analysis and synthesis was an iterative process as concepts emerged and common themes were identified and formed into a coherent analysis (Corbin and Strauss, 2008). The general process of data analysis for interviews is graphically illustrated in figure 4.2.

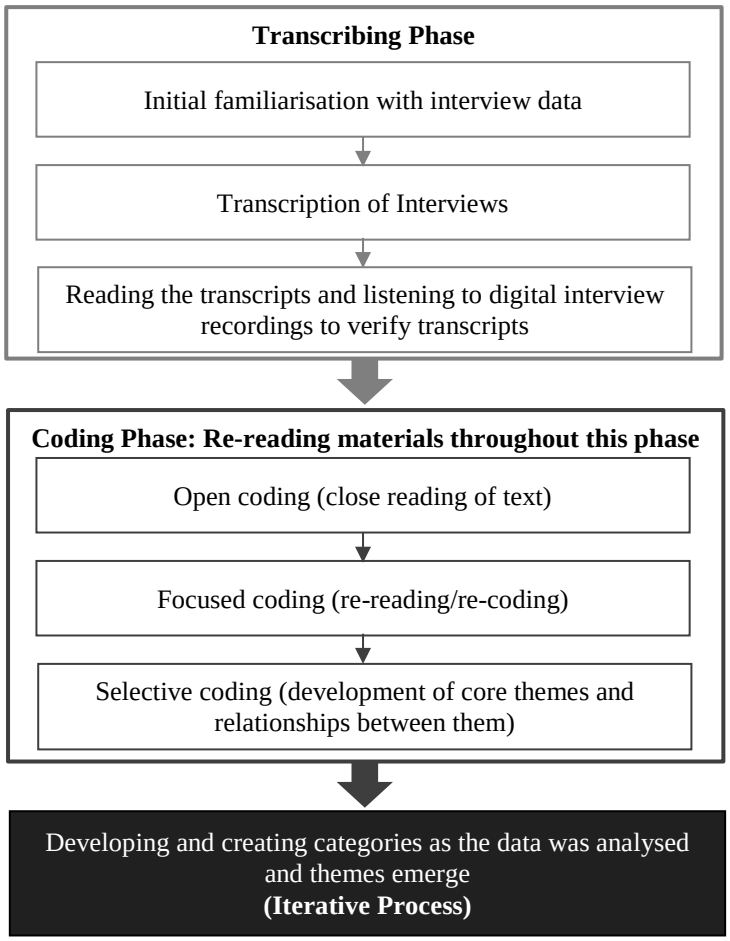

Figure 4.2: Data Analysis Process

In addition, the secondary data such as social media policy documents, IT Corporate strategy and Risk reports were also analysed thoroughly to support some of the interview findings. These results were used to develop the empirical evidence reports that support the conceptual model for application of Web 2.0 technologies in e-Government.

4.6 Case Study Protocol: An Operational Action Plan

Scholars such as Eisenhardt (1989) and Yin (2009) highlight the need for a case study protocol that can be used as a guide in conducting case research. A case study protocol is a set of guidelines that can be used to structure and govern a case research study (Miles and Huberman, 1994; Pervan and Maimbo, 2005; Yin, 2009). Thus, outlining the procedures and rules governing the conduct of the researcher and the research project (Yin, 2009). Additionally, a case study protocol also contains the research instrument(s) that is to be used to collect data during the research project. Researchers (Remenyi, 1991; Runeson and Host, 2009; Yin, 2009) assert that it is important to use a protocol for the following reasons:

- it is a way of increasing the *reliability* of case study research, and;
- it is intended to guide the investigator in carrying out the data collection and to conduct the case study in a rigorous manner.

Apart from the abovementioned importance, developing a protocol can also benefit the investigator(s) by allowing for more effective data collection and enhance communication with participants (Miles and Huberman, 1994; Yin, 2009). Yin (2009) also added that a case study protocol should consist of the following sections:

- an overview of the case study project;
- fieldwork research procedures;
- questions addressed by the research, and;
- the research output format.

These sections helps keep the researcher focused on the topic of the case study and the prior development of the protocol aids the researcher to anticipate any problems or risks in advance (Yin, 2009). As such this research adopted the outline suggested by Yin (1994) and each of these sections are now discussed in detail.

4.6.1 Case Study Overview

This section of the protocol presents the background information about the project and discusses the substantive issues being investigated (Yin, 2009). As argued, this field has seen little research to date so one purpose of this research is to add to the available corpus of data on the use of Web 2.0 application in the e-Government domain. The purpose of this research is to offer a broader understanding of the phenomenon of Web 2.0 application in the context of e-Government. From this point of view, the research subject is considered in order to collect the required data to understand the evaluation criteria and impact factors surrounding Web 2.0 technologies adoption through the data collection resources. The issues that are being empirically investigated are:

- To establish the Web 2.0 strategy and the types of Web 2.0 applications already being used by the case study organisations for internal organisational purposes;
- To establish existing evaluation and decision making processes used by the case study organisations during their application of Web 2.0 applications for organisational purposes;
- To identify and classify the benefits, costs and risk factors considered during the decision making process of Web 2.0 application;
- To identify and classify the organisational, technological and social impact factors of Web 2.0 technologies considered during the decision making process of Web 2.0 application; and,
- To establish whether systematically evaluating Web 2.0 and exploring its impact will influence the organisational decision making when adopting Web 2.0 technologies.
- To identify the suitability of these factors for inclusion in a conceptual model for Web 2.0 application in the context of e-Government.

4.6.2 Fieldwork Procedures

As a case study research involves the study of events within a 'real-life' context (i.e. natural setting and not within a laboratory, or through a rigid questionnaire), there is a need to integrate and account for real-world events with the needs of the data collection plan (Yin, 2009). This means that the researcher needs to take into consideration and cope with events

such as cancellation of meetings, respondents dropping out, pertinent documents not being available, etc. These issues which the investigator often does not have any control over have significant implications during data gathering, thus emphasising the importance of a suitably designed fieldwork procedure. The following are key fieldwork procedures acknowledged during the empirical research conducted:

- ***Defining the interviewees.*** As this research focused on decision making process of Web 2.0 application from an organisational perspective, so the interviewees were chosen from the top management which included senior managers and the head of information communications technology department. The reason for this is that they influence the decision-making process associated with Web 2.0 adoption. Furthermore, informal lines of enquiry were also developed to collect data from other employees within different function areas of the organisation. This was done in order to reduce the impact of bias, and to facilitate the collection of accurate and reliable data. The author triangulated the lines of enquiry in three methods. Firstly, though not relying on data from one functional source but formally interviewing a number of functional areas within the organisation. Secondly, by informally discussing Web 2.0 evaluation and impact issues with employees who use these applications for work purposes within the organisation. Thirdly, by obtaining opinions from supporting staff on cultural aspects of the organisation.

- ***Identifying suitable data collection methods and establishing lines of enquiry.*** As interviews are the primary data collection method, an interview agenda as previously mentioned (see Appendix B) was developed to act as the research method for gathering 'rich' empirical data, and guiding the interview process. The interview process was digitally recorded and later transcribed. Secondary lines of enquiry were informal, with middle managers and other employees who manage and use Web 2.0 technologies were questioned. Apart from this, further supporting evidence was sought from archival documents; minutes from meetings; policy documents; internal memos and business case reports. These different methods of data collection and similar questions asked from different interviewees helped increase the triangulation of data and avoid bias in collecting data.

- ***Developing a data collection schedule that accounts for contingencies.*** Where possible, secondary people was identified as 'stand-by' employees for interviewing.

- ***Developing an interview schedule.*** The researcher was aware of the unpredictable data collection environment such as a change in the interview time or the cancellation of a meeting by the interviewee. Therefore, a schedule was developed in advance with dates and times agreed with interviewees. Interviews have been scheduled across a week to allow the researcher with some level of flexibility in the case of any unforeseen events that could occur resulting in the cancellation of an agreed interview meeting. The interviews were evenly spaced within the whole week in order to provide the researcher with an opportunity to reflect on the conducted interviews and review if there is a need for additional data that needs to be considered in the subsequent interviews. All formal interviewees were told the interview process time which could approximately last for one hour and thirty minutes.

- ***Addressing Ethical procedures.*** This involved ensuring that issues associated with confidentiality were addressed. The interview protocol was subjected to the standard university process with regard to ethical approval of data collection methods and modes of collection. The research ethics form that was submitted and approved by the University can be referred to in Appendix A and this research was conducted in full accordance with the University's ethical guidelines. In this research the case organisation had agreed to the publishing of findings on the basis of their anonymity. As a result, the case study organisation of this research study is reported as "UKLGA" in this thesis.

A case study implies a comprehensive and rigorous study of a subject and, therefore thoroughness is crucial. In this instance, the interview agenda acts as an important research guide during data collection. The researcher anticipated that there could be opportunities during the interviews that could be of advantage to the study, and therefore was aware of these prospects such as obtaining other relevant documents and possibility of getting to know other interviewees. This required the researcher to be fairly flexible to be able to apply different types of interview methods (i.e. structured, semi-structured and unstructured) if the need arose. Additionally, data for this research was collected from multiple sources (i.e. interviews, participant observation and official organisation documents) as abovementioned.

This use of more than one data source allowed for triangulation of data which is highly recommended by many researchers (Miles and Huberman, 1994; Yin, 2009; Neuman, 2000) as a mechanism for increasing both the reliability and validity of qualitative research (Chau, 1999).

As per Yin (2009) it was also important for the researcher to seek consent from the subjects and the organisation that is part of the study to explicitly agree to participate in the case study. Therefore, pre-prepared consent forms were used to obtain consent from the interviewees. In addition, as the case study organisation may not be always be aware of the academic practices for publication and dissemination, it was also necessary to explicitly inform the participants about these procedures. Finally, it was important to give feedback to the participants of a study which is critical for the long term trust and for the validity of the research (Runeson and Host, 2009). Firstly, transcript of interviews and observations was sent back to the participants to enable correction of raw data. Secondly, analyses were presented to them in order to maintain their trust in the research. The feedback of the analysis results' also ensured the validity of the study.

4.6.3 Case Study Questions

At the centre of the protocol, is a set of questions reflecting the enquiry at an individual case level. These questions are different from those that are presented in the interview agenda. The set of questions are posed to the researcher, and not to the interviewee where these acts as a reminder or a prompt regarding the data that needs to be collected to test the proposed conjectures. The main purpose of these questions is to keep the interviewers focus during the data collection process. According to Yin (2009), it is also important to make a note of the likely sources of evidence against each question. The author suggests that this "crosswalk" between the question types and the likely sources of evidence is to help in collecting case study data. For example, it can provide the researcher with an opportunity to quickly review the "major questions" that the interview should cover before starting the interview process. It is to be noted that these questions form the structure of the enquiry and is not used as the set of questions that will be directed at the interviewee. Therefore, four specific questions had

been developed to help retain the focus during the data collection process. These questions are presented in the below table 4.2.

Question Number	Research Question
1	What is the Web 2.0 strategy of the case study organisation and identify the types of Web 2.0 technologies used by the organisation for internal operations?
2	What are the existing evaluation criteria used by the case organisation when adopting technologies such as Web 2.0?
3	Identify what benefit, cost and risk factors are associated with the application of Web 2.0 technologies in the context of e-Government?
4	What are the types of organisational, technological and social impact factors are associated with the application of Web 2.0 technologies in the context of e-Government?

Table 4.3: Questions Addressed by the Empirical Research

4.6.4 Research Output

The research output format of the empirical data gathered from the case study is presented in this section. This element of the protocol was important as it helped envisage the amount of data that was to be gathered during the case study visit. The author addressed issues associated with the large amounts of data that is likely to be generated, through aligning each question within the interview agenda, with the proposed conjectures (see Appendix C). This approach contributed to the quality of research output, as it focused on the development of an effective interview agenda (Appendix B) and for the testing of the proposed conjectures. Most importantly, unless a question within the interview agenda sufficiently contributed, or guided towards the gathering of appropriate test data, it was considered that it may not "add value" towards the research objective. A basic outline of the structure of the case study report is presented below in figure 4.3 that facilitated the collection of relevant data, in the appropriate format, and help reduced the possibility of a return visit to case study site.

1.1. Background of the local government authority
1.2. Web 2.0 Strategy in the local government authority
1.3. Evaluation of Web 2.0 technologies by local government authority
    1.3.1. Benefits of Web 2.0 technologies
    1.3.2. Costs of Web 2.0 technologies
    1.3.3. Risks of Web 2.0 technologies
1.4. Impact of Web 2.0 technologies on local government authority
    1.4.1. Organisational impact of Web 2.0 technologies
    1.4.2. Technological impact of Web 2.0 technologies
    1.4.3. Social impact of Web 2.0 technologies
1.5. Overall, Web 2.0 Application in the Local government Authority

Figure 4.3: Case study structure for analysis

However, the existence of such an outline did not necessarily mean that the research needed to strictly adhere to the presented protocol. As per Yin (2009) case study plans can often change as a result of the initial data collection, and therefore it was important to be fairly flexible in the methodological approach that was used.

4.7 Conclusions

This chapter has set out the research methodology adopted. The basic framework is interpretivist and this has important consequences in terms of research design, how the data was gathered and interpreted as well as the extent that it is possible to generalise from these findings. Given the focus on a real world process of using Web 2.0 application in the context of e-Government, a case study was seen as the appropriate research framework. This allows a study of this adoption and implementation in its natural setting and allows for the building and testing of theories. This study is both exploratory and theory building in that the goal was to use the results to refine the model presented in chapter 3. Web 2.0 technology is relatively new, and there is little research on them, especially in the context of e-Government development within local government.

Even within the case study approach, there are a range of options. In this instance, a single case study was used. In this instance, a single case study was used and the ability to review documentation allowed a view to be taken about the overall development and implementation of the project. Equally, as noted, Web 2.0 is still not common in the sector which means that, pragmatically, it is not clear whether multiple instances could be found that fitted the research goals and time scale. In addition, the holistic conceptual model already developed, allowed the interpretation of the findings. This was important as a key goal was to refine the model and create a tool that would assist other LGA's in developing Web 2.0 e-Government schemes.

Within the case study, the main data collection tool was semi-structured interviews but with these supplemented by access to key internal documentation. Chapter 5 presents the results of these two enquiry methods. They allowed a degree of triangulation between data sources and provided access to a substantial amount of information about the design and implementation process adopted by the LGA.

In summary, this chapter has set out the research methodology adopted to test and refine the Web 2.0 application model already presented. This design is interpretivist and relied on a single in-depth case study in one LGA. Data collection was spread over a period of time and this allowed observation of both the design and implementation of the chosen approach to e-Government. In turn, these findings were compared to the model developed from the literature review and used to refine that model.

Chapter 5

Case Empirical Data Analysis and Conjectures Testing

5. Case Empirical Data Analysis and Conjectures Testing

5.1 Introduction

In chapter 4, the research methodology employed in this study was set out. This chapter applies data analysis method described in the research methodology to test the proposed conceptual model for effective application of Web 2.0 technologies in LGAs. In doing so, presenting and analysing the empirical data collected from the LGA within UK. This chapter offers a comprehensive empirical analysis of an in-depth case study which describes human and organisational behaviour and perceptions during the case adoption of Web 2.0 and after its implementation. The interview structure, and linked questionnaire, was designed to ensure that each of the factors built into the conceptual model was covered during the field work. This approach improves the scope to replicate the findings of this study in any follow up case-studies into the implementation of Web 2.0 in the LGAs.

A major goal in this chapter is to draw on the data to test the validity of the conceptual model and in particular which factors should be seen as a prerequisite for Web 2.0 evaluation and impact analysis. This is followed by an analysis of the case with regards to Web 2.0 application, before presenting empirical conclusions. The results elicited from the case organisations have confirmed the validity of the proposed conceptual model presented in figure 3.1.

5.2 Background to Case Organisation

As previously mentioned, due to confidentiality reasons, the case organisation in this study is referred to as “UKLGA”. The case study is a public sector organisation which has been established since 1995 to provide a range of public services, including Education, Social Services and Highways. The population is 160,000, the staffing establishment is 7,500 and the annual revenue budget is £350m. There are five Strategic Directorates in UK Local Authorities. These are Social Services, Education, Community Services, Highways and Corporate Services. All of these mentioned directorates report to the Chief Executive Officer.

The Information, Communications and Technology (ICT) Department is headed by the Head of ICT and forms part of a corporate support services directorate. The ICT departments' two main functions are to facilitate corporate IT strategy and policy, and to provide comprehensive ICT services to support corporate and user departmental objectives. There are 80 staff within the ICT department and the IT infrastructure comprises of approximately 5500 computers and laptops, 180 sites, 200 servers and 220 departmental and corporate IT systems. There are four divisions within the department, each of which is headed by a senior manager reporting to the head of ICT. The first department is Systems Development which is responsible for business analysis, procurement, development, implementation and support of IS. The second department is Operations, which includes the installation, support and maintenance of computer platforms. The third department is Desktop Support, which includes implementation and support of desktop infrastructure, local area networks and wide area networks. Finally, the fourth division is e-Government which includes the Website and Corporate Systems.

The UKLGA has been has been awarded the Society of Information Technology Management (SOCITM) award in June 2013 in recognition of the best IT provision out of 650 competitors in the public sector organisations. SOCITM is the membership association for all ICT professionals working in Local Authorities and the Public and Third Sectors and suppliers to those sectors, founded in 1986. The UKLGA's website has also been recently accredited by SOCITM as a '3star' website, identifying it as one of the best in the UK and an example of good practice. UKLGA extensively uses modern technologies such as cloud computing and Web 2.0 technologies for both internal operations by employees and external engagement with citizen. Therefore, it fulfils the selection criteria of the case study. The table 5.1 below highlights the Web 2.0 technologies adopted by UKLGA for internal organisational use and the purpose of the use of these technologies.

Web 2.0 Application Class	Used by UKLGA	Application(s) Used	Purpose(s)
Blogs (e.g. Blogger, Tumblr)	✓	Various	Staff Communication
Collaboration Workspaces (e.g. Yammer, Huddle)	✓	Sharepoint, Yammer	Knowledge Bank, Corporate canvassing feedback, Social media collaboration, Tech Support, Change Control, Project Management
Cloud Computing –Software as Service (SaaS) (e.g. Google Apps , Salesforce)	✓	Internal Cloud Infrastructure, Airwatch, Dropbox, Remote Access	Provide ICT systems to Internal Users, Home working
Mashup (e.g. Google Maps)	✓	Internal Geographic information system (GIS), Google Maps	Maps on Council Website, Mapping – Basic Analysis
Microblogs (e.g. Twitter, Blauk)	✓	Twitter	External and Internal Communication, Signposting, Syndication of corporate content, Educational and Training
Online Picture Sharing (e.g. Pinterest, Flickr)	✓	Flickr, Google Images	Competitions
Online Video Sharing (e.g. Youtube)	✓	Youtube	Communication and Training , Promotional Videos, Used for research
RSS (Really Simple Syndication) (e.g. News Feeds)	✓	RSS feeds	Communication and Job applicants, Signposting
Social Bookmarking (e.g. Delicious)	x		
Social Gaming (e.g. Doof, Pogo)	x		
Social Networking Sites (e.g. Facebook, LinkedIn)	✓	Facebook, Linkedin	Communication and Job Adverts, Signposting and Networking, Employee and Business Engagement
Virtual Learning Environments (VLE) (e.g. Blackboard, Moodle)	✓	Blackboard, Moodle	Learning and Training, For training and in-house course information
Virtual Worlds (e.g. Second Life)	x		
Wikis (e.g. Wikipedia)	✓	Wikipedia	Knowledge Access

Table 5.1: Web 2.0 technologies adopted by UKLGA for internal organisational use

In the following sub-sections, an analysis and synthesis of five key areas have been elicited from the empirical work – Organisational Culture, the Role of ICT and Web 2.0 Adoption in UKLGA; Web 2.0 Strategy and its Application in the Case Organisation; IS evaluation: A Web 2.0 perspective; Impact of Web 2.0; Overall Assessment of Web 2.0 application in the Case Organisation – are presented. It is important to emphasise that findings drawn from the case study while cannot be generalised, may still be generally useful (Urquhart, 2001). The first area of discussion reported below provides views from non-IT departmental managers on Organisational Culture, the Role of ICT and Web 2.0 Adoption in UKLGA.

