E-GOVERNMENT
– ASSESSMENT OF CURRENT RESEARCH AND SOME PROPOSALS FOR FUTURE DIRECTIONS

ULRICA LÖFSTEDT
Dept. of Information Technology and Media
Mid Sweden University
SE-831 25 Östersund, Sweden
ulrica.lofstedt@miun.se

Abstract

Electronic Government, or e-Government, is on the agenda both in research and in practice and there is a rather broad research field. Several researchers are involved in a range of different research projects concerning different topics within the area and are generating an increasing amount of research literature. This paper examines current research concerned with e-Government in order to define deficiencies, shortcomings, and some directions for future research. Current research in the area focuses mainly on the national level while that for the local level is in short supply. Consequently, proposals for future research concern e-Government at the local level.

Keywords: e-Government, governmental systems, public systems, local e-Government, e-Services

1. Introduction

Electronic Government, or e-Government and its many synonyms, has been on the international agenda for several years. Since the late 1990s, governments at all levels have launched e-Government projects in order to provide electronic information and services to citizens and businesses. At present e-Government is on the agenda both in research and practice and this new arena of public interest attracts the great attention of governments, technology providers, and researchers [Curtin et al., 2004]. Although e-Government has existed for several years, in many ways it is still in its infancy, and its study is even younger.

According to Grönlund [2004], the e-Government field is certainly generating an increasing amount of research literature. However, the research field of e-Government is rather broad and several researchers are involved in a range of different research projects on different topics within the field. When studying references, there is, as yet, no kernel of established e-Government researchers or concept creators and the field of research has in no way matured as yet. Thus, the field is indeed immature and, according to Grönlund [2004], appears to run the risk of not achieving maturity, for several reasons. Accordingly, there is a need to further investigate the field and this paper serves as a starting point for further research into e-Government.

The purpose of this paper consequently, is to provide a foundation for future research in the field of e-Government. Therefore, some interesting trends in current research into e-Government are identified and critically analysed in order to define

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deficiencies, shortcomings, topics of interests, and requirements for further research in the field. This paper also proposes some future directions on the basis of existing and current research concerning e-Government.

2. Selection Procedure

The analysis focuses on current research into e-Government. At a general level, studies eligible for analysis were those explicitly concerning e-Government and concepts closely related to the area. At a more specific level, current research within the field of e-Government was chosen to provide a representative sample, relevant to e-Government research.

The search for current research included journals as well as conferences. To identify relevant e-Government papers, a keyword search on library databases and search engines on the World Wide Web was conducted. Keywords included 'e-Government', 'governmental systems', 'public systems', 'e-Democracy', 'e-Services', and 'e-Security'. Secondly, papers from conferences where sources were widely accessible and whose emphasis was on research were identified and analysed. Thirdly, the reference lists of the papers surveyed was investigated to relate the researchers to each other and to find more relevant research in the field. Articles excluded from the analysis included those whose focus exclusively concerned technical aspects. The intention was to use the science citation index to crystallize a kernel of well quoted researchers in the field, but because of the immaturity and the youth of the field, the effort failed.

Furthermore, with the keywords of the papers and the research issues as a base, researchers and papers were grouped together into a few overarching areas within the research field of e-Government (see Figure 1). The areas identified overlapped and connected to each other, thus some researchers and papers belong to more than one area. Analysis was based on the areas grouped and the research directions and results found. The research found was compared and assessed to find areas of assimilation and dissemination and to identify possible deficiencies or shortcomings in existing research in the area of e-Government.

3. The Area of e-Government

Lenk and Traunmüller [2000] assert that e-Government is a powerful guiding vision for the transformation which governments must adapt to over the next years. E-Government is the term that reflects the use of information and communication technology (ICT) in public administration to change structures and processes of government organisations. Furthermore, the concept is an attempt to offer more ease of access to governmental information and services for citizens, businesses and government agencies and there is great potential for improving and advancing interaction between the above. The aim is also to improve the quality of services and to provide greater opportunities for participation in democratic institutions and processes [Lambrinoudakis et al., 2003]. The potential of e-Government can be fully realised only if it is harnessed to the existing social and political context of government. According to the UN (2003) there are three prerequisites that affect the potential of e-Government: a minimum threshold level of technological infrastructure, human capital, and e-connectivity for all. Jaeger [2003] claims that mature, effective e-Government has the capacity to create new methods and ways for participation in government, acting as an endless wire, electronically threading together citizens, businesses, and all levels of government in a nation. E-Government is still in its

formative stages and any idealised visions of e-Government are just that. *"Because e-gov continues to evolve, the full measure of its success awaits assessments."* [Relyea, 2002].