5.3 Organisational Culture, the Role of ICT and Web 2.0 Adoption in UKLGA – a non-IT managerial perspective

Prior to presenting the interview findings from the UKLGA's IT senior management regarding Web 2.0 application, this section discusses the findings elicited from informal interviews conducted with 3 senior managers from the non-IT departments. Their views were mainly focused on the organisational culture, the role of ICT and Web 2.0 adoption within the case organisation. These informal interviews with the managers provided an overview and an assessment of the general approach the case organisation took when deploying any new form of ICT.

In terms of the type of *organisational culture* embraced by the UKLGA, all three managers indicated that the case organisation had an open and a changing culture for allowing employees to develop and try new things. The Finance manager reported:

"…I would say the culture is a changing culture in my professional opinion. I think where this council has come from the reorganisation in 1996 from where we are now, 17 years later into 2013, we have come along leaps and bounds in terms of development probably in many key areas, so I would say we are a massively changing authority and very open… (FM)"

This statement and the views from the other managers highlight that the case organisation is a forward looking authority embracing changes and willing to experiment new developments. The service improvement manager also added that they were also a customer focused organisation as they tried to listen to their stakeholders (e.g. Citizens, businesses, employees, other UKLGA's) and incorporate their needs as part of their overall strategy to improve the services provided by the UKLGA.

The interviewees were also asked questions to identify their views on the importance of the *role of ICT* towards the council's growth and success. The manager's asserted that ICT played a significant role in transforming the case organisation. The service improvement manager stated:

"I would say a great importance is placed on IT … I have seen dramatic changes in IT in terms of the way it's actually helped us to provide our services and I think it's not just only the operational side but it's also the way that we communicate with our stakeholders through the web and through different types of things and obviously with the social media being the way it is now with the likes of Facebook, twitter and all the rest of it… (SIM)"

The manager with 34 years of experience in the local government sector highlighted that IT has helped transform the services provided by UKLGAs and therefore plays an important role in a council's growth and success.

Additionally, these three managers were asked questions to establish their *awareness on the adoption of Web 2.0 technologies* among other departments within UKLGA and its current impact on the UKLGA. Once again all three managers had the same views in relation to the awareness of Web 2.0 adoption by stating that they were all kept informed and were fairly involved during the implementation of these technologies. They also highlighted that as part of the adoption process, there was a "Social Media User Group" set up by the ICT department for each of the service department that were potential users of these technologies. This pre-existing group was part of the decision making process around the adoption and extension of Web 2.0 at the early stages of making use of this technology. Table 5.2 presents the services and the number of representatives from each service department involved in this group.

UKLGA's Social Media User Group	
Service	**Number of Representatives**
Social Care – Children & Families	2
Social Care – Adult Services	1
Regulatory – Youth Homeless Outreach	1
Regulatory – Licensing, eCrime	1
Education	3
Business and Enterprise	2
Language Unit	1
Communications and Marketing	2
e-Government and Web Team	2
IT Technical Support and Networks	2

Table 5.2: UKLGA's Social Media User Group

The above table clearly indicates that the UKLGA and especially the IT department were open to involve and address the views of the potential users/departments of Web 2.0 tools prior to its implementation. However, there were mixed outcomes with regards to the impact of the Web 2.0 tools on the case organisation. The Information manager reported that:

"I don't think they made an impact because I don't think we have fully embraced it, but I think the reason we haven't embraced them is because we don't necessarily understand them. So I think we could do more, I can understand why we haven't but we need to do the research to find out what is that we want to do… (SSIM)"

The manager clearly believed that their department (i.e. Social Services) in the UKLGA hadn't exploited these technologies to its full potential for it to have a severe impact on their department or the council whether it was positive or negative effects. Similarly, the service improvement manager also thought the use of these tools within the Highways and Infrastructure Services department was still at its early stages. The manager asserted that even though they have established several potential uses of these tools within their own department, nothing had been executed in a systematic manner to reap its benefits. The manager also raised some concerns that they believed had held back their department to use these tools. The manager reported:

"…The problem I see, we got to have both the human resource and the actual material resource as well because if you are going to start this two-way communication, you got to have somebody there who is going to be able to sit there, read it, digest it and answer the question. That would be a quite a large impact really… (HDM)"

This statement indicated that the manager had real concerns over the amount of resources that would be needed in terms of staff and time when these tools are used to its full potential. Another concern highlighted was that in some instances there was also need to consider the multi-lingual output of data to Web 2.0 applications such as their own Facebook page. This meant that they had to have multi-lingual staff that were also able to respond to queries whilst using these tools.

The next section reports the findings of the UKLGA's strategy for Web 2.0 adoption and its current uses in the organisation. The following sections now mainly represent the views of senior management from the IT department unless otherwise stated.

5.4 Web 2.0 Strategy and its Application in the Case Organisation

The UKLGA had a Corporate IT strategy in place to complement the LGA's Corporate plan, Improvement plan and Departmental Service Plan. The strategy was in place to also contribute towards improving service delivery and the efficiency agenda. The review of the strategy document highlighted that the LGA was also committed to innovation and ready to embrace modern technologies for the delivery of its services. In the case of a Web 2.0 strategy, the Head of ICT and the senior management team were asked if there was a formal strategy in place for adopting Web 2.0 technologies in their LGA and all the interviewees responded that there was no need for a separate strategy document to be in place. The Head of ICT stated:

"..Probably when we wrote the IT strategy we felt that it is probably sufficient or otherwise you can get into a situation where you could have an ICT strategy, you could have an IT technical strategy, you could have a Web 2.0 strategy, you can have an email strategy , it starts to get a bit unwieldy… (SJ)"

According to the Head of ICT, the department felt that an overall IT strategy was sufficient and adoption of Web 2.0 did not need a strategy of its own. The Head of ICT also stated that a Web 2.0 strategy on it its own would be outdated too quickly and would also need to be updated on a regular basis which could be time consuming. Interestingly it was also pointed out by the e-Government manager and IT Services manager that the UKLGA felt that a social media policy was even more important than having a standalone strategy in place for Web 2.0 adoption. The review of the document is presented in table 5.3.

UKLGA's Social Media Policy Document Review	
Purpose of the policy	The key purpose of the policy was to ensure: ▪ That the legal and governance risks to the authority are reduced ▪ That the general reputation of the Authority is protected ▪ That the general public can have confidence that information provided by the Authority via social networking is trustworthy ▪ That employees are made aware of their role in ensuring the Authority's commitment to social media managed responsibly
Applicability	The policy applies to all employees (including agency workers) carrying out work on behalf of the authority and/or using Authority owned equipment and facilities. It also applied whether working from the office, home or any other remote site from which the Authority conducts its business and operation.
Review Period	A formal review of 12 months was meant to take place. However it was also stated that the policy has the potential to be out of date very quickly as the technology develops or public focus switches. As a result the policy will be reviewed on a regular basis in line with the needs of the Authority and any external influences such as changes in technology or consumer trends.

Table 5.3: UKLGA's Social media policy document review

The managers in general believed that the policy document was useful in terms of educating and providing guidelines for the UKLGA employees explaining the purposes of these tools

and the good practices or the rules of the use of these technologies for business and work related activities. On the other hand, IT Systems manager highlighted that there was no such strategy in place even though a social media policy existed mainly due to their belief in the need to prioritise their time and effort on other areas which needed more attention.

With regards to the decision making process for the use of Web 2.0 within the case organisation, this was ultimately made by the Head of ICT and the senior management team within the IT department. The Head of ICT mentioned that they had a 'Push' and 'Pull' strategy in place in the IT department where 'push' meant that any new ideas or technology implementation were initiated by the IT department themselves. On the other hand the 'pull' strategy was when the users and other departments would request new forms of technology from the IT department to meet their needs. The decision to implement Web 2.0 technologies was described as obvious because both, the IT department and the wider organisation wanted to keep up with the technological changes and maintain their reputation. When the senior management were asked if they thought an individual or a department was responsible for the initiation of Web 2.0 implementation in UKLGA, some of the factors outlined by them were:

- *Addressing specific needs* – This was mainly in relation to specific requests made by UKLGA departments (e.g. Leisure Centre, Web team) for the use of these tools to assist in some of their business functions.

- *Meeting overall ICT strategy* – Head of ICT stated that the introduction of Web 2.0 was due to that the fact that Web 2.0 adoption was a key element and formed part of the overall ICT strategy that was in place within the UKLGA.

- *Responding to overall demand* – Most managers asserted that the initiation of Web 2.0 implementation was mainly due to response by the IT department for the overall demand for the use of these tools within the UKLGA.

Furthermore, the managers emphasised that the need for Web 2.0 technologies had primarily risen in the case organisation when the ICT department had to react to the needs of other departmental services that had started experimenting with these tools. For instance, the IT support manager highlighted that the leisure centre staff started using Facebook to

communicate with citizens for promotional and marketing purposes. The IT support manager reported:

"…I know we could have done a lot more but certainly where we saw that we have to pick this up and look at it was because of the small services were already doing things. For instance, I think with like the leisure centre members, they were sending out marketing media, it's very fast and effective… so instead of having to produce a mailshot or print a poster and stick it around we just send it out or put it out on Facebook site..(NP)"

This statement made by the manager highlights the importance that the other non-IT departments had placed on Web 2.0 tools such as Facebook for marketing communication. It also highlights how the ease of accessibility of these tools that had led to its quick adoption by users.

When the interviewees were asked about the organisation's motivation for adopting Web 2.0 technologies, the Head of ICT and IT Systems manager both stated that a key factor was to maintain the reputation of the UKLGA. IT systems manager reported:

"Again there is couple of factors, one of them is the factor of reputation because you want to be seen as yes we know about this thing and we are dealing with it, rather than just ignoring it and then things happening. (RJB)"

This statement clearly indicated that the IT department felt that they wanted to be seen as keeping up with the technological changes in terms of maintaining their reputation and did not want to be left behind by ignoring it. From the responses it was evident that the IT department was keen to implement Web 2.0 in order to maintain its knowledge of ICT developments and that the council, as a whole, saw this as a means to build on its reputation for innovation. This resonates with the view of Charlton (2011) who highlighted that some public sector organisations are jumping on the 'bandwagon' to keep up with technological changes and maintain reputation. Other motivational factors highlighted by the rest of the management team are as follows:

- *To plug gaps in communications and engagement* – The e-Government manager specifically stated that the UKLGA believed these tools can be used to engage with

young individuals who didn't traditionally come in contact with the authority through traditional communication channels (i.e. phone, email, etc.).

- *To make these technologies available to users and provide greater accessibility* – Some managers also believed that the council had also found that young employees were also keen on using these types of technologies for work purposes and felt there was a need to embrace tools such as Facebook to satisfy the needs of the younger work force.

- *To try and achieve business efficiency* – Senior management team reported that there were business use for collaboration platforms such as Yammer and had been requested by certain departments to assist in their daily work activities. Microsoft SharePoint, a web application platform that existed in the organisation was used for internal sharing of information however the licensing costs of these applications were high. However, the rise of low cost or free Web 2.0 project management and collaboration tools has meant there has been an increase in demand for the use of such in tools within the UKLGA. Therefore, the IT team had been presented with strong business cases bout how to improve business efficiencies by using such tools.

These factors demonstrated that the UKLGA were keen to support the use of these emerging tools within the council. The management team were also asked to indicate the level of support that was received from the staff within the UKLGA for the development of the business case for the use of Web 2.0 technologies. Table 5.4 depicts the responses from the interviewees that highlight their indication of the level of support they had received when developing a business case for adopting these tools.

Most of the senior management team reported that they had received significant support from the Directors and the Senior Management teams from other departments within the UKLGA. The e-Government manager stated that the Web 2.0 tools were championed by a director and therefore had received high level support. The manager also added that the senior management team from other departments (e.g. Marketing and Communications) were also another helping hand in the whole process of seeking approval for the implementation of these tools within the council. Other managers including the Head of ICT also reported that they had received strong support from councillors. Some members of council were advocates

of social media as it allowed them to engage with citizens through their own political blogs and Twitter pages therefore encouraging the use of these tools within UKLGA.

UKLGA	Head of ICT	Corporate e-Government Manager	Website Manager	IT Systems Manager	IT Support Manager	IT Services Manager
Directors	✓	✓	✓	✓	x	✓
Senior Management	✓	✓	✓	✓	x	✓
Middle Management	✓	✓	x	x	✓	x
Junior Management	✓	✓	x	x	✓	x
Supervisory Level	x	x	x	x	x	x
Administration/Support Staff	x	x	x	x	x	x
Others:						
Councillors	✓	x	x	x	✓	✓

Table 5.4: Support offered by UKLGA for the application of Web 2.0 tools

It is certain that parts of UKLGA had received a good level of technical support and had embraced the use of Web 2.0 technologies for internal work purposes. Table 5.5 depicts the type of Web 2.0 technologies used by the IT senior management team for internal work purposes.

Web 2.0 Application Class	Head of ICT	Corporate e-Government Manager	Website Manager	IT Systems Manager	IT Support Manager	IT Services Manager
Blogs (e.g. Blogger, Tumblr)	x	x	✓	x	✓	x
Collaboration Workspaces (e.g. Yammer, Huddle)	x	✓	✓	✓	✓	x
Cloud Computing –Software as Service (SaaS) (e.g. Google Apps , Salesforce)	✓	x	✓	✓	✓	x
Mashup (e.g. Google Maps)	x	x	✓	✓	x	✓
Microblogs (e.g. Twitter, Blauk)	x	✓	✓	x	x	x
Online Picture Sharing (e.g. Pinterest, Flickr)	x	x	✓	x	x	x
Online Video Sharing (e.g. Youtube)	✓	x	✓	✓	✓	✓
RSS (Really Simple Syndication) (e.g. News Feeds)	x	x	✓	x	x	x
Social Bookmarking (e.g. Delicious)	x	x	x	x	x	x
Social Gaming (e.g. Doof, Pogo)	x	x	x	x	x	x
Social Networking Sites (e.g. Facebook, LinkedIn)	✓	✓	✓	✓	✓	✓
Virtual Learning Environments (VLE) (e.g. Blackboard, Moodle)	x	x	x	✓	✓	x
Virtual Worlds (e.g. Second Life)	x	x	x	x	x	x
Wikis (e.g. Wikipedia)	✓	x	✓	✓	✓	✓

Table 5.5: Web 2.0 technologies used by IT senior management team for work purposes

The findings from the table 5.5 reflect the views of six senior staff who are responsible for the Council's IT strategy and operation. Among this group, social networking sites, wikis, online video sharing, cloud computing applications and collaboration workspaces were amongst the most popular Web 2.0 tools used. Applications such as social bookmarking, social gaming, and virtual worlds were not used at all by the management as they did not seem to have an immediate use for these tools in a local government organisation setting. As such, it is likely that the variances between the team members reflect variations in their roles and personal interests.

Although some of the Web 2.0 tools were well embraced by the UKLGA employees, there still remained some resistance and lack of commitment from some internal employees to exploit Web 2.0 tools to improve their respective service areas. This was illustrated by the lack of Web 2.0 tools used in important areas such as Highways and Finance. Some senior staff described themselves as being 'too busy' to prioritise and divert resources to Web 2.0 thus resulting in a loss of opportunity to develop Web 2.0 to improve service delivery. In addition there were also access restrictions set by the UKLGA's IT department. An informal conversation with the Service Improvement manager who was not from the IT department reported:

"In the main (apart from some 300 staff) are blocked by firewall. So there will be limits as to what and how people communicate with us and also in us being able to respond. This lack of access was definitely a disadvantage. It is often used by organisations to disseminate information, which we cannot access except by special arrangement.…(SIM)"

The manager clearly stated and highlighted that tools such as Facebook and Twitter were restricted for use by some staff in the UKLGA and there was a need to make special arrangements which could be time consuming at some instance. According to the Head of ICT, all the employees did not use platforms such as Facebook or Twitter. Instead, these applications were used where a business use was seen. The head of ICT said:

"We haven't got everybody on Facebook or Twitter for example; it's deployed where there is a business use. So ultimately whether or not we deploy is with me and my team. 9 times out of 10 we will try and help. (SJ)"

This clearly highlighted that ultimately, the use of Web 2.0 tools is under the jurisdiction of the Head of ICT and the IT management in the UKLGA and also that its implementation was initiated and constrained by the opinions of senior staff. Although there were clearly access restrictions to these tools for some staff use, the informal interviews and conversations with most of the non-IT department indicated that in this case the organisation was far more liberal compared to other local authorities in the UK. Some of the employees reported that this was one of the few LGA's in UK that allowed employees to exploit these tools for internal business related activities as majority of the LGAs in UK often allowed their employees to use it only for citizen engagement which was often managed by the marketing and communications team.

5.5 IS Evaluation: A Web 2.0 Perspective

Innovative web-based tools such as Web 2.0 have a lot to offer to the employees in performing their internal operations within the LGA (Sander, 2008). Nevertheless, innovative digital communication comes with both potential opportunities as well as risks. Therefore, the implications and evaluations of these tools are now on the governmental agenda and are of significant relevance to government organisations (Klischewski, 2010).

The literature stresses that IS evaluation is definitely an important process prior to implementing a new system (Seddon, 1997; Irani and Love, 2001). Hence, the findings of this evaluation analysis at the pre-implementation stage will be invaluable to government organisations. This concurs with the views of all the interviewees who suggested that it is important to perform a formal IS evaluation prior to implementing a new technology. However, it was interesting to note that while they signify IS evaluation as an important procedure to follow, there was no formal evaluation that was conducted prior to the adoption of Web 2.0 technologies. One of the key reasons for this neglect was reported as due to the belief that these technologies came with no initial direct costs and therefore did not require a formal evaluation. The head of ICT said:

"…We haven't done it, probably because it was an obvious thing to do and as it is mainly used as a communication tool. It's difficult to calculate things like efficiencies and

cost savings on a tool. Although normally we will do it on a system, we haven't done it on Web 2.0... (SJ)"

The above statement made by the Head of ICT in UKLGA clearly highlighted that as the majority of Web 2.0 technologies were free of cost, only an informal discussion about the benefits, costs and risks were conducted prior to its implementation. Another reason added was that it would be difficult to measure the efficiencies and cost savings that these tools had to offer to the LGA. The senior management were asked about their views on this study's chosen IS evaluation approaches which consisted of benefits, costs and risks factors proposed by Shang and Seddon (2002), Irani and Love (2001) , Evangelidis et al. (2004) and Schwartz (2000) respectively. These evaluation approaches formed the IS evaluation segment of the conceptual model (as illustrated in figure 3.1 in chapter 3) which will help LGAs understand the real benefits, costs and risks of using Web 2.0 applications in the context of e-Government prior to its implementation by these organisations. The responses received from the senior management emphasised that evaluation of benefits, costs and risks of Web 2.0 technologies together would better influence their decision in adopting these technologies. In effect, the appraisal process was informal due to the low key introduction with progress kept under review in meetings and discussions. On the other hand, this was not treated to the same formal appraisal as, for example, a purchase of a new payroll system. This distinction supports the study's research conjectures C1, C2 and C3. For instance the IT support manager stated:

"Yes, if we were to put together a formal evaluation report, you get more of a rounded picture. It might be expensive to implement but the benefits might be huge. It might not be financial benefit but it could be efficiency like process changes or you can communicate with people a lot quicker. There might be indirect or hidden savings. (NP)"

This statement by the manager certainly asserted the significance of developing a formal evaluation report for the application of Web 2.0 tools. The manager highlighted the benefit of this report would be that it will provide a holistic view in term of understanding the potential risks and the indirect or hidden savings these tools might be able to provide for the case organisation. The Head of ICT and e-Government Manager also emphasised that this was an area that needed more of a focus in the future given the lack of a formal evaluation process for these technologies. The e-Government Manager said:

"Yes, I think this is the area where you got to look at risk management and we did largely ignore costs because the biggest cost would have been the technology and that was free, the fact that we are now diverting staff resource at this even though it is only a small percentage of your day job. We are spending some time on this and time is money. I think this is the area that we should look at. (SD)"

The statement made by the manager highlights that the management had ignored an important evaluation process mainly due to the costs of implementing Web 2.0 tools. It had been ignored as generally the biggest cost of a new system would be the technology itself, which in this case was free. However, according to the e-Government Manager, the LGA now needed to be more careful in view of the rising indirect costs as the organisation was now diverting more staff resource and spending more time with these technologies, all of which result in additional costs to the organisation. The findings from the benefits, costs and risks evaluation of Web 2.0 technologies in the case organisation are reported below.