It has been emphasised that an important goal of e-Government is the delivery of faster and cheaper services and information to citizens, business partners, employees, other agencies, and government agencies [Layne and Lee, 2001]. Easy and equitable access to public information and services has always been a goal of open and democratic governments.

However, e-Government is a much more substantial transformation than e-Service delivery. E-Government defines an area, the public sector, as well as the institutions, people, and processes which operate within this area. It is obviously not only about services or technology; it is about reinventing the way in which governments interact with citizens, governmental agencies, businesses, employees, and other stakeholders. It is about enhancing democratic processes and also about using new ideas to make lives easier for the citizen by, for example, transforming government processes, enabling economic development, and renewing the role of government, itself, in society.

E-Government is usually presented as using IT to: (1) provide easy access to government information and services to citizens and business; (2) increase the quality of services, by increased speed, completeness and process efficiency; and (3) provide citizens with the opportunity to participate in different kinds of democratic processes. The implementation of e-Government involves not only a profound transformation in the way government interacts with the governed but also the reinvention of its internal processes and organisation. E-Government concerns both internal and external use of IT, for internal administration as well as for external services [Grönlund, 2002].

E-Government remains a knowledge field in its exploratory stages and is, consequently, difficult to accurately define. Furthermore, it encompasses such a broad spectrum that it is difficult to find one expression that specifies what e-Government really represents. However, the term is loosely used to describe the legacy of any kind of use of information and communication technology within the public sector and represents the use of the Internet to deliver information and services by the government [Bhatnagar, 2004]. Despite the lack of and difficulty in agreeing upon a commonly accepted definition of the concept, there have been efforts to create a definition and e-Government has been variously defined in the literature and research [Grönlund, 2004; Curtin et al., 2004; Hirst and Norton, 1998; Scholl, 2003; Zweers and Planqué, 2001; Bathnagar, 2004]. However, sometimes e-Government is defined as electronic service delivery to citizens, but those working in the field maintain that e-Government is concerned with far more than simply making some public information and citizen services available on the Internet. *"E-Government runs wide across all aspects of government, deep within the core of every governmental entity, and will inevitably be a transforming agent for government and governance."* [Curtin et al., 2004].

4. Current Research Directions in e-Government

According to Scholl [2004], the complex relationship between information technology and government has become a major focus of academic research in several fields such as public administration, organisational behaviour, information science, and technology innovation. Thus, researchers who have chosen e-Government as a problem domain might have their theoretical starting points in several other

disciplines, e.g., organisation theory, social science, informatics, computer science, public administration, business administration, economy, political science, law, government professionals, library science etc. Thus there are different approaches depending on the starting point and chosen problem domain.