5.5.1 Benefits Evaluation of Web 2.0 Technologies

Web 2.0 technologies may be considered a disruptive technology for governments, creating "disruptive innovation" in the digital government as well as augmenting digital government with better services and management (Chun et al., 2010). The potential for Web 2.0 tools create a public sector paradox especially in government organisations. Therefore, a systematic benefit evaluation is essential prior to placing government information and providing services using Web 2.0 technologies, as the integration of these technologies in e-Government should not be done arbitrarily (de Kool and van Wamelen, 2008; Dadashzadeh, 2010). However, in the UKLGA it was interesting to note that the Head of ICT suggested that a benefit evaluation was not a significant criterion to be considered when adopting Web 2.0 technologies since it was seen as a low risk, low cost development in the first instance. Subsequently, the rest of the management team including the e-Government Manger highlighted that benefits evaluation was highly important which supported the study's research conjecture C1. The Head of ICT stated that even though they were supportive of evaluating systems, it was difficult to evaluate the benefit of Web 2.0 in a traditional manner

such as using cost-benefit analysis or return on investment. Nevertheless, the Head of ICT believed that in the future a formal evaluation would become necessary as Web 2.0 tools grow to be used more extensively. This can be seen as an instance where the UKLGA has learnt from the first phase of Web 2.0 introduction and now sees the need for proper evaluation of any further developments.

The benefits evaluation criteria identified in chapter 3 consisted of dimensions such as operational, managerial, strategic efficiency, the value of IT infrastructure and organizational benefits which were all identified as important factors that could contribute to an organisation (Seddon, 1997). These dimensions were used to evaluate the benefits of Web 2.0 as the classifications covered a broad spectrum of functions surrounding an organisation. Table 5.6 provides with the analysis of the importance of Web 2.0 benefit factors for its effective application in the UKLGA based on the views from the interviewees. It uses a 7 point Likert scale of *less important* to *fairly important* (○), *moderately important* to *important* (◉) and *highly important* to *extremely important* (●) and where the interviewees said *not important*, the "x" symbol is used.

Classification	Benefits of Web 2.0 Technologies	Head of ICT	Corporate e-Government Manager	Website Manager	IT Systems Manager	IT Support Manager	IT Services Manager
Operational	▪ Streamline internal operations	●	⊙	⊙	●	⊙	x
	▪ Lower IT costs	●	⊙	⊙	⊙	●	x
Managerial	▪ Improvement of policy making	○	○	○	○	○	x
	▪ Rapid dissemination of information	●	●	●	●	●	x
Strategic	▪ Enhance external transparency	●	●	●	●	●	○
	▪ Revive civic engagement	●	●	⊙	●	●	⊙
	▪ *Other: Marketing of Services*	●	●	●	⊙	●	⊙
	▪ *Other: Communication*	●	●	●	●	●	⊙
IT infrastructure	▪ Scalability of the system	●	⊙	●	●	●	⊙
	▪ Exploit free tools	●	●	●	●	⊙	⊙
	▪ Ease of use and greater access	●	●	●	●	●	⊙
Organisational	▪ Efficient gathering of collective intelligence	●	●	●	●	●	⊙
	▪ Co-production and collaboration	⊙	●	⊙	●	●	○

Table 5.6: Importance of Web 2.0 benefits for effective application in the UKLGA

The findings from the empirical data as depicted in the table 5.6 highlight that benefits of Web 2.0 such as *rapid dissemination of information*, *enhancing external transparency*, *reviving civic engagement*, *exploiting free tools* and *ease of use and greater access* had been considered by the interviewees to be highly important factors for the effective application of Web 2.0 tools in the case organisation. The future goals of the UKLGA's IT strategy and the responses from the senior managers above reflects the commitment in following the formal IT strategy to be an innovative organisation that draws on emerging technologies as reported in section 5.4. The subsequent sections present discussions on some of the noteworthy findings in each of the benefits dimensions. A research synthesis of these findings will be discussed in chapter 6 however, it is worth stressing that there is a clear gap between the need for an evaluation as identified above and the actual practice at the early stage of Web 2.0 implementation within the UKLGA.

Operational Benefits:

Within the *operational* benefits dimension, *lowering IT costs* and *streamlining internal operations* were both regarded as important factors by the UKLGA senior management team. The Website Manager highlighted that streamlining internal operations were an important consideration because the use of Web 2.0 tools where collaboration platforms (i.e. Yammer) would help facilitate project management within the departments. For example, the manager reported:

"I think it will be important. Potential for it is, obviously less email or it's on one place focus, you can tell… just go there it's on Yammer rather than go back and look though the last 50 odd emails. So that's pretty much the massive advantage to it. If it stopped the other emails, it would be wonderful and it will be highly important...(RSJ)"

The manager clearly described that Yammer could act as a one-stop platform where project related information could be stored and be used as a dedicated area for sharing information and change logs that are relating to the projects. The manager believed that this would help reduce the traditional chain emails which are sent to update the progress or any amendments of a project to all the related employees. The better management of these projects is one example of how Web 2.0 technologies would help streamline internal operations within the UKLGA.

On the contrary, though most of the managers believed that lowering IT costs was an important Web 2.0 benefit factor, they were vague on indicating where the savings were to be made within the UKLGA. The Web Manager stated that it was not as straightforward as establishing the cost-savings when adopting a complete new IT system (e.g. payroll system). As in the case of Web 2.0 technologies, these tools were used only as additional applications and were alternatives to the existing tools used in the UKLGA. The manager believed that the direct cost savings will be only established once they are being used more extensively within the case organisation for a few more years and if and when a formal cost-benefits analysis or evaluation is performed.

Managerial benefits:

In terms of managerial benefits, both the e-Government manager and Website manager stated that *rapid dissemination of information* was an extremely important factor. The e-Government manager reported:

"..In terms of the rapid dissemination of information, I think this was probably the most important area that we were considering, that it was a way of getting information out to the staff quickly, so that I think it is probably the highest..(SD)."

The managers highlighted that the use of tools such as Twitter were useful for them as it was far more efficient in getting out information to vast number of users at a greater speed compared to other methods of communication such as a static website or a printed newsletter. However, on the other hand the benefit of using Web 2.0 tools to *improve policymaking* was not believed to be of great importance by most of the managers. The e-Government manager stated that it was not important at all and the Website Manager said:

"In principle it makes perfect sense but in reality I think it tends to be rather a self-selecting group, so people that are affected by the policy aren't actually part of the consultation group…(RSJ)"

The statement by the manager clearly highlights that in principle it made perfect sense to use these tools but in reality, policymaking tended to be down to a self-selecting group who had a greater control over policy-making.

Strategic benefits:

Enhancing external transparency and reviving civic engagement were deemed highly important strategic benefits of using Web 2.0 tools by the senior management team. The e-Government manager highlighted that both these factors were certainly two key drivers for Web 2.0 application in the UKLGA and were important considerations for any organisation. With regards to enhancing external transparency, the Web manager reported:

"I know this will be extremely important because you are not giving the pre-chewed data.(RSJ)"

This statement made by the Web manager clearly emphasised the importance of providing good quality information to any user within the council and externally was highly significant for the UKLGA and Web 2.0 technologies were a platform to enable communication of such information as they are mostly real-time.

In addition to the benefits of Web 2.0 derived from the literature, the Head of ICT and IT Systems Manager both added that *Communication* and *Marketing of Services* were two other important *strategic* benefits of Web 2.0 that was of significance for the decision making process of its application. Though marketing is quite certainly the primary use of these tools in the private sector, it is interesting to note that marketing of LGA's existing services with the internal employees also seemed quite a prominent and an effective use of these tools in the case organisation. *Communication* was considered to be an important factor mainly by the Head of ICT as it was believed that the use of Web 2.0 tools such as blogs would help disseminate strategic messages to the council's employees quickly and in a conversational tone rather than sending formal newsletter or emails. The head of ICT also highlighted some of the employees such as chief executives and senior employees already employed such methods and were regular 'bloggers'. The key benefits achieved by this method was that the employees had the freedom to visit the blogs in their own time and also allowed for interactions by allowing them to comment on blog posts. The Head of ICT therefore believed

that use of these tools would help improve the communication style of senior staff into a friendlier manner.

IT infrastructure benefits:

In terms of Web 2.0 technologies helping achieve *IT infrastructure* benefits, all three factors illustrated in table 5.3 were regarded as highly important criteria to be considered prior to adopting these tools. For instance, all the managers including the Head of ICT stated the fact that Web 2.0 tools came with no cost and were essentially free made it an easy decision to implement these applications in the UKLGA. Thus, exploiting free tools as a factor was a highly important consideration which concurred with the views of Picazo-Vela et al., (2012). Similarly, *ease of use and greater access* was also regarded as an important factor by the IT senior management. Web 2.0 technologies are usually quick and easy to learn and use. It can also be accessed from multiple devices as long it is connected to the internet allowing for greater access to these technologies. The e-Government manager and the IT support manager clearly stated that there was no point of implementing a technology if the employees found it difficult to use and which wasn't the case with Web 2.0 tools. In the normative literature similar views were echoed by O'Reilly (2007) where the author stated that Web 2.0 technologies are usually quick and easy to learn and use. In addition, it can also be accessed from multiple devices as long these were connected to the internet allowing for greater access to these technologies.

Organisational benefits:

Finally, o*rganisational benefits* entailed factors such as *co-production and collaboration* and *efficient gathering of collective intelligence* which were both regarded as significant factors by the managers for the adoption of Web 2.0 technologies.

IT systems manager asserted that efficient gathering of collective intelligence often occurred in the UKLGA when using interactive Web 2.0 survey tools to collect information regarding employee satisfaction. The manager added that when using such tools there wasn't an issue of scalability when compared to traditional means of collecting data. The sharing of these surveys via their own Twitter and Facebook pages also meant that they were able to reach out to a wider audience and get more valuable feedback. It was highlighted that the use of emails

and paper surveys were still being used but these new tools have certainly helped their department to see an increase in survey responses.

With regards to co-production and collaboration, there was a lot more emphasis by the managers on the use of Web 2.0 tools in relation to its improvement in collaboration than co-production. The IT support manager stated:

"With my experience and to be fair that's the only way to do it in a lot of case so I would say it's highly important. You know practical experience really is being in terms of sharing, even if it's just documents between six authorities it can be very difficult and this could really make it a lot more easier.(NP)"

This statement clearly highlights the advantage of using Web 2.0 tools such as Wikis and Yammer for more efficient collaboration to take place between employees in the UKLGA . The IT services manager also added that a potential opportunity for such collaboration to take place in these digital platforms would be is for local development plan for formal consultations within different departments in the UKLGA.

5.5.2 Costs Evaluation of Web 2.0 Technologies

Chapter 3 stressed the importance of establishing the benefits of an information system in order to complete a robust IS evaluation, however it is equally important to understand the cost implications of an IS project (Irani et al., 2003) . According to Hochstrasser (1992) , the real costs of an IT/IS deployment can often be divided into direct and indirect cost factors. Therefore, the cost evaluation criteria developed in this research presents both direct and indirect costs adopted from Irani and Love (Irani and Love, 2001). The authors highlight that the cost associated with the adoption of IT/IS can be classified as having direct and indirect (human and organizational) characteristics.

The literature findings highlight that a cost evaluation is a key element of the IS evaluation process. These findings resonated with the views from most of the UKLGA management team. The management were asked to indicate their initial views on the significance of cost evaluation when adopting Web 2.0 and most of the managers except for the e-Government

manager thought a systematic cost evaluation was fundamental. This view concurred with the study's research conjecture C2. However, the e-Government manager asserted that the management already had made a fundamental decision on adopting these tools without having to prepare a formal evaluation. It was interesting to find out from the manager that if they had chosen the path of a formal evaluation this would have made the approval for adoption of these tools a much lengthier process. So by choosing to not perform an IS evaluation they were able to indirectly allow individuals to think that there was no significant direct costs for the adoption of these tools and have them implemented more quicker in the UKLGA. The manager also highlighted that the UKLGA's plan was to make use of the existing human resources to manage these tools. The author believes that although this strategy in the short-run might have helped with the swift adoption of these tools but this does not necessarily mean that in the long-term it might be easy to cope with issues such as needing additional resources to manage these tools. A detailed analysis of this issue backed with literature will be discussed in Chapter 6.

Table 5.7 depicts the analysis of the importance of Web 2.0 cost factors for its effective application in the UKLGA based on the views from the interviewees. It uses a 7 point Likert scale of *less significant* to *fairly significant* (○), *moderately significant* to *significant* (⦿) and *highly significant* to *extremely significant* (●) and where the interviewees said *not significant*, the "x" symbol is used.

Classification	Cost of Web 2.0 Technologies	Head of ICT	Corporate e-Government Manager	Website Manager	IT Systems Manager	IT Support Manager	IT Services Manager
Direct	▪ Development of new service model	●	◉	◉	◉	◉	◉
	▪ Additional Staff	●	○	●	●	◉	◉
	▪ Data maintenance	●	◉	●	◉	●	◉
Indirect Human	▪ Restricted user participation	●	◉	◉	◉	◉	◉
	▪ *Other: Personal time (Monitoring and Brokering)*	●	●	●	◉	◉	◉
Indirect Organisational	▪ Loss of control	●	◉	◉	●	◉	◉
	▪ Staff learning and training	●	◉	●	◉	◉	◉
	▪ Introducing new organisational policies	●	◉	●	●	◉	◉

Table 5.7: Significance of Web 2.0 costs for effective application in the UKLGA

As the above table 5.7 illustrates cost factors such as *data maintenance*, *restricted user participation* and i*ntroducing new organisational policies* are some of the factors that the senior management team believed to be important considerations to have prior to Web 2.0 adoption. The following sub-sections present discussions on some of the noteworthy findings in each of the costs dimensions.

Direct Costs:

One of the key *direct costs* of Web 2.0 technologies that the interviewees highlighted was *data maintenance*. The e-Government manager asserted that this was an important factor and stated:

"I think that's a significant factor, we are very good at getting stuff out there when we want to but we are not so good at taking it all in when it has passed its sell by date. We are aware of that.(SD)"

The statement indicates that the case organisation is generally good at putting information out but not as good when it comes to tidying up the data once it becomes outdated. This can usually have a detrimental impact on the image of the organisation and its inability to maintain accurate and reliable information for the users of these channels. High quality information is vital when it comes to Web 2.0 tools as users expect up-to-date data through mediums such as Twitter which sends information out in real-time. If users do not have access to accurate information, there is a significant risk of the social media channel not being used in the future and losing its audience or followers.

Apart from this, requiring *additional staff* as a direct cost factor was also thought to be an important consideration by the managers. They highlighted that this potential direct cost was an important factor to be kept in mind by the decision makers when it came to adopting Web 2.0 tools in an organisation. The IT support manager points out that often senior manager are seduced into investing in new technologies heavily but they tend to not like to recruit or pay staff to manage these new investments. This can always mean that the existing staff are put under pressure and stress to manage these tools which can lead to a detrimental effect on their daily jobs. Furthermore, the newly invested technology would also not be exploited to its maximum potential. Therefore, it was noted that this factor was highly important for managers to consider when having to source new staff or manage the workload of the existing staff to make the most out of any new technological investments.

Indirect costs:

The managers responded that restricted user participation was fundamental and an important indirect human cost factor that managers had to take into consideration before introducing any new technologies and the same applied to Web 2.0 technologies. IT support manager asserted that UKLGA had to be extra careful because they were a public sector organisation and user's been restricted to use of such tools could result negatively on its image. The manager added especially when the media or the press is keen on spotting and publicising such issues.

Apart from the existing costs derived from the literature, the Website manager also highlighted that use of *personal time for monitoring and brokering* Web 2.0 applications was a highly significant *indirect human cost* for the LGA. The manager stated:

"..The fact is that I have to keep checking the social media personally several times a day and when stuff comes in I am back to where I start with the council sending emails out to services, this person's tweeted about you can you please give me some information… So it's the time taken because there wasn't a clear defined role set for this…That is actually extremely significant because it stops me doing the rest of the day job.(RSJ)"

The statement clearly highlights that there was no dedicated role (e.g. social media officer) in the council to manage these channels. It was left to the IT department and in this case it was the Website manager who was mainly left to monitor and manage the adopted Web 2.0 tools in the UKLGA. This resulted in a member of the IT team having to personally monitor council's social media sites and respond to Twitter and Facebook communication which meant that it was a highly time consuming task resulting in losing focus on their day-to-day duties. This factor raised by the manager is very closely related to the concerns raised with the additional staff requirement when investing in new technologies.

With regards to indirect organisational costs, *introducing new organisational policies* was considered to be highly significant. This resonates with the findings of Bertot et al. (2012), where the authors stated that as many social media services are hosted outside government websites (e.g., Facebook, Twitter, YouTube), it is important for government agencies to establish and enforce explicit agency-wide linking policies. The managers from the UKLGA concurred with this view and also added that it can be time consuming and costly for organisations but still a very important process that cannot be neglected.

Furthermore, the management team also felt that *loss of control* was another significant consideration when adopting Web 2.0 tools as it could potentially have an impact on indirect organisational costs. The Web Manager stated that though this drawback might not stop the use of tools such as Facebook but it definitely does the raise the concern of trusting the information that is put out to these third party applications which the UKLGA has no control

over or could solicit. The manager added that therefore it was definitely an important factor to be aware of prior to putting out any sensitive information on these channels.

5.5.3 Risks Evaluation of Web 2.0 technologies

Generally, risk can be asserted as the likelihood of a negative outcome because of uncertainty, which is often uncontrollable (Willcocks, 1994). As IS projects are renowned for their high failure rate, it is important for organisations to improve their ability to manage these risks so that projects can be delivered against the objectives with which they were justified (Irani and Love, 2008). The risk dimensions outlined in this research are Political and Legal, Reputational, Security, Societal and Technical. For instance, reputation has been included in the research model from Schwartz (Schwartz, 2000) as it addresses a significant risk factor from a general organisational perspective. As Web 2.0 technologies are a social platform, they allow users to discuss any matters openly, which could potentially have a direct impact on the reputation of the organisation. Therefore, the consideration of reputation as a risk dimension in the model is vital. This concurred with the views made by senior management team when asked to indicate their view on the significance of systematic risk evaluation prior to Web 2.0 adoption in the UKLGA. Thus, supporting the study's research conjecture C3.

Although the e-Government manger thought a cost evaluation was not essential in the case of Web 2.0 adoption interestingly pointed out that a risk evaluation was extremely significant. The manager asserted that they had considered risks mainly due to the risk of reputation which was something that they were more aware of than any other factors. This revelation by the manager does not come with a surprise as the UKLGA is a public sector organisation and the working environment are open to various potential detrimental impact on their public image.

Table 5.8 provides with the analysis of the importance of Web 2.0 risk factors for its effective application in the UKLGA based on the views from the interviewees. It uses a 7 point Likert scale of *less significant* to *fairly significant* (○), *moderately significant* to *significant* (◉) and *highly significant* to *extremely significant* (●) and where the interviewees said *not significant*, the researcher uses "x" symbol.

Classification	Risks of Web 2.0 Technologies	Head of ICT	Corporate e-Government Manager	Website Manager	IT Systems Manager	IT Support Manager	IT Services Manager
Political and Legal	▪ Weak social media policies	●	●	◉	●	◉	◉
	▪ Data ownership	●	◉	◉	●	●	◉
	▪ Data protection	●	●	◉	●	●	◉
	▪ Freedom of information	●	●	◉	●	◉	◉
Reputational	▪ Critical reviews	●	●	●	◉	○	●
	▪ Risk of information overload and reliability	●	●	●	●	○	●
Security	▪ Security and Privacy	●	●	●	◉	●	●
	▪ Threat of cyber extremisms	●	●	◉	◉	●	●
	▪ Trolling	●	●	◉	◉	◉	●
Societal	▪ Social isolation	●	●	◉	●	◉	◉
	▪ Digital Divide	●	●	◉	●	◉	◉
Technical	▪ Access to the technologies	●	●	◉	◉	●	◉
	▪ Discontinuation of technology	●	◉	◉	○	○	◉
	▪ *Other: Integration to other systems*	◉	◉	◉	●	●	●

Table 5.8: Significance of Web 2.0 risks for effective application in the UKLGA

As the above table illustrates risk factors such as *data ownership, risk of information overload and reliability* and *security and privacy* were some of the factors that the senior

management team believed to be important considerations to have prior to Web 2.0 adoption. The subsequent sections present discussions on some of the noteworthy findings in each of the risk dimensions.

Political and Legal Risks:

In terms of political and legal risks, weak social media policies, data ownership and protection and freedom of information were all considered to be significant factors to help support effective application of Web 2.0 technologies. For instance, the Website manager asserted that *data protection* is significant due to the social nature of Web 2.0 tools and usually users have their personal details stored on these applications. However, the manager added that the severity of this concern really depended on the type of data or information put out by the users of these medium in the UKLGA. Nevertheless, it was pointed out that it was important for the UKLGA to have a strategy and policy in place to manage any type of data being held over time. Similarly with regards to *data ownership,* some managers stated that the employees of the case organisation had to be weary of the information being placed in social media applications as these information were being placed on third party providers where these companies had their own privacy and legislations.

Furthermore, *weak social media policies* were another important consideration that was highlighted by the management. The e-Government manager stated:

"I think social media policies are extremely significant. If we roll the clock back to 2011 -2010 when we were first thinking about this we said we haven't got a policy on this ,if we haven't got a policy on this where does this lead us and what is the risk of not having a policy. So first and foremost it was the most significant thing we actually have a policy before we even got a strategy. (SD)"

This statement clearly indicates the significance that the management had placed on having strong social media policies even before adopting these tools. The Website manager also emphasised the importance of having strong social media policies. The manager highlighted that there is a need for a clear vision for the use of these tools in order to avoid chaos and the policy is something that sets that out clearly. Moreover, the IT services manager pointed out some instances in the past where the UKLGA had problems with staff wasting work time whilst dealing with communications via social media using their own personal mobile devices such as a smartphone. The manager added that the employees also had used their

work e-mail accounts for social activities such as setting up Facebook or Twitter accounts communicating with family and friends. Employees had then started to respond to such communications during work time. This had over time lead to disciplinary problems with the staff as it is extremely difficult to find the balance in encouraging them to use social media for work purposes, but at the same time discouraging them from using it for personal reasons (e.g. Facebook) during working hours. This therefore presents the management a challenging task of policing these tools. According to UKLGA senior management, a strong social media policy in any organisation is fundamental as it allows the organisation to define the separation between business and social use of these tools.

Reputational Risks:

With regards to reputational risks, *information overload and reliability* was highlighted as a significant risk that had to be taken into account before implementing these tools. This finding resonates with the view of Huijboom et al., (2009), where the authors highlighted that there is a risk of information overload and poor quality of content shared by users when using some Web 2.0 applications such as blogs and wikis, as concerns are raised against their reliability, accuracy and authority of information. IT support manager also agreed that there is certainly a risk of keeping the data presented over the social media applications accurate. The manager claimed that internally UKLGA's intranet sites were not maintained as well as it should have been, so the more information there is the more difficult it is to maintain accurate information. On the contrary, the manager asserted that in terms of information overload, it could be argued that it is better to have more information out there as long as it's accurate. The manager added this was mainly because as this makes it easier for UKLGA to deal with open information requests (i.e. keeping in line with freedom of information policy) as the employees can easily direct users to the web where the information may be stored.

Furthermore, c*ritical reviews* were another key factor that the management had referred to as an important reputational risk that the UKLGA had to be aware of as it was another case of managing its public image. However, on the other hand the IT systems manager stated that although there may be instances when negative reviews are posted by users but this also could mean the council isn't providing a good service. So it is the UKLGA's to investigate

these types of reviews and embrace any valuable feedback if it is for the betterment of the services it provides to its employees.

Security Risks:

The statements made by the UKLGA management unsurprisingly highlight that *security and privacy* as the most significant *security* risk factor of Web 2.0 tools that needed consideration before adopting these technologies. This finding concurs with the view of Bin Al-Tameem et al., (2008) who noted that the open nature of Web 2.0 presents significant challenges to the traditional enterprise approach to controlling intellectual property over information shared and surety of these applications. E-Government manager asserted that precautionary measures had been taken into account by the IT team in the case of security breaches to the social media account. The manager stated:

"..one of the things that we have got in our social media policy is that the web team, if it's an authorised social media account and if it's an official one representing the authority, the web team ought to have administrative level access to it as well…(SD)"

This statement emphasises that the management were keen on having a certain level of control over Web 2.0 technologies. The manager highlighted that there were two key reasons for this tight control:

- *Moderation and Security* - to take control of a social media account immediately in case of unauthorised security breach. This would avoid having to waste crucial time getting in touch with multiple users to shut down a social media channel.
- *Operational continuity* – to be able to continuing use and transfer social media application in case existing staffs managing a social media account leaves the UKLGA.

This method of moderation of Web 2.0 technologies made perfect sense given the sensitive working environment of the case organisation. With regards to security risks such as *threat of cyber extremism and trolling*, most of the managers reported that though they considered it to be significant risk considerations, the direct impact that it would have on the UKLGA would not be seen as high risk as Web 2.0 technologies are not used by the employees for critical

work. However, it was highlighted that this would have certainly been the case where these tools are used for citizen engagement by the marketing and communications department.

Societal Risks:

Social isolation and digital divide were both regarded as highly significant societal risk factors for the UKLGA by majority of the management. For instance, the IT support manager believed that digital divide was certainly an issue and as some of the younger workforce had questioned the lack of use and access to the some of the systems in the organisation which had somewhat restricted their ability to perform their job. Similarly, the e-Government manager reported:

"This is extremely significant that we felt with social media in relation to digital divide. When you talk about traditional web services, you have to think about somebody having PC at home, access to broadband and all of that. With mobile phones and mobile devices that whole area or debate is just opened right up and we knew that the people that we are engaging on social media are on mobile devices and that made it affordable. So if we weren't in that market we were going to miss those people so it's extremely significant. (SD)"

This statement emphasises that it was vital for the UKLGA to keep in mind of the digital divide issues and to keep up with the current trend when it comes to the use of emerging technologies. The Website manager also highlighted that there is a certain level of restriction where certain members of the staff don't have access to desktop computers. According to the manager, UKLGA employs around 7000 staff but only about 3000 of them have direct access to desktop PCs. Most of the workforce has brokered access where their line manager will be able to show them and print work off but in terms of their direct access they will be somewhat limited. Similarly, in relation to *social isolation*, the Web manager stated though they consider this risk as significant, it was never the case where social media tools were going to be a full replacement to the traditional means of communication such as using the phone or face-to-face meeting. However, the manager thought it is important for the UKLGA to consider these risks as the employees become more drawn into these technologies especially the younger workforce.

Technical Risks:

In terms of technical risks *discontinuation of technology* was not believed to be a significant risk by the management although Bertot et al. (2012) asserted this as a risk in the literature. The authors raised concerns over the risk of the continuity of existing Web 2.0 tools. For instance, Yahoo's announcement of the discontinuation of its 'delicious' tagging service presents such an example. However, according to the e-Government manger, Web 2.0 tools are a supplement to the other methods they use traditionally, so it will not be an issue to the LGA if they were to discontinue. Apart from the Web 2.0 risks derived from the existing literature, the IT support manager highlighted that *integration and interface to other systems* was a technical risk of Web 2.0 tools that needed to be considered prior to its adoption. The manager believes that integrating some Web 2.0 tools to the existing systems in the organisation could prove challenging at times and be time consuming. There could be also instances when they might need assistance from third-party companies to facilitate the integration process as there might be a lack of in-house skills.

5.6 Impact of Web 2.0 on the UKLGA

The influence of Web 2.0 on governments is not an isolated phenomenon as the new internet enabled technologies continue to have an increasingly disruptive impact on all organisations (Mintz, 2008). It is therefore vital for these authorities to understand the effects of these emerging technologies. However, since the deployment of such technology is at its early stages in the public sector, research about the impact of Web 2.0 technologies are still highly tentative and exploratory (Huijboom et al., 2009). Hence, the post-implementation findings of this impact analysis will be invaluable to government organisations as they aim to determine the level of use of these technologies by LGAs and assess if they are relevant and necessary in order to propose areas for improvement and future action plans (Bonsón et al., 2012). This resonates with the responses from the ICT management team where they felt that understanding impact of the decision to adopt Web 2.0 technologies prior to implementation would definitely help influence their decisions. When the interviewees were questioned regarding the impact of Web 2.0 technologies on the LGA, everyone anticipated some sort of

impact except for the IT support manager who didn't anticipate it due to the rapid evolution of such technologies.

The key focus within this study is the use of Web 2.0 for local governments and to facilitate their internal operations. Therefore, the chosen three classifications to articulate the implications of such technology were *organisational*, *technological* and *social* implications. These have been classed as important antecedents of IS success and have been envisaged to contribute greatly to the IS success of an organization by many scholars (DiMaggio et al., 2001; Delone and McLean, 2003; Seddon, 1997). This concurs with the views of the senior managers and the head of ICT who all mentioned that it would definitely be helpful and provide a holistic view, which in turn will benefit the LGA. These views support the study's research conjectures C4, C5 and C6. The e-Government Manager stated that the social and organisational impact was one of the key drivers for implementing Web 2.0 technologies and an assessment on whether this could be achieved would affect the decision-making process.

Table 5.9 provides an analysis of the Web 2.0 impact factors based on the views of the interviewees using a 7 point Likert scale of '*less significant to fairly significant*' (○), '*moderately significant to significant*' (◉) and '*highly significant to extremely significant*' (●). For questions where the interviewees stated '*not significant*', the researcher uses "x" symbol.

Classification	Impact Factors	Head of ICT	Corporate e-Government Manager	Website Manager	IT Systems Manager	IT Support Manager	IT Services Manager
Organisational	▪ Culture and Change	○	○	○	○	○	○
	▪ Transparency and accountability	◉	◉	○	○	○	○
	▪ Policy Alignment and Governance	○	○	○	○	○	○
	▪ Knowledge Management	◉	○	○	◉	○	○
	▪ Collaboration and Communication	◉	◉	○	○	◉	◉
	▪ Organisational learning	○	○	○	○	●	○
	▪ Human Capital	◉	x	○	◉	○	x
	▪ Financial Resources	○	x	○	○	◉	○
Technological	▪ Security and Privacy	●	○	○	○	◉	◉
	▪ Interoperability	○	◉	○	○	○	◉
	▪ Scalability	○	○	○	x	◉	○
	▪ Data Presentation	○	◉	○	○	◉	○
Social	▪ Democratic Participation and Engagement	○	◉	○	○	◉	○
	▪ Co-production	○	◉	○	◉	○	◉
	▪ Crowdsourcing solutions and Innovations	x	x	○	○	○	○
	▪ Building and Maintaining Trust	●	◉	◉	○	◉	●

Table 5.9: Impact of Web 2.0 technologies on UKLGA

The table highlights that Web 2.0 technologies has mostly had significant impact on *collaboration and communication, security and privacy* and *building and maintaining trust* elements of the UKLGA. The discussion on the findings from the organisational, technological and social impact analysis of Web 2.0 technologies in the UKLGA are discussed in the subsequent sections.

5.6.1 Organisational Impact of Web 2.0 technologies on UKLGA

Web 2.0 provides a new set of technologies to government organisations. However, at the same time, it brings about a change in the existing organisational culture of participation, openness and transparency (Balutis, 2009). Within the organisation, Web 2.0 facilitates many interpersonal functions with implications, such as internal teaming, problem solving, collaboration, and knowledge management and transfer (Parycek and Sachs, 2010; Schweik et al., 2011). Such interactions lie at the core of meeting the demands of a growing government in order to improve communications, enhance collaboration and encourage innovation throughout the organization (Osimo, 2008). Therefore, the consideration of organisational dimension as part of the impact analysis in the model is vital. This concurred with the favourable views made by the IT senior management team when asked to indicate their view on the significance of organisational impact analysis prior to Web 2.0 adoption in the UKLGA. Thus, supporting the study's research conjecture C4.

The organisational dimension of the proposed conceptual model includes various factors such as *culture and change*, *transparency and accountability*, *policy alignment* and many more, all of which are extrapolated from the normative literature (Meijer and Thaens, 2010; Parycek and Sachs, 2010). The impact on *collaboration and communication* was highlighted as the most significant implication of web 2.0 technologies on the case organisation. This finding concurs with the view of Schweik (2011), who highlighted that the internal and external collaboration and communication within an organisation is better facilitated by Web 2.0 tools. For instance the head of ICT emphasised the importance of communication within different departments by stating:

"I think communication and collaboration is highly significant within departments. Because departments know what they are doing so we have got separate departments knowing a bit more than what they do and been able to talk to each other via this media is a lot better, so it's important.(SJ)"

Mangers also highlighted that collaborative editing tools such as Wiki's made the process of collection and sharing of information more efficient. It had also helped build of a knowledgebase which the employees could always refer to at their own convenience. The interviewees stated that communication and collaboration within departments have been more efficient using collaborative tools such as Google's 'Apps for Business' and Yammer. The management asserted that it improved communication by breaking down the traditional organisation hierarchy.

Surprisingly, the implication of Web 2.0 technologies on *culture and change* was considered to be of less significant impact on LGA by majority of the interview participants. In the literature, Parycek and Sachs (2010) highlighted that the adoption and implementation of web 2.0 technologies requires government organisations to embrace innovation, transparency, collaboration, open communication and user generated content. They also need to be open to the changes this brings and adapt to a Web 2.0 friendly working culture thus leading to an open government culture. The Head of ICT and IT support manager both believed that Web 2.0 technologies had not had a substantial effect on the LGA within this context, as the staff have been open to the change in terms of embracing new technological changes. The senior managers believed that this was because the LGA operates an 'open culture' policy. This view was also echoed across senior managers from non-IT departments such as Highways and Finance departments when these managers were interviewed on an informal basis to crosscheck the results and avoid any bias. For instance, the Information Manager stated:

"In general, I think it's an open culture, I don't think it is particularly autocratic, I think it also has a culture of allowing people to develop and try things. They want results at the end of the day but to get those results, certainly the department that I work in, we are not afraid to try something it doesn't work because sometimes it doesn't always work and then you go back and say well ok what didn't work?, why didn't it work? And you try something else. So I think it's a fair assessment. (SSIM)"

The manager clearly asserts that the UKLGA operates on an open culture basis, which has been important when it came to experimenting and embracing such new technologies.

5.6.2 Technological Impact of Web 2.0 Technologies on UKLGA

As technology rapidly develops, it is important for organisations to understand the technical implications of these developments (Delone and McLean, 2003; Myers et al., 1997). The technological dimension in the proposed conceptual model reflects the influences of Web 2.0 tools on the technical front of a local government organisation. Therefore, the consideration of technological dimension as part of the impact analysis in the model is significant. This concurred with the favourable views made by senior management team when asked to present their view on the significance of technological impact analysis before the application of Web 2.0 in the UKLGA. Thus, supporting the study's research conjecture C5. This dimension includes factors such as *security and privacy*, *interoperability, scalability and data presentation* (Osimo, 2008; O'Reilly, 2007; Meijer and Thaens, 2010) .

Not surprisingly, *security and privacy* was reported as a significant technological implication by the management team in the LGA. This resonated with the findings of authors such as Osimo, (2008) and Chen et al. (2008), where they reported that government organisations need to be aware of security and privacy concerns as Web 2.0 technologies leave organisations more vulnerable to issues such as loss of information, hacking and cyber extremism. However, the authors also highlighted that a balance between tight security without stifling creativity and communication needed to be achieved. The head of ICT in the case organisation stated that some Web 2.0 technologies were more risky than others. For instance, according to SJ, using Wikis was not high risk as they were mainly used for information research but if they are to send "tweets" using Twitter, then there is a high risk of damage to reputation.

The technical impact of interoperability was considered to be fairly significant. The e-Government manager reported:

"It's fairly significant because of course we feed it from our own. One of the reasons we haven't had to have extra resource centrally is because we feed it automatically. We have

put some time and effort into some code and every day, the tweets go out automatically and we publish a webpage, the twitter feed is taken care by itself. The interoperability is between that feed, if that was to break down that is then important. (SD)"

The interviewees considered the potential of Web 2.0 tools to allow *data presentation* in various methods was not a significant implication for the LGA. According to Meijer (2010), information can be shared and presented in a variety of new ways beyond traditional methods with the aid of Web 2.0 tools, thus enabling better data presentation. Although the case findings did not resonate thoroughly with Meijer's (2010) views, the management felt that they had not extensively exploited such practices and tools to have a significant implication in data presentation.

5.6.3 Social Impact of Web 2.0 Technologies on UKLGA

Changes in technology often affect society (DiMaggio et al., 2001). Technology and any change in the same impacts on individuals extending to aspects such as jobs, education, governments and social interactions within a community. Social dimension of the proposed conceptual model encompasses factors that are associated with the societal implications of Web 2.0 use in facilitating e-Government services by the government authorities. One of the main features of Web 2.0 is that it allows for user-generated content and this is often perceived to have a major social implication (OECD, 2007). Therefore, the consideration of social dimension as part of the impact analysis in the model is important. This resonated with the positive views made by the IT senior management team when asked to indicate their view on the significance of social impact analysis prior to Web 2.0 adoption in the UKLGA. Thus, supporting the study's research conjecture C6.

The proposed conceptual model comprises social impact factors such as *participation and engagement, co-production innovations and crowdsourcing solutions,* and *building and maintaining trust* (Bertot et al., 2012). One of the main social impacts that Web 2.0 technologies has had in the case organisation is on *building and maintaining trust*. A study by Grabner-Krauter (2009) on the role of trust in Web 2.0 suggests that continuous interactions and positive experience in social networking sites will enhance the initial trust of

the user. This resonates with the case study finding where the interviewees echoed that regular interaction with users via social media technologies helped build and maintain trust. . For instance the IT systems manager mentioned:

"… I think it is significant just because even if we are not firing all cylinders and delivering, you know the experience, the full interactive where someone's always there online helping do stuff and as the expectations grow. If people can't trust or even look at it, obviously the channel is going to die. (RJB)"

Similarly, most of IT management team also reported *co-production* as a significant social implication of Web 2.0 tools to the LGA. This concurs with the view of Bertot et al. (2012), where the authors asserted that government organisation employees could use Web 2.0 tools to work with the public to get their involvement in design, development and delivery of their services thus building a two-way relationship.

On the contrary, the impact of Web 2.0 technologies on triggering *innovations and crowdsourcing solutions* in the LGA was not considered as being significant across the management. According to Bertot et al., (2012) the use of Web 2.0 tools spark innovation through sharing of knowledge and help support crowdsourcing (i.e. distributed problem solving and production model outsourced to a group of people). However, this was not seen in the case LGA.