Figure 1 below gives a rough approximation of some of the current research in the field of e-Government and how different aspects and some researchers in the field are connected to each other. The overarching areas identified both overlap and connect and in some cases even form parts of the other, but this is not visible in the figure for practical reasons. The map does not claim to be complete, but offers an approximate picture of the research field of e-Government.
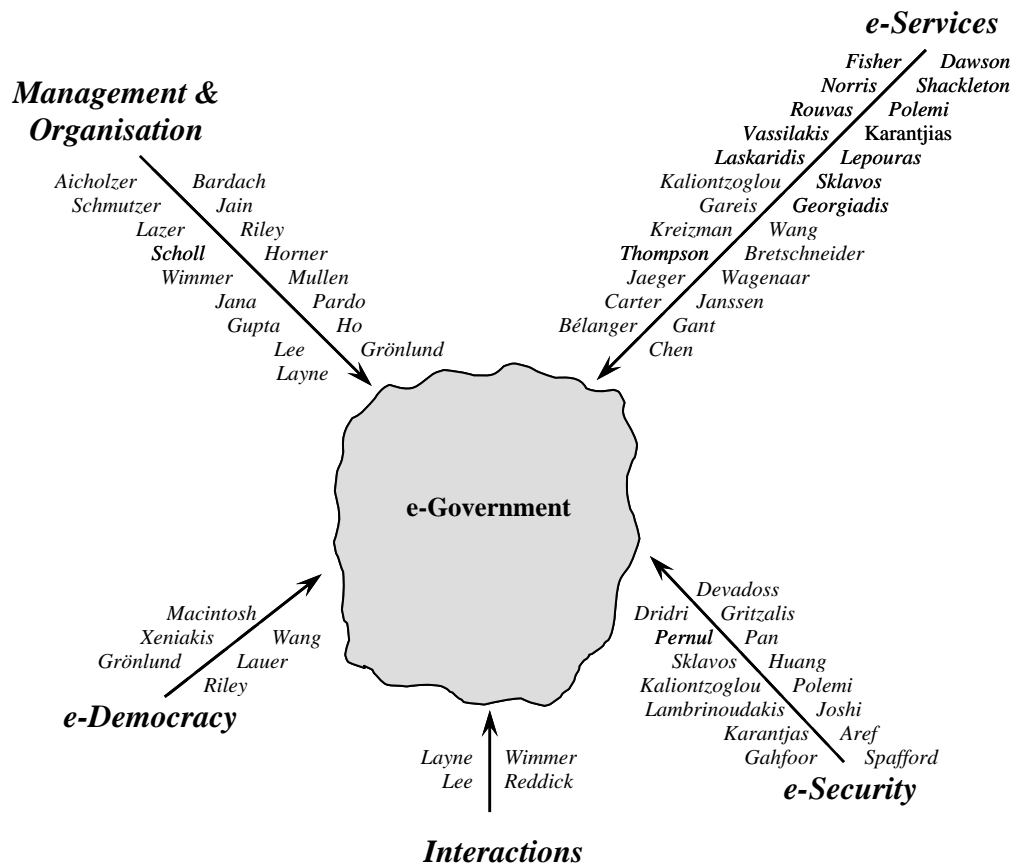
Figure 1. Map of current research in the field of e-Government

Research and development of e-Government have until recently been mainly guided by supply-side factors, i.e., the focus has been on the governments and their prerequisites for development. Furthermore, research and practice have mostly focused on the national level (see Figure 2).

National level

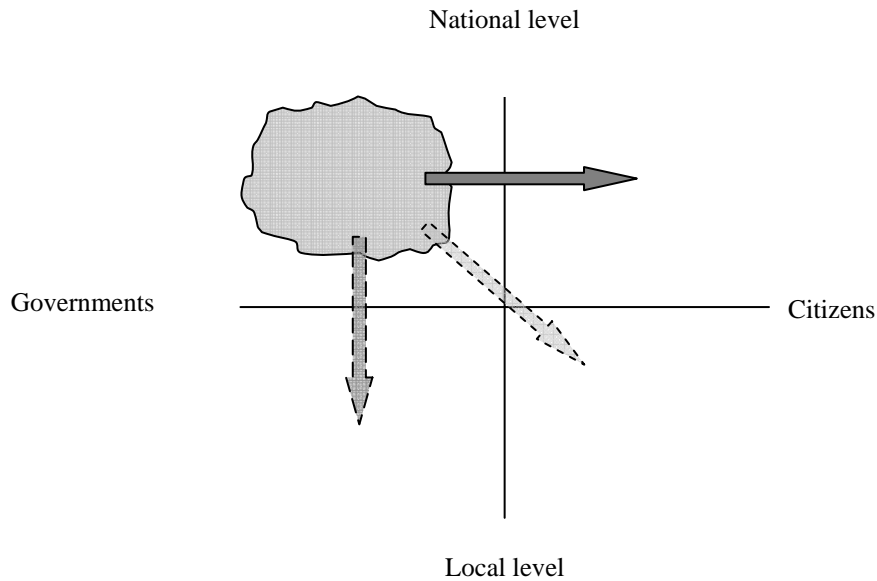Governments

Citizens

Local level

Figure 2. Different research focuses in the field of e-Government.

Current interest, however, is increasingly focusing on the demand-side, i.e., the individual citizen. Research concerning user-related issues is thus becoming more frequent. Interest in the field has begun to shift from government at the national level to more citizen-related issues such as usability and user willingness. However, research at local level is in short supply and Grönlund [2004] believes that the lack of e-Government achievements at the local level depends on conflicting goals or other priorities. Government agencies at different levels have different prerequisites and to accomplish the e-Government research, focus should also move towards issues related to that level of governments.

4.1.   E-Services

E-Services form an emerging field which is rapidly gaining attention and importance. Citizens expect and demand governmental services with a high degree of quality, quantity, and availability in a 24-hour, seven-days-a-week, and year-round fashion. Governments all over the world are developing information systems and electronic services that have the capacity to meet these emerging service needs and demands of citizens and other clients [Scholl, 2004; Bruecher et al., 2004; Bathnagar, 2004]. There have been suggestions concerning the potential for more efficient and user-centred methods for delivering e-Services. Thus, user awareness of these services, their willingness to use them, and ease of use all are important factors for the further development of e-Government [CEC, 2003].

There have been a number of studies concerning e-Services provided and also those services citizens actually need and desire [Cook, 2002; SIBIS, 2003; BISER, 2003; Gareis, 2004; Sleeman, 2004]. The conclusion is that, in most cases, governments do not provide the necessary and desired e-Services of their users. Nevertheless, governments at all levels and in a wide range of nations have made significant commitments to staffing, finances, and technology in order to develop and improve the delivery of e-Services to their citizens. According to Wimmer [2003], success in delivering electronic services depends upon the capability and self-confidence of citizens in performing e-transactions, as well as their trust and

confidence in the protection of their personal data within an open and accountable government.

However, few studies have explored the core factors that influence citizens' adoption of e-Services. This is an important issue, because the success and acceptance of e-Government initiatives are dependent on citizens' willingness to adopt and utilise these services. Higher levels of perceived ease of use are not significantly associated with intentions of increased use of e-Services. Carter and Bélanger [2004a; 2004b; 2005] have tried to explore this gap and have investigated the effects of relative advantage, compatibility, ease of use and image with regards to the citizens intention to use e-Services. Their results show that perceived ease of use, compatibility, and trustworthiness are significant predictors of citizens' intention to use e-Services and that perceived reactive advantage, perceived image, perceived compatibility, perceived usefulness, and relative advantage are significant elements of e-Government adoption. Carter and Bélanger [2004a; 2004b; 2005] have also developed and tested a concise model of citizen adoption of e-Services. Since the success and acceptance of e-Government initiatives are dependent on citizens' willingness to utilise the services provided, there should be more research into this factor; e.g., more elaborate models and methods should be developed. There is also a need to identify and explain the advantages of using e-Services to citizens as opposed to their current means of retrieving information from and completing transactions with government agencies.

With reference to the lack of e-Government usage, the main emphasis has concerned access, which has resulted in the focus primarily being on the important issue of 'the digital divide'. This includes aspects such as an economic gap, a racial gap, a geographic gap, and a disability gap which have all been identified as reasons for citizens not using e-Government information and services. Social or behavioural reasons that might influence citizens not to choose to access and use e-Services have been ignored. However, Jaeger and Thompson [2004] focus on this issue and demonstrate that e-Government should be carefully examined at both the theoretical level and practical level. They discuss aspects of social behaviour which may offer means for greater understanding of the usage of e-Government information and services and they believe that the concepts of normative behaviour and information poverty can be applied to research that has been conducted and could serve as a framework for future studies.

Evaluation of e-Government is critical. However, there has been little research focusing on this factor. Wang et al. [2005] have developed a theory model for the evaluation of e-Services, which can also serve as a tool for understanding why government websites succeed or fail to help citizens find required information. According to Shackleton et al. [2004], there is a failure to move from web-based information to e-Service provision, and thus research whose purpose is the further development of e-Services is necessary. However, research whose purpose is to guide development [Vassilakis et al., 2003], management, and evaluation of e-Government services is still in its infancy. Consequently, tested concepts and well-understood practices are in short supply.