5.7 Overall Assessment of Web 2.0 Application in the Case Organisation

As the above discussions on the empirical findings highlight, Web 2.0 technologies can have a significant impact on transforming government organisations. Thus, having articulated the findings of both the IS evaluation approaches and implications of these technologies provide a better understanding of its effects on government organisations. The Head of ICT and the IT management team concurred with the view that both evaluation of Web 2.0 technologies and exploring its impact on the LGA together would better influence their decision prior to adopting these technologies. They were two of the most influential and main decision makers with the application of Web 2.0 technologies in the UKLGA. Furthermore, according to the IT senior management team, with new and rapid technological changes, singular use of the traditional IS evaluation approaches such as analysing benefits, costs and risks is no longer

sufficient. Therefore, merging these along with impact factors of Web 2.0 application provides them with a holistic tool. For instance, the IT support manager stated:

"Yes it would definitely influence as it will help the decision making process better. The more information you can get is better and evidence based information is fantastic not from a sales man but practical evidence. (NP)"

The statement made by manager asserts that a combined analysis of IS evaluation and impact factors rather than a singular approach would help their decision making process for the adoption of Web 2.0 tools. The manager also added that though at times performing IS evaluation which is often a perceived view is good but it could be better with evidence based support drawn from an impact analysis. Thereby it supports the study's final research conjecture C7. However, the author is aware that this is not always easily done and is often a challenging task to gather a large amount of data especially impact information prior to evaluating an information systems. Nevertheless, this research study helps to address this issue by presenting a model with descriptive information to assist the decision makers in such cases.

The management team were also asked about their perception on the adopted Web 2.0 technologies and whether it was a success whilst stating their criteria for success. Most of the managers responded positively and it was stated that overall they thought these technologies were well exploited. The e-Government manager highlighted that it was a success and one of the criteria to measure success was *quality i*n terms of information published on social media websites such as the LGA's Facebook page compared to what they had on it two years ago. It was also felt that they were now better organised and provided more up-to-date information which can often be a challenge. On the flipside, the manager spoke about the challenge of cutting out rogue operations such as reviews or comments which could damage reputation but had to be controlled in a professional manner.

It was also interesting to note that the Website manager had a completely different view to the e-Government manager by stating that Web 2.0 was only a limited success as its full potential had not still been exploited and that it was a work in progress. The manager reported:

"I would say we are having limited success with our low ambitions so it's a work in progress. To do it well, we require a lot of time and effort; we can't underestimate the resource and probably knowledge and skills to do it well. Then there again in 10 years' time everyone should have it. (RSJ)"

The manager clearly indicated that they required more time and effort and UKLGA had underestimated the resource and probably the knowledge and skills it needed. Nevertheless, the manager believed that the Web 2.0 tools are being better utilised by the LGA's employees now compared to a few years ago when it was first implemented.

5.8 Conclusions

This chapter has analysed and presented the findings of an in-depth case study conducted in a UK local government authority. The findings reported from this case study are the perceived importance of Web 2.0 evaluation prior to its implementation and the impact analysis of Web 2.0 technologies on the case organisation. There has been much empirical data reported in this chapter, with the enquiry now being able to draw conclusions. As a result, the following represents those conclusions derived from the empirical research presented in this chapter.

The empirical findings of the case study highlighted that the uptake of Web 2.0 technologies in the public sector is no longer a new phenomenon, thus making government organisations more amenable to exploiting such technologies. This research contributes at both a theoretical and empirical level towards the enhanced understanding of the significance and the implications of using Web 2.0 technologies in government organisations. The main conclusions elicited from these findings on exploring the application of Web 2.0 technologies in the UK LGA are summarised below.

- Various Web 2.0 technologies ranging from Blogs to Mashup are being used by the UKLGA for internal work purposes such as staff communication to learning and training. However, the most popular tools used commonly by the UKLGA employees are social networking sites (i.e. Facebook and LinkedIn), Wikis (i.e. Wikipedia), Collaboration workspaces (i.e. Yammer) and Online Video Sharing sites (i.e.

YouTube).

- There are some access restrictions for the use of Web 2.0 technologies within the UKLGA where some employees or departments were not granted access unless they had a business use. Therefore, the decision making process for the use of Web 2.0 within the case organisation was ultimately under the jurisdiction of the Head of ICT and the IT senior management team.
- The decision to implement Web 2.0 technologies by the UKLGA was described as obvious because the organisation wanted to keep up with the technological changes and maintain their reputation. The IT department felt that they wanted to be seen as keeping up with the technological changes and did not want to be left behind by ignoring it.
- The UKLGA senior management team highlighted that there was no independent Web 2.0 Strategy in place within the organisation. However, some managers, specifically the e-Government manager and the Head of ICT, asserted that it was extremely important to have a strong social media policy in place prior to using these tools for work purposes.
- It appears to be that the case organisation has been seduced by the capabilities of new technological communication channels and the views from the interview participants suggests that the UKLGA may have limited sensitivity to the appropriateness of employing Web 2.0 tools to add value to the users' service experience. Launching Web 2.0 initiatives is low cost and fairly straightforward, technically, but managing the subsequent interactions and engagement appropriately can often be beyond an organisations resources and competencies. This has been the case in UKLGA.
- The results reported mixed outcomes over the IS evaluation criteria considered for Web 2.0 tools in the case organisation. However, the adoption of Web 2.0 tools have been well received by the employees and effectively supported by the ICT department. The fairly unrestricted support given by the ICT department and LGA for the use of such technologies by employees was vital to the effective application of the Web 2.0 technologies.
- The introduction of Web 2.0 technologies does not appear to have had as big an impact on the case organisation as anticipated by the ICT Department and the non-IT departments. This is evidenced in the findings illustrated in table 5.6 and from the informal interviews with non-IT managers. It was highlighted that it was mainly a result of Web 2.0 tools not being exploited to their maximum potential within the

organisation even though have been deployed for over almost 2 years and according to the management it's still at its early stages.

- The empirical findings highlight that a combined analysis rather than a singular approach in using IS evaluation criteria (i.e. benefits, costs and risks) and impact factors (i.e. organisational, technological and social) would better assist the decision-making process and lead to an effective application of Web 2.0 technologies in e-Government.

These conclusions presented are in keeping with this study's research conjectures. The revisions to the applications of Web 2.0 model based on the empirical findings presented in this chapter are carried out in Chapter 6.

Chapter 6

Revised Model for Web 2.0 Application in e-Government

6. Revised Model for Web 2.0 Application in e-Government

6.1 Introduction

In the previous chapter, the research empirical findings were presented and discussed. The discussion was keeping in line with aim of testing the research conjectures presented in chapter 3. This chapter now provides a revised model for Web 2.0 application in e-Government context.

A critical issue for the development of this chapter was to decide how to handle the gap between the statements about how to conduct an effective IS evaluation of Web 2.0 and the actual lack of such a formal evaluation in the case study. In that instance, Web 2.0 has been adopted piecemeal driven by interest in non-IT departments in using tools such as Facebook for customer interaction. Importantly, it was seen as a low cost technology since use was made of easy to adapt software that appeared to impose limited direct costs on the organisation. The reason for this model of adoption would be interesting to explore but it was decided to place this investigation to one side as a secondary theme.

The logic for this approach is twofold. In part, such an informal adoption may well be a risk in the very early stages of Web 2.0 introduction in local government (and possibly other organisations as well). However, as discussed in chapter 5, the local authority is now seeking to bring further Web 2.0 development under control although, as reported, there is still a tendency to see Web 2.0 as a subset of a wider ICT approach. Nonetheless, a case can be made that the problem identified in chapter 5 (of non-evaluation and informal adoption) is unlikely to be repeated. So to focus on that aspect would be to miss the core issue of how such an evaluation should be considered. The second reason for not focussing on this aspect is it would tend to ground the research much more in organisational behaviour and decision making rather than IS evaluation.

In consequence, the model presented in this chapter is a synthesis of a wide array of potential factors to consider in the implementation and evaluation of Web 2.0 applications in e-Government. This chapter draws together the material presented in the conjectures from chapter 3, as well as the data from chapter 5, and moulds them into a model based around an

analysis of the benefits, costs and risks of Web 2.0 and the organisational, technological and social impact of these technologies in e-Government. The conjectures and the factors of the model are tested against the responses of senior managers in the case study organisation to examine whether they are borne out by their experience in the field. This allows for some conjectures and factors to be effectively disproven, or more usually, for the conjectures and factors to be modified based on the specific experience of senior IT managers. The sum of this is to develop the model presented in chapter 3 from its purely theoretical basis to consideration of how such an evaluation could be carried out in practice.

6.2 The Revised Model for Web 2.0 Application in e-Government

Chapter 5 presented the data collected through the research, in order to test the model theorised in chapter 3. The purpose of doing this was to identify factors that support or conflict with the research conjectures, in relation to deploying these factors in the e-Government domain with Web 2.0. This, then, allows for the comparison of this data with the experiences of others with similar web deployments.

At this juncture it should be noted that the aim of this section or the thesis is not to offer prescriptive guidelines on Web 2.0 application in the e-Government context. Rather, it is meant to describe one very specific case study that allows others to relate their experiences to those reported. As a result, the outcome is to offer a broader understanding of the emerging phenomenon of Web 2.0 use for work purposes from an organisational point of view. In doing so, presenting figure 6.1 as a revised model that can be used as a frame of reference during the evaluation of Web 2.0 prior to its adoption in a local government authority.

The revised model included below has several implications but prior to discussing these implications, it is important to understand the evolution of figure 6.1 which represents amendments to the proposed conceptual model presented in figure 3.1 in chapter 3.

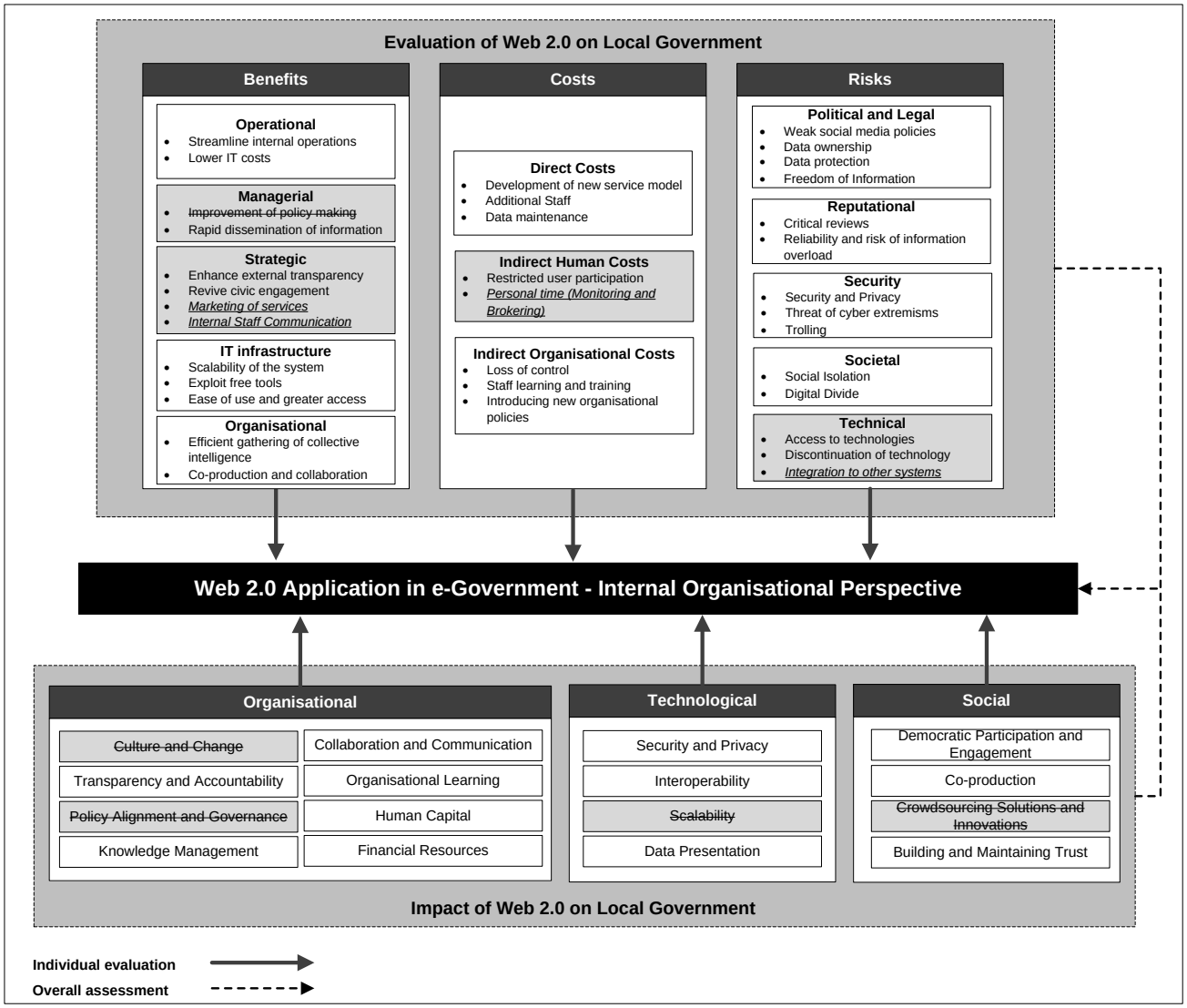

Figure 6.1: Revised Web 2.0 Application in e-Government Model

Chapter 5 detailed the data collection exercise used to develop the revised Web 2.0 application model; the culmination of this is figure 6.1 which represents the revised model developed after the testing of the conjectures and identification of the core factors. At the time of writing, Web 2.0 strategies for internal organisational use in local government are but nascent, so it is only possible to describe a model of an emerging phenomenon that can serve as the basis for future research. Indeed, as was the case in chapter 5, there is clearly a risk of adoption of Web 2.0 by default due to a perception of limited costs and being driven by the enthusiasm of one particular department or function.

Nonetheless, the revised figure 6.1 identifies a range of issues, and their interaction, that should be taken account of in evaluating Web 2.0 technologies. For example, in the event that they have an organisational culture that is 'closed' to innovation, then the model will indicate to them that they will not be able to gain the full benefit of Web 2.0 technologies for their organisation, since they would not be able to develop the cross-functional working required; but show them where they need to go to rectify that. This is supported by Parycek and Sachs (2010) as indicated in table 3.4 in chapter 3.

6.3 Revised IS Evaluation Criteria: A Web 2.0 Perspective

The literature supports the notion that IS evaluation is key to the successful implementation of any new system (Seddon, 1997; Irani and Love, 2001), and Web 2.0 is no different to that. In this case the case study organisation, UKLGA, did not undertake a formal evaluation prior to adopting Web 2.0; nevertheless the senior management that contributed to the research noted that evaluating the costs, benefits and risks would improve decision making, supporting conjectures C1, C2 and C3. The argument supporting this statement can be referred to in chapter 5, section 5.5.

The literature review revealed a series of criteria that might be used to evaluate Web 2.0 technologies; these are now mapped against the case study findings in tables 6.1, 6.2 and 6.3 below and elaborated upon in this section. This illustrates the divergence between some perceived criteria within the case study organisation and the literature. Where there is clear agreement between the literature and the views of those interviewed in the case study, less discussion and analysis is required; thus the bulk of discussion is focused on where the literature and the case study do not quite match.

6.3.1 Benefits Evaluation of Web 2.0 Technologies

This study confirms that a comprehensive and systematic evaluation of the benefits of Web 2.0 is essential before launching any such initiative. The following table maps potential benefits with case study findings.

Classification	Benefits of Web 2.0 Technologies	Demonstrated in the Literature	Case Study Findings
Operational	▪ Streamline internal operations	✓	✓
	▪ Lower IT costs	✓	✓
Managerial	▪ Improvement of policy making	✓	x
	▪ Rapid dissemination of information	✓	✓
Strategic	▪ Enhance external transparency	✓	✓
	▪ Revive civic engagement	✓	✓
	▪ *Other: Marketing of Services*	x	✓
	▪ *Other: Internal Staff Communication*	x	✓
IT infrastructure	▪ Scalability of the system	✓	✓
	▪ Exploit free tools	✓	✓
	▪ Ease of use and greater access	✓	✓
Organisational	▪ Efficient gathering of collective intelligence	✓	✓
	▪ Co-production and collaboration	✓	✓

Table 6.1: Benefits of Web 2.0 mapped against findings of Case Study Organisation

The case study findings that are not identified in the literature or newly identified in the case study are discussed below to give a better insight into the case issues.

- ***Improvement of policy making:***

In the existing literature, Dixon (2010) and Bonson et al., (2012) note that policy making can be improved by Web 2.0 approaches, notably through things such as online collaboration and mapping tools. This allows a greater level of inclusion and responsiveness throughout the policy process. However, the practical experience of managers in the case study organisation went against this, noting that it looked fine on paper, but would actually just come down to a small group of self-selectors. The argument supporting this statement can be referred to in chapter 5, section 5.5.1.

- ***Marketing of Services:***

In addition to the benefits of Web 2.0 derived from the literature, Marketing of Services was highlighted as an important strategic benefit of Web 2.0 that the UKLGA believed that was of significance for the decision making process of its application. Though marketing is quite certainly the primary use of these tools in the private sector, it is interesting to note that marketing of LGA's existing services with the internal employees was a prominent and an effective use of these tools in the case organisation.

- ***Internal Staff communication:***

Internal Staff Communication was considered to be another important factor that was not indicated in the existing literature. UKLGA noted that Web 2.0 tools such as blogs were also very useful for disseminating information throughout the staff body quickly and in a more collegiate manner compared to formal communications. The Head of ICT noted that this helped improve the communication style of senior staff into something less stentorian.

6.3.2 Costs Evaluation of Web 2.0 Technologies

Understanding the benefits of Web 2.0 has to be married to an understanding of the cost associated with it. As with the benefits, the costs drawn from the literature are correlated with the case study in the table below.

Classification	Costs of Web 2.0 Technologies	Demonstrated in the Literature	Case Study Findings
Direct Costs	▪ Development of new service model	✓	✓
	▪ Additional Staff	✓	✓
	▪ Data maintenance	✓	✓
Indirect Human Costs	▪ Restricted user participation	✓	✓
	▪ *Other: Personal time (Monitoring and Brokering)*	x	✓
Indirect Organisational Cost	▪ Loss of control	✓	✓
	▪ Staff learning and training	✓	✓
	▪ Introducing new organisational policies	✓	✓

Table 6.2: Costs of Web 2.0 mapped against findings of Case Study Organisation

The case study findings that are not identified in the literature or newly identified in the case study are discussed below to give a better insight into the case issues.

- ***Personal Time (Monitoring and Brokering):***

Apart from the existing costs derived from the literature, the senior management in the case study organisation noted that there were significant indirect costs associated with Web 2.0, mainly derived from monitoring those applications used, which was currently done in a highly inefficient manner by people who should have been doing other things. This was mentioned in parallel with the cost base of new staff required for investing in new technology cited in the literature.

6.3.3 Risks Evaluation of Web 2.0 technologies

The findings of the case study and this research support that conducting a systematic risk evaluation of Web 2.0 is important as part of a comprehensive IS evaluation for the organisation. As with the preceding sections, literature and case study exemplars are mapped below.

Classification	Risks of Web 2.0 Technologies	Demonstrated in the Literature	Case Study Findings
Political and Legal	▪ Weak social media policies	✓	✓
	▪ Data ownership	✓	✓
Reputational	▪ Data protection	✓	✓
	▪ Freedom of information	✓	✓
Security	▪ Critical reviews	✓	✓
	▪ Risk of information overload and reliability	✓	✓
	▪ Security and Privacy	✓	✓
	▪ Threat of cyber extremisms	✓	✓
Societal	▪ Trolling	✓	✓
	▪ Social isolation	✓	✓
	▪ Digital Divide	✓	✓
Technical	▪ Access to the technologies	✓	✓
	▪ Discontinuation of technology	✓	✓
	▪ *Other: Integration and Interface to other systems*	x	✓

Table 6.3: Risks of Web 2.0 mapped against findings of Case Study Organisation

The case study findings that are not identified in the literature or newly identified in the case study are discussed below to give a better insight into the case issues.