Shackleton et al. [2004] point out that little progress has been made in the transition to e-Service delivery in most areas of local government. Chen & Gant [2001] examine the potential of Application Service Providers (ASP) to transform e-Services at the local level. The ASP model assists local government to overcome barriers in offering next wave e-Services, such as a shortage of skilled IT staff and limited financial resources. Kreizman [2002] and Janssen and Wagenaar [2004]

propose a Shared Service Centre (SSC) to manage obstacles such as high costs, lack of expertise and to share the development of similar functionality. Janssen and Wagenaar [2004] have explored the concept of a SSC and have found it to be feasible to achieve operational efficiency and have gained considerable attention from politicians and other government representatives.

4.2.   E-Democracy

E-Democracy is explored as a subset of the greater, and more important, philosophical topic of democracy itself. E-Democracy focuses on the use of information and communication technologies in supporting democratic decision-making processes and in allowing more effective and transparent engagement between government, business, and citizen. According to Welch et al. [2004] there are several different research areas which fall under the general heading of e-Democracy including for example electronic voting, access equity, online interaction for public decision making, information reliability, political coordination among multiple stakeholders, and public monitoring of and communication with elected officials.

Macintosh [2004] describes an initial characterization framework and argues for the urgent need to better understand those e-Democracy pilot projects that have already been conducted and are currently being developed. The framework addresses the issue of what should be characterised in these pilot e-Democracy projects in order to better identify both types of citizen participation exercises and the appropriate technology to support them. This will then offer an analytical framework for electronic participation.

Most of research discovered in the field of e-Democracy is concerned with e-Voting. According to Riley [2004a], e-Voting has been recognized as a tool, not a means of enhancing or reinvigorating democracy. Lauer [2004], whose focus was on integrity, has analysed security risks that may threaten e-Voting schemes and further, has proposed several recommendations. Xeniakis and Macintosh [2004] have explored the security related procedures surrounding the successful development and deployment of e-Voting in legally-binding government elections. According to their findings, security in e-Voting has two aspects: namely technical and procedural aspects and further research is required into both these areas.

E-Voting is of current interest but, more research is necessary concerning other aspects of the e-Democracy field. Models, methods, and theories must be developed and a citizen centric approach must be adopted to ensure its success. E-Democracy is an area which is important and substantial because it offers citizen means to participate in the democratic process.

4.3.   Organisation and Management

There is a need to develop theories, models, and methods within the area of e-Government. Thus far, the research has mainly involved descriptive studies, philosophical studies, theoretical research, and empirical studies (Grönlund, 2004). In Grönlund's [2004] survey of the state-of-the-art e-Government research in 2004, the discovery was made that theory generating and theory testing are not frequent in research approaches, but case studies and product descriptions are. However, efforts are being made to elaborate both theories and models.

Layne and Lee [2001] have described different stages of e-Government development and have proposed a "stages of growth" model for fully functional e-Government. Riley [2004b] explores the theory of information and the degree to

which new methodologies may be designed for governments in order to better share information with the public for the common good. Grönlund [2005] has identified a need for a model of government that goes beyond the individual organisation in order to discuss e-Government theoretically. He has tried to offer a way to fill the gap in e-Government effectiveness by developing a theory of e-Government/e-Governance information systems, which considers governance as a system rather than as individual organisational units and processes, and views information systems from that perspective. The purpose of the theory is to provide a general framework.

Grönlund [2002] also claims that the strategic perspective regarding e-Government remains to be researched. Ho and Pardo [2004] introduced a strategy for assessing the practical frameworks used by government managers to guide e-Government investment decisions. They outline a gap analysis strategy and present a preliminary application of the analysis. The gap analysis strategy serves two purposes, namely to give information concerning the design, development, and use of e-Government investment decision-making tools and processes and to propose a strategy for initiating discussion in the debate about information system research relevance.

Valuations and measurements are urgently required to enable the field to develop and there is a great need for more research into such issues. According to Gupta & Jana [2003], the importance of measuring the performance of e-Government cannot be overemphasised. They proposed a flexible framework to choose an appropriate strategy for measuring the tangible and intangible benefits of e-Government.

There is also an identifiable lack of developed and well understood rules and models for ethical behaviour in e-Government. Mullen and Horner [2004] propose a framework for evaluating the extent to which different types of mistakes are related specifically to the technologies used and also to identify instances where rules and models of ethical behaviour may be deficient. A definition of most basic concepts and most of the fundamental questions concerning ethics and morality is urgently required within the e-Government field. Ivanov [1986] raised these questions concerning system developments several years ago and these are now of great importance in contemporary research within the e-Government field. These aspects are essential for the development and deployment of e-Government and confirm the need for additional research in this area.

The field of e-Government has been influenced by many disciplines and to enrich the field several researchers have used a variety of established and theoretical theories to study e-Government. For example Scholl [2001] has used the Stakeholder theory to examine e-Government research, Bardach [2002] has used the Network theory to examine IT enabled interagency collaboration, Lazer [2002] has used the Diffusion of Innovations Related theory to examine the impact of computerisation on innovation within governments, and Jain [2003] has utilised Weber's theory of bureaucracy to examine contemporary e-Government related research and literature.

Most research in the field is concerned with development, services, citizen participation etc and, at present, there are still only a few research projects concerning the organisations, i.e., the governments. How should these be transformed to facilitate the development and deployment of the electronic government? Aicholzer and Schmutzer [2000] discuss three major organisational challenges faced by initiatives associated with the implementation of e-Government: (1) guiding principles and problems of restructuring administrative functions and process; (2) requirements of and barriers to coordination and cooperation within public administration; and (3) the need to organise monitoring of performance in terms of e-Government.

4.4. E-Security

E-Government services have to be secure with regards to all aspects, so that the government and the users trust the system and feel confident in using it. Security is critical since it can influence citizens' willingness to adopt the services offered. In the area of e-Government, concerns regarding the extent to which information security and user privacy can be ensured are raised. Information System Security is thus an essential management responsibility for e-Government, which must satisfy the fundamental security properties of availability, confidentiality, integrity, accountability, and information assurance [Joshi et al., 2001].

Lambrinoudakis et al. [2003] have compiled a list of security requirements applicable to the entire e-Government platform. They conclude that most of the e-Government security requirements can be fulfilled through the PKI (Public Key Infrastructure) security services. In the study by Devadoss et al. [2003], many issues are discussed from a tele-cooperation perspective. They have found that human and social factors interact at every level and they have developed an exploratory framework for future examination of e-Government initiatives. The framework proposes that requirements should be tested in a G2C (government-to-citizen) initiative, where user participation and user communication with systems developers are the key issues.

4.5. Interactions

There have been a number of categories identified for interaction within e-Government: government-to-citizen (G2C), government-to-employee (G2E), government-to-government (G2G), and government-to-business (G2B). Each uses Internet technology to provide government services online. G2C implies that citizens are allowed to retrieve government information and complete government transactions, such as licence renewal, online. G2E implies that government agencies are allowed to interact with their employees online. G2G supports online communication and interaction between government agencies. G2B allows businesses to retrieve timely government information and complete transactions with government agencies online [Carter & Bélanger, 2004a].

Layne and Lee [2001] have developed a model for different degrees of interaction and have addressed the requirements for integration. The model consists of four stages of e-Government growth, i.e., cataloguing, transaction, vertical integration, and horizontal integration, which emphasise the citizen as a user of governmental services and offer a path for governments to follow. They also suggest challenges, both in terms of the organisation and technical factors. The model developed by Layne and Lee [2001], is furthermore used as a basis for other research projects, e.g., Reddick [2004]. Findings suggest that e-Government growth is more pronounced in some areas than others and that there is a need for research concerning interaction in the development towards one-stop government systems. According to Wimmer [2002] a holistic developmental approach provides important guidelines for addressing different aspects concerning this aspect.

The focus of the majority of research in this field is on the relationship between government and citizen and external services. Henriksen et al. [2004] point out the consequences with regards to considerations related to the allocation of resources in the public sector and Grönlund [2002] claims that it is also important to consider the efficiency of internal operations.