- ***Integration and Interface to other Systems:***

Apart from the Web 2.0 risks derived from the existing literature, there was a clear technical risk identified in the case study organisation, in that any Web 2.0 applications would need to integrate and interface Web 2.0 developments with all the existing systems. The senior management of the UKLGA believed that this was not only technically difficult, but immensely time consuming. Not only that, but there may be a need to bring in external consultants if they lack the technical skills for all or part of such an integration.

6.4 Revised Impact Analysis of Web 2.0 on the UKLGA

This dissertation underlines the importance of robust impact assessment for Web 2.0 strategies within LGA's. However, since this is only a nascent trend in the local government sector there was limited available data or research on the actual impacts of such technology. Therefore, and supporting research conjectures C4, C5 and C6, this research makes important interventions with its initial summary of the organisation, technological and social impact analysis. The key argument supporting this statement can be referred to in chapter 5, section 5.6.

The impact analysis taken from the literature review are mapped against those suggested by the case study, in the same manner as the costs, benefits and risks, summarised in table 6.4 below. This forms the basis for the discussion that follows.

Classification	Impact Factors	Demonstrated in the Literature	Case Study Findings
Organisational	▪ Culture and Change	✓	x
	▪ Transparency and accountability	✓	✓
	▪ Policy Alignment and Governance	✓	x
	▪ Knowledge Management	✓	✓
	▪ Collaboration and Communication	✓	✓
	▪ Organisational learning	✓	✓
	▪ Human Capital	✓	✓
	▪ Financial Resources	✓	✓
Technological	▪ Security and Privacy	✓	✓
	▪ Interoperability	✓	✓
	▪ Scalability	✓	x
	▪ Data Presentation	✓	✓
Social	▪ Democratic Participation and Engagement	✓	✓
	▪ Co-production	✓	✓
	▪ Crowdsourcing solutions and Innovations	✓	x
	▪ Building and Maintaining Trust	✓	✓

Table 6.4: Impact of Web 2.0 mapped against findings of Case Study Organisation

The case study findings of the impact analysis that are not identified in the literature or newly identified in the case study are discussed below to give a better insight into the case issues.

6.4.1 Organisational Impact of Web 2.0 technologies on LGA

The findings support the importance of an organisational impact analysis, if only to aid the organisation in understanding whether any actual benefits will be derived, and whether there will be changes to the organisational culture in terms of participation and transparency.

- ***Culture and Change:***

The implications of Web 2.0 technologies on *culture and change* were considered to be of less consequence in the case study organisation. From the literature Parycek & Sachs (2010) note that successful adoption of Web 2.0 strategies requires a culture of innovation, collaboration, user generated content and transparency. The case study managers felt that this had not changed their organisation much, as they had already adopted many of these characteristics, which was supported both within and without the ICT department. The reasoning supporting this statement can be referred to in chapter 5, section 5.3.

- ***Policy Alignment and Governance:***

Meijer (2010) argues that as Web 2.0 strategies make it essential for LGA's to make sure their internal policies are tightly aligned against practices to minimise risk from issues such as confidentiality, propriety etc. However, the IT managers in UKLGA did not support this, arguing that they already had highly robust systems in place and also had a social media policy for the employees to abide by, so therefore Web 2.0 addendum did not represent a major task.

6.4.2 Technological Impact of Web 2.0 Technologies on UKLGA

As with other sections, the findings support the utility of a robust technical impact evaluation prior to implementing Web 2.0 technologies.

- ***Scalability:***

In the existing literature O'Reilly (2007) argues that some variants of Web 2.0, notably cloud computing technologies, offer fast and efficient scalability. The case study managers noted that while there was theoretical support for this, many of the applications that are specifically scalable – file sharing for example – are not particularly relevant to or prevalent in local government yet, so there had been little impact. This reasoning is supported by the results presented in table 5.6 in chapter 5.

6.4.3 Social Impact of Web 2.0 Technologies on UKLGA

The findings of the case study and this research support that Social impact analysis is also an important factor in any evaluation, as it allows for organisations to understand the wider societal implications of pursuing Web 2.0 strategies.

- ***Crowdsourcing solutions and Innovations:***

Bertrot et al., (2012) note that one of the key features of Web 2.0 approaches is knowledge sharing, and particularly crowdsourcing, both internally and externally, potentially allowing for new forms of innovation. However the case study managers felt that, as yet, there had been very little impact on innovation and crowdsourcing solutions. This is perhaps best explained by noting that the existing use of Web 2.0 is more in terms of public administration rather than policy formulation. It may be that the more interactive aspects of Web 2.0 are better suited to wider, more open ended, consultations rather than the use so far made by the UKLGA.

6.5 Contribution of the revised model

Overall, there is substantial evidence that the UKLGA's proposed approach to Web 2.0 evaluation is a close match to the conceptual model derived from the literature. In particular, there is evidence that identifying factors such as benefits, costs and risks and for these to be appraised through consideration of organisational, technological and social impact factors is an effective approach. In addition to gaining support for the basic framework of the

conceptual model, the interviews supported the majority of the more specific factors that were identified in figure 3.1 (see for example tables 6.2, 6.3 and 6.4).

In effect, the data gathered from the UKLGA contributes to the normative literature by:

- Combining and extending existing research in Web 2.0 in e-Government.
- Improving the quality of Web 2.0 assessment and evaluation.
- Providing increased insight for decision makers and senior managers surrounding Web 2.0 application.

Additionally, the revised model makes an important contribution to the emerging literature of e-Government and Web 2.0 by presenting a synthesis of factors from the existing literature which is now grounded with empirical data. Importantly, this study supports the validity of the existing research and that issues identified as important for Web 2.0 in other settings are valid in the context of local governments. This means the conceptual model has been developed by:

- Synthesising a wide variety of research studies and factors of Web 2.0 evaluation into a single holistic model.
- Providing a comparative evaluation of a wide range of Web 2.0 impact factors with management experience and producing a more robust result.
- Developing a new set of potential research trajectories for exploration in the future.

The revised model, therefore, has clear and specific theoretical and practical implications for LGA's and researchers.

6.6 Conclusions

This chapter has presented and discussed the ley findings from an in-depth case study excavation of Web 2.0 approaches in e-Government domain. The conclusions are in keeping with the research conjectures specified in chapter 3, while the modifications to the main model are presented in this chapter. The main conclusions elicited from these findings on exploring the application of Web 2.0 technologies in the UKLGA are summarised below.

- The chapter presented an analysis of the benefits, costs and risks of Web 2.0 the

organisational, technological and social impact of these technologies in e-Government.

- The resulting model is a combination of the conjectures and factors tested against the experience of senior IT managers in the case study organisation.
- The model is also a synthesis of many factors drawn from other literature, lending added credence to the model.

The revised model presented in this chapter adds new criteria and rejects some that were originally identified in chapter 3. These can be usefully broken down into the division used of separating the three aspects of IS evaluation from identifying the type of issues that need to be captured in such an evaluation. In terms of the IS evaluation factors, drawing together tables 6.1, 6.2 and 6.3, the revised findings are summarised in the following table 6.5.

Classification	New Findings	Identified in Conceptual Model (Chapter 3)	Supported by Case Study Findings (Chapter 5)	Added by Case Study Findings (Chapter 5)
Benefits of Web 2.0				
Managerial	Improvement of Policy Making	Yes	No, little use for policy making	
Strategic	Marketing of Services	No	Yes	Yes, the value of marketing services provided by an organisation to its employees
	Internal Staff Communication	No	Yes	Yes, the value of internal staff communication especially the engagement of staff quickly and in a more collegiate manner
Costs of Web 2.0				
Indirect Human Cost	Personal Time (Monitoring and Brokering)	No	Yes	Yes, added idea of the need for use of personal time to be allocated to monitoring the use of these tools.
Risks of Web 2.0				
Technical	Integration to other systems	No	Yes	Yes, need to consider the interface to other systems

Table 6.5: Summary of the revised findings of IS Evaluation Factors of Web 2.0

The main implication of table is the relatively close match between the original model and the findings in chapter five. This suggests two important findings. First that the basic IS evaluation model is robust and widely shared. Second that it is applicable to Web 2.0 implementation. The only aspect of the original model (figure 3.1) that was not supported was the potential benefit in terms of policy making. In this respect, this may well reflect how the UKLGA, at this stage, is using Web 2.0. In terms of the e-Government taxonomy discussed in chapter two, what they are doing is e-Administration (and to a lesser extent e-Services) rather than e-Participation. The Leisure department is making some use in terms of gaining feedback and adapting services in the light of those comments but at a strategic level this is less about overall policy and more about implementation and adjustment of services. At this stage, not seeing policy support as a benefit may be a reflection of the current usage of Web 2.0 in the UKLGA.

However, the interviews yielded three additional criteria. In terms of benefits, they identified the value in terms of marketing and internal staff communication. What stands out is both of these were linked in terms of being of benefit for intra-LGA interaction rather than particularly a benefit in terms of interaction between the LGA and the citizens. This again, may reflect the current usage of Web 2.0 but it also indicates that effective implementation of Web 2.0 can have significant benefits for internal interaction, in other words, again, in terms of e-Administration. The second issue that was added was in terms of the time implication as an additional indirect cost. This suggested that while Web 2.0 often has the advantage of being low cost to set up, it created a time burden for people who were already busy with their original roles. This can be related to the third additional factor, of the risk imposed by the need to integrate information across various platforms. In effect, again, Web 2.0 may be easy to set up but there needs to be a means to ensure that all the information is kept up to date and is compatible with information provided elsewhere in different formats.

In terms of the impact issues, drawing together the findings in table 6.5, the revised findings are summarised in the following table 6.6.

Impact Factors	Identified in Conceptual Model (Chapter 3)	Supported by Case Study Findings (Chapter 5)
Organisational impact of Web 2.0		
Culture and Change	Yes	No, view is that the UKLGA had already adopted the needed culture and were open to change by embracing emerging technologies as highlighted in their ICT strategy
Policy Alignment and Governance	Yes	No, as the UKLGA had already in place highly robust systems and also had a social media policy for the employees to abide by.
Technological impact of Web 2.0		
Scalability	Yes	No, the main technologies in this respect are not fully exploited in the UKLGA so far.
Social impact of Web 2.0		
Crowdsourcing solutions and innovations	Yes	No, as focus to date has been public administration not policy formulation

Table 6.6: Summary of the revised findings of Impact Factors of Web 2.0

Again this broadly supports the issues identified in chapter three, but there are some noticeable differences in terms of the evaluation factors discussed above. In terms of factors seen as not being appropriate, it is noticeable in each case that these are identified in terms specific to this LGA. Thus, the IT managers argue that they have made the cultural changes that are essential for Web 2.0 and therefore there are no more concerns in that regard and that equally their IT policies already cover the issues that can arise from Web 2.0. Scalability and Crowdsourcing are not seen as valid criteria as they either do not use the relevant technologies or have not yet started to use Web 2.0 to support policy making as opposed to public administration. In effect, the domain of issues that should be evaluated using the IS evaluation factors is perhaps more variable across LGAs than the basic set of evaluation criteria.

If so, this suggests a need to ensure that LGAs are encouraged to reflect on important issues, using the basic taxonomy of organisational, technological and social factors that may be applicable in their own particular situation. On the other hand, it is probably more

appropriate to use the conventional IS evaluation criteria as the evidence in this instance is of a very close match of practice within the LGA and the theoretical investigation used in chapter three.

In the main, the findings from the interviews closely support the research conjectures and the factors derived from the existing literature and this gives the proposed model a degree of robustness. Against this should be noted that in this case, there was no formal evaluation of Web 2.0 before its implementation. The reasons for this can be traced to the small scale initial projects that were seen to be of low cost (especially in terms of software and hardware) and low risk. It may be that this is typical of what could be characterised as first generation Web 2.0 technologies. However, the interviewees were clear about the need for more formal evaluation before any further expansion. While one case study can never be endowed with too much explanatory power, the balance of this analysis means that the potential avenues of new research identified in this chapter can be pursued with some confidence.

Chapter 7

Conclusions

7. Conclusions

7.1 Introduction

Web 2.0 technologies are now increasingly being adopted in the public sector as government organisations embrace the potential benefits. This research emphasises that Web 2.0 technologies in the public sector are no longer a new phenomenon but that there are significant issues to be addressed if the full advantages are to be gained. This research examined the literature on e-Government and information systems and found a lack of research surrounding the application of Web 2.0 in the e-Government domain. Therefore, this study addressed this void in the literature by presenting and articulating a comprehensive model for Web 2.0 application in the context of e-Government from an internal organisational perspective. The model combines conventional information systems (IS) evaluation criteria (i.e. benefits, costs and risks) and impact factors (i.e. organisational, technological and social) to aid the effective introduction of Web 2.0 in e-Government. The intent was to construct a model and a framework that would support decision makers in the introduction of Web 2.0 technologies for internal work purposes such as collaboration, knowledge management, dissemination etc. This research contributes at both a theoretical and empirical level towards the enhanced understanding of the significance and the implications of using Web 2.0 technologies in government organisations.

This concluding chapter begins by presenting how the research aims and objectives have been met by this thesis. Afterwards, the main conclusions drawn from both the literature and empirical research reported in the dissertation are presented along with this study's possible limitations. Following this, the research contribution is summarised and, finally, recommendations for further work are proposed.

7.2 Meeting the Research Aim and Objectives

To achieve the aim of this thesis, a number of objectives were defined in chapter 1 that informed the literature review, research design and the findings that were reported in chapters 5 and 6. These objectives are summarised in table 7.1 and analysed in the following paragraphs.

Objectives	Chapters
1	Chapter 1 and 2
2	Chapter 2 and 3
3	Chapter 3 and 4
4	Chapter 5 and 6
5	Chapter 7

Table 7.1: Research Objectives mapped against Thesis Chapters

Objective 1: To critically review the published literature in the area of information systems evaluation with a particular focus on e-Government domain. Then describe the evaluation and impacts factors of Web 2.0 from an organisational perspective, thus establishing the basis for the research.

- Based on the critical analysis of the literature, several research gaps were identified and were further examined and investigated by the researcher. Chapter 2 reported a comprehensive literature review in the field e-Government, Web 2.0 and IS evaluation and this enabled the researcher to identify Web 2.0 evaluation and impact factors. It was identified that there is absence of conceptual models that deal with Web 2.0 application in the local government authorities (chapter 1 and chapter 2).

Objective 2: To translate the research need into a conceptual model and propose conjectures.

- Based on the research issues identified in chapters 1 and 2, the researcher proposed the conceptual Web 2.0 application model in e-Government that compromised of IS evaluation factors and Web 2.0 impact factors in chapter 3.

Objective 3: To identify evaluation (i.e. benefits, costs and risk) and impact (i.e. organisational, technological and social) factors associated with Web 2.0 decision making by following an appropriate and a rigorous research methodology.

- In order to test the proposed conceptual model in chapter 3, an appropriate and a rigorous research methodology was justified and explained in chapter 4.

Objective 4: To generalise (within the confines of the study) the empirical results to the conjectures. Then, extrapolate data that was gathered into a revised Web 2.0 application model.

- Using the research methodology set out in chapter 4 to test the proposed conceptual model, chapter 5 analysed and presented the empirical data collected from an in-depth case analysis of a UK LGA. In doing this, testing and evaluating the conceptual model proposed in chapter 3. In chapter 6, the research findings derived from the case study were considered and used to modify the conceptual model accordingly to provide a revised Web 2.0 application model for decision makers.

Objective 5: Offer conclusions and recommend further work

- Chapter 7 begins by summarising the thesis and drawing conclusions that derived from both the literature and empirical research reported in this thesis. Thereafter, stating the research limitations, novel contribution and providing recommendations for future work.

The accomplishment of these objectives was made possible through the development of a novel model for the examination of issues related to Web 2.0 application in e-Government. The creation of the conceptual model from the existing literature was one of the main developments and this has both theoretical and practical implications. It extends the current research on e-Government adoption to a new technological domain and presents a useful framework for those implementing such emerging technologies. The conceptual model was largely supported by the evidence gathered from the case study indicating it has a robust foundation even if more work is needed.

7.3 Research Findings and Evaluation

The research findings in chapter 6 rested on two sources. Firstly, it was the literature review presented in chapter 2 and drawn together in the conceptual model presented in chapter 3. The second is the results of the case study in a UK based local government body that was just starting to introduce Web 2.0 technologies. The second block of evidence is grounded in actual practice in local government while the first block draws on wider research into Web 2.0 usage in other settings (both e-Government and private sector) and the wider domain of e-Government introduction. This presents two contrasting focuses to interpret the findings and can be used to present the conclusions that can be drawn from the research. The key findings elicited from this research are highlighted below:

- A number of government organisations have introduced Web 2.0 technologies such as networking sites (e.g. Facebook), Microblogging (e.g. Twitter), online video and photo sharing sites (e.g. YouTube and Flickr) and RSS feeds to enhance e-Government services. In the case of local government authorities in the UK, tools ranging from Blogs to Mashup are being used by these organisations for internal work purposes such as staff communication to learning and training. However, the most popular tools used commonly by the UKLGA employees are social networking sites (i.e. Facebook and LinkedIn), Wikis (i.e. Wikipedia), Collaboration workspaces (i.e. Yammer) and Online Video Sharing sites (i.e. YouTube).

- These developments have not been the focus on academic research and a need clearly exists for high quality theory-building in the field of e-Government, particularly in the adoption of web based technologies such as Web 2.0, as there is a scarcity of theory development and use in this domain.

- The findings drawn from the literature on the evaluation of Web 2.0 technologies and its impact on LGAs highlighted that Web 2.0 tools can have significant effects (i.e. both positive and negative) on these organisations. Therefore a systematic assessment of these tools is needed prior to its adoption, thus justifying the need for the proposed conceptual model.

- It appears to be that the LGAs have been seduced by the capabilities of new technological communication channels and the empirical findings suggests that LGAs

may have limited sensitivity to the appropriateness of employing Web 2.0 tools to add value to the users' service experience. Launching Web 2.0 initiatives is low cost and fairly straightforward, technically, but managing the subsequent interactions and engagement appropriately can often be beyond an organisations resources and competencies as highlighted by empirical findings. This mind-set seems to be the reason why the LGA studied in this research effectively introduced Web 2.0 with no prior evaluation.

- The results reported mixed outcomes over the IS evaluation criteria considered for Web 2.0 tools use in LGA. However, the adoption of Web 2.0 tools have been well received by the employees and effectively supported by the ICT department. The fairly unrestricted support given by the ICT department and LGA for the use of such technologies by employees was vital to the effective application of the Web 2.0 technologies.

- The introduction of Web 2.0 technologies does not appear to have had as big an impact on the LGAs as suggested in some of the literature. Research findings highlighted that it was mainly a result of Web 2.0 tools not being exploited to their maximum potential within the organisations and as Web 2.0 use for work purposes with LGAs in UK is still at its early stages although being used for around two years. Equally the case study indicated that Web 2.0 was being used for public administration purposes rather than the more radical step of policy formulation.

- The study findings highlight that a combined using IS evaluation criteria (i.e. benefits, costs and risks) and impact factors (i.e. organisational, technological and social) would better assist the decision-making process and lead to an effective application of Web 2.0 technologies in e-Government. The alternative is to see evaluation using some, or just one, of these factors and failing to capture the holistic nature of Web 2.0.

These findings presented are in keeping with this study's initial research conjectures. One key conclusion from the support in chapter 5 for the conceptual model is that traditional IS evaluation tools do apply to Web 2.0 innovations in e-Government. Web 2.0 is clearly a

major transformation of how e-Government can be delivered but should be treated in the same way as any other major ICT development.