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5. Proposals for Future e-Government Research

Until recently, the main focus of the research has concerned the national level and significantly less has been available with reference to local governments, which does, in fact, have a greater impact on citizens and their daily lives. Consequently, we do not have adequate knowledge about e-Government initiatives and practices at the local level. Hence, there is a possible risk of duplication of local experiences and knowledge. Thus, the research directions presented in this section concern local e-Government.

There is, as for the national level, a shortage of usable theories and models for e-Government at the local level and only a few research projects into this area have been found; [Chen and Gant, 2001], [Kreizman, 2002], [Janssen and Wagenaar, 2004], [Kaliontzoglou et al., 2004], [Shackleton et al., 2004], and [Norris, 2005]. More efforts focusing on this aspect are thus required. According to Kaliontzoglou et al. [2004], local governments share some of their e-Government requirements with those at the national level, including such needs as interoperability, security, and user friendliness. Additionally, local governments have specific requirements that are either unique to their context or, because of their characteristics, demand more attention. These include cost and resource considerations, enhanced accessibility and greater scalability due to the larger number of citizens and businesses served. The prerequisites for the local level differ in comparison with the national level, e.g., the resources are fewer and more limited. There is a need for theories and models dealing with these aspects.

There have been a few case studies of local e-Government [Norris, 2005; Shackleton et al., 2004]. To lay the foundation for further research, an empirical study is suggested investigating the state of development, e-Services provided and e-Strategies of local e-Government. The study should collect, compare, and assess data about actual local e-Government to identify good and bad practices through analysis. To improve the development of local e-Government, with its special characteristics in focus, e.g., cost, resources, and enhanced accessibility, the suggestion is to find out existing or possible collaboration between different local governments and to develop guidelines for an application and knowledge centre for the sharing of knowledge and experiences.

Lenk and Traunmüller [2000] suggest that e-Government should be viewed from four perspectives: the citizen perspective, the process (reorganisation) perspective, the cooperation perspective, and the knowledge perspective. The direction for future research is proposed to be from the citizen perspective. By placing the individual user, i.e., the citizen, in focus the general perspective will be more of "Citizen Systems" and less of "Governmental Systems".

The analysis of current research shown that, thus far, e-Government has not been adequately analysed at the theoretical level with few theories having been developed. For further research, concepts of Social Systems Design [Banathy, 1996] can be used in the study of e-Government services with a view towards creating new perspectives for increasing citizen involvement in e-Government and use of e-Government services. Holmberg [2001] points out a synergetic combination of the Artefact Approach and the Social Systems Design Approach as an interesting approach for further research in this field. The social context is important and a more integrated socio-technical view is interesting in order to avoid the separation of social behaviour from technologies [Kling, 1999].

Philosophy of Technology can contribute to the area of e-Government. There are ideas and thoughts about humans and their attitudes to technology, perhaps interesting for citizen centred local e-Government research to further develop. In what ways do technology and its concepts affect the use [Stolterman, 2001] of e-Services? How should e-Services be developed from a citizen perspective? What contribution can the citizens make in this development process? Is there any common strategy for the development of local e-Government and e-Services? How should such a strategy be developed and what should it comprise? What are the current perspectives and in what way do they take citizens into consideration?

6. Summary

E-Government is about reinventing the way in which governments interact with citizens, governmental agencies, businesses, employees, and other stakeholders. It is about enhancing the democratic process and also about using new ideas to make life easier for citizens. The term e-Government is of recent origin and the research and practice is still in its infancy. The research field of e-Government is rather broad and immature and many researchers are involved in a range of different research projects in different topics in the field.

The purpose of this paper was to provide a foundation for future research in the field of e-Government and some interesting trends in current research has been identified and analysed. As a result of the analysis a rough map of current research in the field was created and several deficiencies and shortcomings were identified concerning research with e-Government. The study is limited and the ambition was not to include all of the current research in the field. However, the intention was to make the study comprehensive enough to provide a grasp of the most interesting areas in the field and to provide ideas for researchers already working in the field. As a result of the analysis, some proposals for future research and questions to be answered in further research concerning local e-Government were outlined.

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