In the case study, it is interesting to note the contrast between the agreement about the need for evaluation of Web 2.0, and how to carry that out, and the lack of systematic evaluation in that particular instance. One explanation for this is that Web 2.0 was initially introduced in a low key, incremental manner, using free IT resources that were easy for the staff involved to develop. As such, progress was kept under review but it was not seen as a major project needing formal evaluation. It may well be that this is typical of the first wave of implementation where the drivers are staff commitment and a perceived fit to a specific need.

However, the discussion about the need for evaluation indicates that Web 2.0 carries both benefits and risks and has wider implications for the whole organisation. The acknowledgement of such factors has important implications during decision making, as it promotes a more rigorous evaluation process. In doing so, the adoption related issues cannot be integrated into traditional appraisal methods and there is a need for a more holistic approach, which has resulted in the identification of Web 2.0 evaluation criteria, and development of a model that integrates IS evaluation and impact factors into the decision making process. In doing so, the revised conceptual model provides decision makers with a rigorous assessment model for evaluating adoption of Web 2.0 technologies and fits to both the existing literature and has some empirical validity.

7.4 Research Novelty

A key part to any dissertation is a contribution to knowledge of a particular issue or academic community. In this case, the main contribution is to break down the process of Web 2.0 evaluation by drawing on a wide range of existing literature. In particular, the IS evaluation model is shown to be applicable but needs to be adapted to reflect specific issues connected with Web 2.0 as a technology. This study contributes both theoretically and practically as follows:

7.4.1 Theoretical Contribution:

This research has allowed for the development of a conceptual model as a frame of reference that contributes to the existing knowledge of e-Government and IS literature by articulating a descriptive account of IS evaluation and impact factors that need to be considered when adopting Web 2.0 technologies to facilitate e-Government and more specifically local government authorities. This gives two main contributions. First, the conceptual model presented can be justified by the results of one case study. Linking both the literature and the findings has created a useful framework for evaluation of any new Web 2.0 implementation. The need for appropriate frameworks for evaluating these technologies is a widely recognised need in the existing literature. The second main gap, identified in chapter 2, was the need for more theoretical development of the reasons why e-Government can fail or succeed. As such, this was not the focus of this case study, but an important contribution is that the revised conceptual model can now be used to explore if particular factors are more or less important in resulting in the success of a particular initiative.

7.4.2 Practical Contribution:

This study is of significant relevance to public sector and IS researchers, policy makers, local government authorities and practitioners as it provides them with a deeper understanding of knowledge factors that encourage or hinder adoption of Web 2.0 technologies. In doing so, the conceptual model can be used to supporting the management when taking decisions regarding the adoption of Web 2.0 technologies in government organisations for internal work purposes and service delivery.

In this respect, both the theoretical and practical contributions come together to create a model for Web 2.0 application adoption in the local government authorities. This model provides the local government authorities, senior management and others with clear guidelines that can be used while adopting Web 2.0 technologies.

7.5 Research Limitations

Nonetheless, as with any research study there are limitations and these are discussed below:

- The most important difficulty the researcher faced was not being able to access UK LGAs that adopted Web 2.0 technologies for work purpose by their employees. As indicated in the literature review, most organisations had adopted Web 2.0 technologies for citizen engagement and there is a lack of LGAs using Web 2.0 technologies for internal work. In turn this led to the pragmatic adoption of a single case study as the basis for data collection. This, as discussed in chapter 4, creates issues in terms of generalising from the findings but was the result of the lack of structured Web 2.0 implementation in LGAs at the time of commencing this study.

- Another limitation of this study is the research context being restricted to the local government authorities in the UK. The structure of LGAs varies in different parts of the UK and the organisational structure, nature and size of each authority vary among themselves, from city to city and even country to country. Therefore, it may be difficult to generalise the results of this research to other parts of the UK and other countries. However, the relatively close fit of the research findings to the themes in the literature review suggests that in practice these differences may be less critical in terms of identifying key themes to be considered when implementing Web 2.0 technologies.

- The discussions in chapter 4 focused on the use of qualitative method for collecting the data for this study. The reason for this is that the qualitative method facilitates generalisation of soft, rich contextual data, which is associated with human and organisational issues. However, despite the advantages the qualitative research provides, this method does have its disadvantages as well, such as being time consuming, in that the researcher spent a lot of time in the process of data collection and analysis. The amount of data collected from the case study was more contextual. This made the interpretation a challenge but a key aspect was to compare the findings to the conceptual model that represents the factors influencing Web 2.0 application in e-Government (i.e. Benefits, Costs and Risks of Web 2.0 and Organisational, Technological and Social Impact of Web 2.0).

However, despite these limitations, this study delivers significant empirical evidence on the evaluation and impact of the application of Web 2.0 technologies by local government authorities in an e-Government context.

7.6 Lessons Learnt from the UKLGA Case Study

The case study demonstrates how the application of Web 2.0 technologies and its implications have the ability to transform the way local government authorities operate using these tools from an internal organisational perspective. A major challenge with UKLGA was the access restriction of using Web 2.0 technologies for its business use to staff members. For instance, out of approximately 3000 staff members, only around 300 employees had access to the use of Web 2.0 technologies who had demonstrated a valid business purpose for its use. With increasing financial pressure on the public sector, there is a need to maximise and exploit emerging technologies such as Web 2.0 to deliver and plan for quality services. However, there is also the need to evaluate these tools and understand the benefits, costs, risks and the potential impact to make informed and smart use of the technologies by practitioners. The tentative lessons below, represent an extrapolation of the key lessons learnt from the case study and can guide researchers and practitioners towards better understanding of these tools in a public sector context:

- *Lesson 1:* Organisations should undertake a Web 2.0 evaluation and impact analysis to ensure these tools used as solutions are delivering cost savings, business efficiency savings, value for money, implications on the working culture and policy etc.
- *Lesson 2:* Organisations must ensure that they have a policy document in place (such as social media policy and guidelines) for Web 2.0 technologies which is kept secure in order to ensure data is not accessed by unauthorised parties and used appropriately.
- *Lesson 3:* The implementation of Web 2.0 technologies should have an explicit concern for the social context and flexible working methods that need to be adopted if the full benefits of Web 2.0 technologies (such as Facebook, Twitter etc.) are to be leveraged.
- *Lesson 4:* The hierarchical and political nature of public sector organisations creates a barrier to change and this must be overcome to ensure Web 2.0 solutions are successful in practice.

- *Lesson 5:* From a methodological perspective, researchers aiming to propose a theoretical model that provides a holistic view need to take into consideration factors such as accessibility to the case organisation, credibility of the data and the time required to gather this information.

These tentative lessons should generally be useful and should be carefully studied and applied to the right context as local government organisations structure and operations could vary (e.g. geographical, organisational or operational perspectives).

7.7 Recommendations for Further Work

Although the empirical research validated the conceptual model, this research can be further developed. In the light of the reflections and the limitations it is recommended that further work could usefully be pursued as follows:

- The model for Web 2.0 application in the local government authorities was based on a single case study in the United Kingdom. It can also be said that local government authorities in other cities within the UK and even other countries may as well be distinct in their operational activities. In addition, the type of community may as well be different. Therefore, the results of this research cannot be generalised for all, even though the fit to the literature review suggests it has considerable validity. The researcher thus recommends validating this model with many local government authorities in different cities in the UK and then perhaps extending other countries.

- The identification of Web 2.0 evaluation criteria and impact assessment through the development of a model has established those issues that appeared crucial within the local government authority studied. To refine such criteria and model may be considered to further substantiate the research presented. While more case studies would be effective, there may also be benefits to adopting a large-scale survey questionnaire method or conduct a mixed approach (e.g. interviews and survey together). Clearly, this approach would not have been possible previously, as such criteria did not exist but, the integration of these criteria into a large-scale survey will offer the opportunity to establish the generic significance of such criteria. In surveying

a representative sample of LGAs, such criteria can thus be developed into a generic application specific evaluation model.

- Another proposition is that as the model currently provides a holistic view of Web 2.0 evaluation. It might be now possible to take parts of the model (i.e. evaluation of Web 2.0 or impact of Web 2.0) and test it further detailed. It will be particularly interesting to test the "Impact of Web 2.0 technologies" segment of the revised model as findings highlighted that at the time of conducting this research Web 2.0 use in UKLGA was still at its early stages and there was no major implications reported.

- An interesting finding was that while the UKLGA saw the need for evaluation it had not done so in respect of its early Web 2.0 projects. To have explored this directly would have meant prioritising concepts of policy and decision making in organisations and how strategies emerge and develop. These are all valid research concepts but the focus here was on the ways in which evaluation and implementation could be improved. In turn, that led to a decision to emphasise the traditional IS approach as one that yields effective evaluation. Equally, as in this case, it may be that such an unstructured implementation may be typical of very early adoption and is to be expected to be less common as the potential of Web 2.0 is more widely understood.

Finally, as discussed in chapter 2 (section 2.9), e-Government research is typified by studies of adoption in particular instances with relatively little theorising as to why it is successful in some instances and fails in others. This reflects the focus in this study on the initial stages of theory building around the adoption and usage of Web 2.0 technologies in the UK local government sector. This wider theme remains an important task in terms of e-Government adoption and development.

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Appendices

Appendix A: Completed Research Ethics Forms

Brunel Business School

Research Ethics Form

PhD Students and Staff

Any research that involves human participation, the collection or study of their data, organs and/or tissues, and that is carried out on Brunel University premises and/or by Brunel University staff or Brunel University students under the supervision of Brunel University staff requires ethical approval.

This document is designed to help you ensure that your research is conducted in an ethical manner. It is the "Ethical Clearance" part of your research (whether it requires funding or not). You need to submit this form with your research documents. In addition to this and other requirements for your project, you might need to submit three documents – see Ethics Submission Guidelines for PhD-Staff for consideration by BBS Research Ethics Committee (via your supervisor if you are a PhD student:

1. A Participant Information Sheet (created by you)
2. A Participant Consent Form (created by you)
3. A Company Confidentiality Agreement Form (created by you, not always required)

Section A – Information About You and Your Research Project

This is used to identify you and to give us a brief overview of your project.

Name: Uthayasankar Sivarajah	**Contact email address:** cbpguus@brunel.ac.uk
Date: Jan 2013	
Name of Supervisor (if PhD student): Professor Zahir Irani	
Title of Research Project: Exploring the Application of Web 2.0 in the context of e-Government	

Describe the Data Collection Process (200 words):
Empirical data is primarily to be gathered by participant observation and conducting semi-structured interviews with United Kingdom local government authorities (UKLGA). In doing so, gathering their insights into the use of Web 2.0 technologies and its impact on the authorities in the context of e-Government.

The author is to visit the UKLGA where qualitative interviews will be conducted with the appropriate personnel from the case study. The interview process is to be digitally recorded (audio) and later transcribed. Secondary lines of enquiry will be informal, with middle managers and other employees who manage and use Web 2.0 technologies to be questioned. Apart from this, further supporting evidence will be sought from secondary sources such as archival documents, minutes from meetings, policy documents, internal memos and business case reports.

Section B – Identification of Ethical and Risk Issues

Most research projects involve a number of potential risks (either to participants or yourself). The more risk factors that can be identified at the start, the easier it will be to guard against them. Answer the questions below to identify potential risks in your project. Please refer to the guidelines if you are unsure about your answer to any of these questions. Please indicate your answer by selecting either "Yes" or "No" options.

1. Is it possible participants might have been told to co-operate rather than freely volunteering? Sometimes it is difficult to ensure interviewees do not feel "obligated" in some way. You will need gatekeeper consent for this.	Yes ● No ●
2. Is it possible that participants might be under eighteen years of age? Normally minors are not legally able to give their consent to participation.	Yes ● No ●
3. Is it possible that participants might be required to discuss sensitive issues (e.g. private or of criminal nature)? Such discussion could put yourself or the participants in danger.	Yes ● No ●
4. Is it possible that your research might cause clinical or psychological harm to participants or yourself? This may include discussion of topics of sensitive nature or prolonged strenuous psychological or physical pressure for participants and/or yourself.	Yes ● No ●
5. Are all or some of the participants unable to give their own consents Including organisations with gatekeepers (e.g. schools and prisons); or vulnerable participants (e.g., children, people with learning disabilities, your own students).	Yes ● No ●
6. Will you be recording the identity of any participants (e.g. their name or employee number)? Sometimes it is difficult to guarantee anonymity. If so, you will need explicit consent.	Yes ● No ●
7. Is it possible that identity of participants could be traced (e.g. their name or employee number)? Sometimes anonymity can be broken by combining information from more than one source. If so, you will need explicit consent.	Yes ● No ●
8. Will you be storing traceable participant data on a laptop or in a file at any point during and/or after the duration of your project?	Yes ● No ●

There is a risk if a laptop or file is lost or stolen.	
9. Is it possible that your company will want the research kept confidential? Some companies allow research only on condition that the results are not made public. If so, you will need to fill in Company Confidentiality Form.	Yes ● No ●
10. Is it possible that copyright material might be copied? It may be necessary to get permission to use it.	Yes ● No ●
11. Will the study involve recruitment of patients or staff through the NHS? If you answered 'Yes', you will have to submit an application to the appropriate external health authority ethics committee, **after** you have received approval from the School Research Ethics Committee.	Yes ● No ●

- If you have answered 'No' to all questions, you may upload **the completed form to your supervisor via uLink** (see submission guidelines)**.**
- If you have answered 'Yes' to ***any*** of the questions **1 – 5**, you will need to describe more fully how you plan to deal with the ethical issues raised by your research. You should use the University Ethics Application form by clicking on this link: Application Form for Research Ethics Approval. You will need to submit the form via uLink.
- If you have answered 'Yes' to ***any*** of the questions **6 – 10**, please tell us in the box below how you are planning to mitigate against these risks. On completions you may upload **the completed form to your supervisor via uLink** (see uLink submission guidelines)**.**
- If you answered 'Yes' to ***question 11***, you will have to submit an application to the appropriate external health authority ethics committee, **after** you have received approval from the School Research Ethics Committee.

Describe which risks (6-10) you have said "Yes" to and your mitigation plans:
8) All necessary security and privacy precautions will be taken to keep the data safely stored on the computer. The interview data file will be encrypted and password protected. Additionally, the computer that is to be used to store the file will also be password protected.
9) Please refer to the attached company confidentiality form.
10) There is a possibility of using copyright material in the future and I am fully aware that prior approval is needed from the organisation before using any of their copyright material. Additionally, acknowledgement to the organisation will also be made in the thesis if these materials are to be used.

Section C – Declaration

Please note that it is your responsibility to follow the University's Code of Research Ethics and any relevant academic or professional guidelines in the conduct of your study. **This includes providing appropriate information sheets and consent forms, and ensuring confidentiality in the storage and use of data.** We should be notified of any significant changes in the protocol over the course of the research and may require a new application for ethics approval.

You need to indicate that you have carried out various activities prior to submitting this form along with your proposal.

I have read through and understood the Brunel University Code of Ethics (available at: http://intranet.brunel.ac.uk/registry/minutes/researchethics/CoEv6.pdf**).**	Yes ● No ●

I have written and attached a Participant Information Sheet ONLY needed if your research involves direct data collection from people.	Yes ● No ●
I have written and attached a Participant Consent Form ONLY needed if your research requires *explicit* consent.	Yes ● No ●
I have written and attached a Company Confidentiality Agreement Form Only needed if your research involves a company that is concerned about information being made public.	Yes ● No ●

For PhD students ONLY

I confirm that I am the supervisor mentioned in Section A and that I have discussed and fully support the application submitted by the PhD student named in Section A and confirm that the information entered is correct. This to be answered by a supervisor in case the applicant is a PhD student.	Yes ● No ●

Appendix B: Interview Agenda

Study of the Application of Web 2.0 technologies in the context of e-Government

This questionnaire is divided into 5 parts, and all of these sections being qualitative in nature and acting as a comprehensive agenda for the case study visit.

The questionnaire aims to address the following issues:

- To establish the Web 2.0 Strategy of the local government authority (LGA)
- To establish the evaluation process and identify the perceived and realised benefits, costs and risks associated with Web 2.0 adoption
- To identify the realised impact of Web 2.0 technologies
- To establish the application of Web 2.0 technologies in the local government authority

Agenda Sections

Section A: General Participant Information

Section B: Web 2.0 Strategy of the Local Government Authority;

Section C: Evaluation of Web 2.0 technologies;

Section D: Impact of Web 2.0 technologies on the local government authority and;

Section E: Web 2.0 Application in Local Government Authority.

Section A - General Participant Information

Participants' Initials:

Position/Role:

Department:

Length of experience in organization (months and years):

Section B: Web 2.0 Strategy of the Local Government Authority

1. Who initiated the idea of Web 2.0 technologies adoption in your local government authority (LGA)?

2. Are you aware of any formal strategy for adopting Web 2.0 technologies in your LGA?

   ☐ Yes ☐ No

   2.1. If yes, please elaborate this formal strategy:

   2.2. If no, are you aware of any reason(s) for not having a formal strategy for choosing to adopt Web 2.0 technologies? Please explain.

3. What was the need for Web 2.0 technologies in your local authority?

4. What was/were the main motivation(s) for adopting Web 2.0 technologies in your local authority?

5. What type of Web 2.0 applications are you aware of that the **LGA** has adopted for internal organisational use and please state the application(s) and its purpose(s) of use?

Web 2.0 Application Class	**Used by LGA for internal organisational purposes** (Please ✓)	**Application(s) Used**	**Purpose(s)**
Blogs (e.g. Blogger, Tumblr)			
Collaboration Workspaces (e.g. Yammer, Huddle)			
Cloud Computing –Software as Service (SaaS) (e.g. Google Apps , Salesforce)			
Mashup (e.g. Google Maps)			
Microblogs (e.g. Twitter, Blauk)			
Online Picture Sharing (e.g. Pinterest, Flickr)			
Online Video Sharing (e.g. Youtube)			
RSS (Really Simple Syndication) (e.g. News Feeds)			
Social Bookmarking (e.g. Delicious)			
Social Gaming (e.g. Doof, Pogo)			
Social Networking Sites (e.g. Facebook, LinkedIn)			
Virtual Learning Environments (VLE) (e.g. Blackboard, Moodle)			
Virtual Worlds (e.g. Second Life)			
Wikis (e.g. Wikipedia)			
Others:			
Others:			

6. What type of Web 2.0 application(s) is/are currently used by **you** for work purposes and its purpose(s) of use?

Web 2.0 Application Class	**Used by You for Work Purposes** (Please ✓)	**Application(s) Used**	**Purpose(s)**
Blogs (e.g. Blogger, Tumblr)			
Collaboration Workspaces (e.g. Yammer, Huddle)			
Cloud Computing –Software as Service (SaaS) (e.g. Google Apps , Salesforce)			
Mashup (e.g. Google Maps)			
Microblogs (e.g. Twitter, Blauk)			
Online Picture Sharing (e.g. Pinterest, Flickr)			
Online Video Sharing (e.g. Youtube)			
RSS (Really Simple Syndication) (e.g. News Feeds)			
Social Bookmarking (e.g. Delicious)			
Social Gaming (e.g. Doof, Pogo)			
Social Networking Sites (e.g. Facebook, LinkedIn)			
Virtual Learning Environments (VLE) (e.g. Blackboard, Moodle)			
Virtual Worlds (e.g. Second Life)			
Wikis (e.g. Wikipedia)			
Others:			
Others:			

7. Describe your actual decision making process for the application of Web 2.0 technologies in the LGA:

8. Which department(s) was/were involved in implementing Web 2.0 technologies in your local authority? Please specify:

9. What level of support was offered during the development of the business case for the use of Web 2.0 technologies in the LGA? **(Please ✓)**

Directors	
Senior Management	
Middle Management	
Junior Management	
Supervisory Level	
Administration/Support Staff	
Others:	

Pre-Implementation of Web 2.0 Technologies

Section C: Evaluation of Web 2.0 Technologies

1. Is information systems evaluation a priority in your LGA?

   ☐ Yes ☐ No

   1.1. If yes, then what evaluation method(s) did you use to evaluate Web 2.0 technologies before its application? Please explain:

   1.2. If no, then please explain what conventional method (s) you have used in the past?

Benefits Evaluation

2. In your view, is a systematic "benefits evaluation" a significant criterion to be considered when adopting Web 2.0 technologies?

   ☐ Yes ☐ No

   If yes, please explain why is it important and if no, why not?

3. Literature indicates that Web 2.0 technologies provide a number of benefits to the organisations as illustrated in the following table. How important were the following benefits in enabling Web 2.0 technologies in the local authority? **(Please ✓)**

Classification	Benefits of Web 2.0 Technologies	Not Important	Less Important	Fairly Important	Moderately Important	Important	Highly Important	Extremely Important
		1	2	3	4	5	6	7
Operational	▪ Streamline internal operations							
	▪ Lower IT costs							
	▪ Other:							
	▪ Other:							
Managerial	▪ Improvement of policy making							
	▪ Rapid dissemination of information							
	▪ Other:							
	▪ Other:							
Strategic	▪ Enhance external transparency							
	▪ Revive civic engagement							
	▪ Other:							
	▪ Other:							
IT infrastructure	▪ Scalability of the system							
	▪ Exploit free tools							
	▪ Ease of use and greater access							
	▪ Other:							
	▪ Other:							
Organisational	▪ Efficient gathering of collective intelligence							
	▪ Co-production and collaboration							
	▪ Other:							
	▪ Other:							

4. If you have listed any other benefit factors in the above table (C.3), can you please further elaborate this/these factor(s)?

Costs Evaluation

5. In your view, is a systematic "cost evaluation" a significant criterion to consider when adopting Web 2.0 technologies?

   ☐ Yes ☐ No

   If yes, please explain why is it important and if no, why not?

6. Literature indicates that Web 2.0 technologies provide a number of costs to the organisations as illustrated in the following table. How significantly has the following cost factors influenced your decision for Web 2.0 technologies adoption in the local authority? **(Please ✓)**

Classification	Cost of Web 2.0 Technologies	Not Significant	Less Significant	Fairly Significant	Moderately Significant	Significant	Highly Significant	Extremely Significant
		1	2	3	4	5	6	7
Direct	▪ Development of new service model							
	▪ Additional Staff							
	▪ Data maintenance							
	▪ Other:							
	▪ Other:							
Indirect Human	▪ Restricted user participation							
	▪ Other:							
	▪ Other:							
Indirect Organisational	▪ Loss of control							
	▪ Staff learning and training							
	▪ Introducing new organisational policies							
	▪ Other:							
	▪ Other:							

7. If you have listed any other cost factors in the above table (in C.8), can you please further elaborate this/these factor(s)?

Risk Evaluation

8. In your view, is a systematic “risk evaluation” a significant criterion to consider when adopting Web 2.0 technologies?

   ☐ Yes ☐ No

   If yes, please explain why is it important and if no, why not?

9. Do you have a risk register?

   ☐ Yes ☐ No

   If yes, please go to Question 10 and if no, why not?

10. If yes to Question 9, is the risk register regularly updated?

    ☐ Yes ☐ No

    If yes, please explain what is the process of updating it and if no, why not?

11. Literature indicates that Web 2.0 technologies provide a number of risks to the organisations as illustrated in the following table. How significantly has the following risk factors influenced your decision for Web 2.0 technologies adoption in the local authority? **(Please ✓)**

Classification	Risks of Web 2.0 Technologies	Not Significant	Less Significant	Fairly Significant	Moderately Significant	Significant	Highly Significant	Extremely Significant
		1	2	3	4	5	6	7
Political and Legal	▪ Weak social media policies							
	▪ Data ownership							
	▪ Data protection							
	▪ Freedom of information							
	▪ Other:							
	▪ Other:							
Reputational	▪ Critical reviews							
	▪ Risk of information overload and reliability							
	▪ Other:							
	▪ Other:							
Security	▪ Security and Privacy							
	▪ Threat of cyber extremisms							
	▪ Trolling							
	▪ Other:							
	▪ Other:							
Societal	▪ Social isolation							
	▪ Digital Divide							
	▪ Other:							
	▪ Other:							
Technical	▪ Access to the technologies							
	▪ Discontinuation of technology							
	▪ Other:							
	▪ Other:							

12. If you have listed any other risk factors in the above table (in C.13), can you please further elaborate this/these factor(s)?

Post-Implementation of Web 2.0 Technologies

Section D: Impact of Web 2.0 technologies on the LGA

1. Did you anticipate the adoption of Web 2.0 technologies to have an impact on the LGA (i.e. on organisation and employees)?

   ☐ Yes ☐ No

   1.1. If yes, please explain what made you anticipate this;

   1.2. And what types of impact (on organization and employees) have been encountered by the adoption of Web 2.0 technologies? Please specify:

   1.3. If no, why did you not anticipate any impact with the use of Web 2.0 technologies?

2. Do you think understanding or knowing the impact of Web 2.0 technologies would have influenced your decision to adopt these technologies?

   ☐ Yes ☐ No

   If yes, how would it have influenced your decision and if no, why not?

3. Literature indicates that Web 2.0 technologies can have a number of impact on LGAs as illustrated in the following table .How significantly have Web 2.0 technologies had an impact on the organisational, technological and social dimensions of the LGA from an internal organisational perspective (i.e. on organization and employees)? **(Please ✓)**

Classification	Impact Factors	Not Significant	Less Significant	Fairly Significant	Moderately Significant	Significant	Highly Significant	Extremely Significant
		1	2	3	4	5	6	7
Organisational	▪ Culture and Change							
	▪ Transparency and accountability							
	▪ Policy Alignment and Governance							
	▪ Knowledge Management							
	▪ Collaboration and Communication							
	▪ Organisational learning							
	▪ Human Capital							
	▪ Financial Resources							
	▪ Other:							
	▪ Other:							
Technological	▪ Security and Privacy							
	▪ Interoperability							
	▪ Scalability							
	▪ Data Presentation							
	▪ Other:							
	▪ Other:							
Social	▪ Democratic Participation and Engagement							
	▪ Co-production							
	▪ Crowdsourcing solutions and Innovations							
	▪ Building and Maintaining Trust							
	▪ Other:							
	▪ Other:							

Section E: Overall Assessment of Web 2.0 Application in LGA

1. Do you think evaluating Web 2.0 technologies prior to its implementation in the LGA would influence your decision to adopt these technologies?

☐ Yes ☐ No

If yes, please state how, or if no, please state why not:

---

2. Do you think performing a benefits, costs and risks evaluation of Web 2.0 technologies together would influence your decision to adopt these technologies?

☐ Yes ☐ No

If yes, please state how, or if no, please state why not:

---

3. Do you think exploring the impact of Web 2.0 technologies prior to its implementation in the LGA would influence your decision to adopt these technologies?

☐ Yes ☐ No

If yes, please state how, or if no, please state why not:

---

4. Do you think exploring the organisational, technological and social impacts of Web 2.0 technologies together would influence your decision to adopt these technologies?

☐ Yes ☐ No

If yes, please state how, or if no, please state why not:

---

5. Do you think both evaluation of Web 2.0 technologies and exploring its impact on the LGA would influence your decision to adopt these technologies?

☐ Yes ☐ No

If yes, please state how, or if no, please state why not:

6. Do you perceive the adopted Web 2.0 technologies to be a success, if so, what is your criteria for success:

Appendix C: Relationships between Conjectures and Interview Agenda

Relationships Between Conjectures and Interview Agenda

- Relationship between Conjectures C1, C2 and C3 and the Interview Questions
- Relationship between Conjectures C4, C5 and C6 and the Interview Questions
- Relationship between Conjectures C7 and the Interview Questions

Conjectures 1, 2 and 3: Evaluating the benefits (C1), costs (C2), and risks (C3) of Web 2.0 will aid the effective application of Web 2.0 in the e-Government context.

Section/Question Number	Guiding Comments
C2: In your view, is a systematic "benefits evaluation" a significant criterion to be considered when adopting Web 2.0 technologies? a) Yes b) No If yes, please explain why is it important and if no, why not?	This question seeks to establish LGA's perception performing a systematic benefits evaluation for Web 2.0 technologies prior to adopting these tools.
C3) Literature indicates that Web 2.0 technologies provide a number of benefits to the organisations as illustrated in the following table. How important were the following benefits in enabling Web 2.0 technologies in the local authority? **Operational** a) Streamline internal operations b) Lower IT costs Other: **Managerial** c) Improvement of policy making d) Rapid dissemination of information Other: **Strategic** e) Enhance external transparency f) Revive civic engagement Other: **IT infrastructure** g) Scalability of the system h) Exploit free tools i) Ease of use and greater access Other: **Organisational** j) Efficient gathering of collective intelligence k) Co-production and collaboration Other:	This question seeks to identify operational, managerial, strategic, IT infrastructure and Organisational benefits of Web 2.0 and the importance of these benefits for deciding to adopt Web 2.0 tools. The question investigates the perceived importance of Web 2.0 benefit factors for its effective application in the LGA. The question adopts a 7 point Likert scale of *Less important* to *fairly important* (○), *moderately important* to *important* (⦿) and *highly important* to *extremely important* (●)and where the interviewees said *not important*, the "x" symbol is used to measure the responses. It also identifies if there is any other benefit factors that the LGA might want to add. This will therefore allow the investigator to develop a taxonomy of drivers that will aid the decision making process for effective application of Web 2.0.
C4: If you have listed any other benefit factors in the above table (C.3), can you please further elaborate this/these factor(s)?	This question allows for the elaboration of the other benefit factors that might be included if any.
C5: In your view, is a systematic "cost evaluation" a significant criterion to consider when adopting Web 2.0 technologies? a) Yes b) No If yes, please explain why is it important and if no, why not?	This question seeks to establish LGA's perception performing a systematic cost evaluation for Web 2.0 technologies prior to adopting these tools.
C6: Literature indicates that Web 2.0 technologies provide a number of costs to the organisations as illustrated in the following table. How significantly has the following cost factors influenced your decision for Web 2.0 technologies adoption in the local authority? Direct a) Development of new service model b) Additional Staff c) Data maintenance **Indirect Human** d) Restricted user participation Other: **Indirect Organisational**	This question seeks to identify the direct, indirect human and indirect organisational costs of Web 2.0 tools to a LGA and the influences of these costs for deciding to adopt Web 2.0 tools. The question investigates the perceived importance of Web 2.0 costs factors for its effective application in the LGA. The question adopts a 7 point Likert scale of *less significant* to *fairly significant* (○), *moderately significant* to *significant* (⦿) and *highly significant* to *extremely significant* (●) and where the interviewees said *not significant*, the "x" symbol is used to measure the responses. It also identifies if there is any other Web 2.0 costs factors that the LGA might want to add.

e) Loss of control f) Staff learning and training g) Introducing new organisational policies Other:	This will therefore allow the investigator to develop a taxonomy of cost factors that will aid the decision making process for effective application of Web 2.0.
C7) If you have listed any other cost factors in the above table (in C.8), can you please further elaborate this/these factor(s)?	This question allows for the elaboration of the other cost factors that might be included if any.
C8) In your view, is a systematic "risk evaluation" a significant criterion to consider when adopting Web 2.0 technologies? a) Yes b) No If yes, please explain why is it important and if no, why not?	This question seeks to establish LGA's perception performing a systematic risk evaluation for Web 2.0 technologies prior to adopting these tools.
C9) Do you have a risk register? a) Yes b) No If yes, please go to Question 10 and if no, why not?	This question investigates if the LGA has a IT risk register in place.
C10) If yes to Question 9, is the risk register regularly updated? a) Yes b) No If yes, please explain what is the process of updating it and if no, why not?	This question investigates if the LGA IT risk register is updated regularly and the process behind this maintenance.
C11) Literature indicates that Web 2.0 technologies provide a number of risks to the organisations as illustrated in the following table. How significantly has the following risk factors influenced your decision for Web 2.0 technologies adoption in the local authority? **Political and Legal** a) Weak social media policies b) Data ownership c) Data protection d) Freedom of information Other: **Reputational** e) Critical reviews f) Risk of information overload and reliability Other: **Security** g) Security and Privacy h) Threat of cyber extremisms i) Trolling Other: **Societal** j) Social isolation k) Digital Divide Other: **Technical** l) Access to the technologies m) Discontinuation of technology Other:	This question seeks to identify the political and legal, reputational, security, societal and technical risks of Web 2.0 tools to a LGA and the influences of these risk factors for deciding to adopt Web 2.0 tools. The question investigates the perceived importance of Web 2.0 risk factors for its effective application in the LGA. The question adopts a 7 point Likert scale of *less significant* to *fairly significant* (○), *moderately significant* to *significant* (⦿) and *highly significant* to *extremely significant* (●) and where the interviewees said *not significant*, the "x" symbol is used to measure the responses. It also identifies if there is any other Web 2.0 risks factors that the LGA might want to add. This will therefore allow the investigator to develop a taxonomy of risk factors that will aid the decision making process for effective application of Web 2.0.
C12) If you have listed any other risk factors in the above table (in C.13), can you please further elaborate this/these factor(s)?	This question allows for the elaboration of the other risk factors that might be included if any.

Table B.1: Relationship between Conjectures C1, C2 and C3 and the Interview Questions

Conjectures 4, 5 and 6: Exploring the organisational (C4), technological (C5), and social (C6) impact of Web 2.0 will aid the effective of Web 2.0 in the e-Government context.

Section/Question Number	General Guiding Comments
D1) Did you anticipate the adoption of Web 2.0 technologies to have an impact on the LGA (i.e. on organisation and employees)? a) Yes b) No 1.1. If yes, please explain what made you anticipate this; 1.2. And what types of impact (on organization and employees) have been encountered by the adoption of Web 2.0 technologies? Please specify. 1.3. If no, why did you not anticipate any impact with the use of Web 2.0 technologies?	This question seeks to establish if the LGA anticipated any implications that Web 2.0 technologies on the organisation and its employees by adopting these tools. It also tries to identify the types of implications that the organisation has experienced.
D2) Do you think understanding or knowing the impact of Web 2.0 technologies would have influenced your decision to adopt these technologies? a) Yes b) No If yes, how would it have influenced your decision and if no, why not?	This question seeks to establish the influence on decision making if the LGA were knowledgeable of the impact of Web 2.0 prior to its application in the organisation.
D3) Literature indicates that Web 2.0 technologies can have a number of impact on LGAs as illustrated in the following table .How significantly have Web 2.0 technologies had an impact on the organisational, technological and social dimensions of the LGA from an internal organisational perspective (i.e. on organization and employees)? **Organisational** a)Culture and Change b) Transparency and accountability c) Policy Alignment and Governance d) Knowledge Management e) Collaboration and Communication f) Organisational learning g) Human Capital h) Financial Resources Other: **Technological** i) Security and Privacy j) Interoperability k) Scalability l) Data Presentation Other: **Social** m)Democratic Participation and Engagement n) Co-production o) Crowdsourcing solutions and Innovations p) Building and Maintaining Trust Other:	This question seeks to identify the organisational, technological and social impact of Web 2.0 tools to a LGA and the influences of these risk factors for deciding to adopt Web 2.0 tools. The question investigates the importance of Web 2.0 impact factors for its effective application in the LGA. The question adopts a 7 point Likert scale of *less significant* to *fairly significant* (○), *moderately significant* to *significant* (⦿) and *highly significant* to *extremely significant* (●) and where the interviewees said *not significant*, the "x" symbol is used to measure the responses. It also identifies if there is any other Web 2.0 impact factors that the LGA might want to add. This will therefore allow the investigator to develop a taxonomy of impact factors that will aid the decision making process for effective application of Web 2.0.

Table B.2: Relationship between Conjectures C4, C5 and C6 and the Interview Questions

Conjecture 7: Evaluating Web 2.0 and exploring the impact of Web 2.0 together will provide a cohesive tool to aid the effective of Web 2.0 in e-Government.

Section/Question Number	General Guiding Comments
B1: Who initiated the idea of Web 2.0 technologies adoption in your local government authority (LGA)?	This question investigates where there was an individual who initiated the Web 2.0 strategy in the LGA
B2: Are you aware of any formal strategy for adopting Web 2.0 technologies in your LGA? a) Yes b) No 2.1.If yes, please elaborate this formal strategy 2.2. If no, are you aware of any reason(s) for not having a formal strategy for choosing to adopt Web 2.0 technologies? Please explain.	This question investigates where the LGA had an existing Web 2.0 strategy in place for its adoption?
B3: What was the need for Web 2.0 technologies in your local authority?	This question is seeking to identify the need for the use of Web 2.0 technologies in the LGA
B4: What was/were the main motivation(s) for adopting Web 2.0 technologies in your local authority?	This question is seeking to identify the motivation behind the adoption of Web 2.0 technologies in the LGA
B7: Describe your actual decision making process for the application of Web 2.0 technologies in the LGA:	This question investigates the decision making process for the adoption of Web 2.0 within the LGA
B8: Which department(s) was/were involved in implementing Web 2.0 technologies in your local authority? Please specify:	This question is seeking to identify the departments that was involved in the implementation of Web 2.0 technologies in the LGA
B9: What level of support was offered during the development of the business case for the use of Web 2.0 technologies in the LGA?	This question investigates the support offered by the LGA for the development of the business case for the adoption of Web 2.0.
C1: Is information systems evaluation a priority in your LGA?(a)Yes,(b)No 1.1: If yes, then what evaluation method(s) did you use to evaluate Web 2.0 technologies before its application? Please explain: 1.2: If no, then please explain what conventional method (s) you have used in the past?	This question identifies if the evaluation of information systems technology is an important process in the LGA.
E1) Do you think evaluating Web 2.0 technologies prior to its implementation in the LGA would influence your decision to adopt these technologies? a) Yes b) No If yes, please state how, or if no, please state why not:	This question seeks to establish if performing a systematic evaluation of Web 2.0 technologies prior to its implementation would have any influence in the LGA's decision to adopt these tools.
E2) Do you think performing a benefits, costs and risks evaluation of Web 2.0 technologies together would influence your decision to adopt these technologies? a) Yes b) No If yes, please state how, or if no, please state why not:	This question investigates if conducting a systematic benefits, costs and risks evaluation of Web 2.0 technologies together would influence the LGA's decision to adopt these tools.
E3) Do you think exploring the impact of Web 2.0 technologies prior to its implementation in the LGA would influence your decision to adopt these technologies? a) Yes b) No If yes, please state how, or if no, please state why not:	This question investigates if conducting an impact analysis of Web 2.0 technologies together would influence the LGA's decision to adopt these tools.
E4) Do you think exploring the organisational, technological and social impacts of Web 2.0 technologies together would influence your decision to adopt these technologies? a) Yes b)No	This question investigates if conducting a systematic organisational, technological and social impact analysis of Web 2.0 technologies together would influence the LGA's decision to adopt these tools.

If yes, please state how, or if no, please state why not:	
E5) Do you think both evaluation of Web 2.0 technologies and exploring its impact on the LGA would influence your decision to adopt these technologies? a) Yes b) No If yes, please state how, or if no, please state why not:	This question seeks to establish if conducting a systematic evaluation and impact analysis of Web 2.0 technologies together would influence the LGA's decision to adopt these tools.
E6) Do you perceive the adopted Web 2.0 technologies to be a success, if so, what is your criteria for success:	This question seeks to establish if the adopted Web 2.0 technologies has been perceived as a success in the LGA. It also investigates the criteria for defining it as a success if any.

Table B.3: Relationship between Conjectures C7 and the Interview Questions

Appendix D: Informal Interview Questions

Set of Informal Interview Questions

1. How would you describe the culture of this local council?
2. What role does ICT play in the council's growth and success?
3. Were you aware of the implementation of Web 2.0 technologies in the local council?
4. Was the adoption of Web 2.0 technologies discussed with stakeholders before implementation?
5. Do you consider Web 2.0 technologies to have made an impact to the local council? If so, how?
6. Is the adoption of Web 2.0 technologies contributing towards the achievement of employee expectations?
7. Anything else that you might want to add?