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2008

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Jorg Becker
European Research Center for Information Systems, becker@ercis.de

Philipp Bergener
European Research Center for Information Systems, bergener@ercis.de

Bjorn Niehaves
European Research Center for Information Systems, niehaves@ercis.de

Michael Raeckers
European Research Center for Information Systems, raeckers@ercis.de

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Social Inclusiveness of Electronic Public Service Delivery in Germany –A Quantitative Analysis

Jörg Becker, Philipp Bergener, Björn Niehaves, Michael Räckers
European Research Center for Information Systems, Leonardo-Campus 3,
48149 Münster, Germany
(becker, bergener, niehaves, raeckers)@ercis.de

ABSTRACT

Digital divide is, despite all efforts in research and practice, a matter of fact in most societies. In search for specific strategies to promote digital inclusion, one has to ask for what are the specific reasons and factors behind the problem. Here, the field of E-Government features several particular characteristics, including high privacy and security demands or high complexity of administrative processes, which might hinder the societal inclusiveness of such electronic public service delivery. Addressing the question of what could be possible explanations for a lack of inclusiveness in E-Government, we develop an E-Government-inclusion-gap-model and conduct a quantitative analysis of statistical data on E-Government usage in Germany, taking into account specific social digital divide groups, such as senior citizens, people with low education or people without employment. Here, we contrast E-Government usage with E-Commerce and internet usage. Specific inclusion gaps in E-Government and their underlying issues are analysed and specific recommendations given.

Keywords

E-Inclusion, Information Society, E-Government, Technology Adoption.

INTRODUCTION

E-Government (Electronic Government) is the key element to modernising public administrations. In the move of the Lisbon-Agenda, all EU (European Union) member states have committed to implementing an E-Government-oriented strategy of public administration modernisation. Web-based information and communication technologies are intended to become the primary channel for public service delivery. According to the European Commission (European Commission 2006b), in 2004 an average of 84% of all public services was available online in the EU member states and 40% of such online services enabled transactional E-Government. For 2007, the average level of the sophistication of online government services is the transactional level (Capgemini 2007) with Germany above this average. On the other hand Accenture ranks Germany low in terms of current service satisfaction and service satisfaction improvement (accenture 2007). In the UN E-Government Readiness Report Germany dropped to 22 place in 2008 compared to eleventh in 2005 (UN 2008).

Furthermore despite all positive efforts to provide (transactional) E-Government services, analyses of usage numbers and user structures indicate that digital exclusion today is primarily a demand side rather than a supply side issue. Here, especially senior citizens, and people without employment or with low education are still very much excluded from participation in electronic services (European Commission 2006c; Timmers 2006). In June 2006, the EU ministerial conference declared to strengthen digital integration by E-Government (electronic inclusive public services), to include elderly people (E-Aging), to widely distribute electronic services (geographical digital divide), to increase accessibility of e-public services (E-Accessibility), and to strengthen digital competency (E-Competency) and cultural diversity by digital integration (cultural E-Inclusion). Such strategy reflects in specific efforts to provide citizen-centric services (Wang et al. 2005), which aim at understanding the problems and issues of those who are supposed to use them.

While both recent literature and political practice acknowledge the variety of problem spheres behind non-usage of the Internet and, in alignment, E-Government (see, for instance (Choudrie et al. 2007; Huijboom 2007; Mwangi 2007; Niehaves 2007)), there is little empirical explanation of which distinct factors impact on the E-Government inclusion gap and to what extent (Kaplan 2005; Korteland and Bekkers 2007; Williams and Dwivedi 2007). Accordingly, it is not yet clear to a necessary extent which actors should be involved in and hold responsibility for what share of an inclusion strategy in order to overcome the digital divide in E-Government. Taking the example of Germany, we therefore seek to address the research question of:

"What is the current state of inclusive E-Government and which factors could explain a possible inclusion gap to which extent?"

In order to address this research question, the following section will relate our analysis to prior studies and the existing literature. Section 3 presents a model for detailed analysis of the E-Inclusion gap, after that the research methodology will be introduced in Section 4, focusing on a quantitative analysis of comprehensive most recent Eurostat data from digital divide group perspectives. Following a comparative presentation and discussion of relevant data (Section 5), data interpretation discusses possible explanations for inclusion gaps in (German) E-Government and identifies potential operational strategies to overcome a digital divide in E-Government (Section 6). The paper will conclude with a summary of results and an outlook to potentially fruitful avenues for future research (Section 7).

E-INCLUSION RELATED WORK

The topic of E-Inclusion – participation for all in the digital, knowledge-based information society – has been gaining significant awareness across European public administrations with the upcoming of the European Commision's strategic policy framework program i2010 and its implications for an inclusive information society. In June 2005 the i2010 EU initiative[1] was launched and devoted to a set of broad policy guidelines and prioritises three major policy fields: creating a single information space, fostering innovation and investment in research and technological leadership in the EU and promoting an inclusive European information society. Focusing on the third pillar of the i2010 initiative, social inclusion in the digital information society (E-Inclusion) becomes the key to an inclusive e-society. However, the i2010 initiative does not just suggest inclusion in general, but specifies priority issues, such as more inclusive public services, which leads us to inclusive E-Government.

With the Riga Ministerial Declaration (2006), the European Commission has further specified this goal of E-Inclusion in an E-Government context. Here, E-Government, in a wider sense, is to be understood as information technology (IT) usage in governments/public administrations. Within this paper, we will focus on those elements of E-Government that involve the demand side, meaning citizens or businesses. Accordingly, E-Government here circles around the web-based electronic public service delivery. Such inclusive E-Government means, for example, that by 2010 all public websites are to be compliant with the relevant W3C common web accessibility standards and guidelines. Furthermore, it is stated that the design and delivery of key services and public service policies shall be user-centric and inclusive, "using channels, incentives and intermediaries that maximise benefits and convenience for all so that no one is left behind." (European Commission 2006b) Finally it also proposes to ensure "that electronic documents are available in such a way that they can be used by people with disabilities in an appropriate and, where possible, EU-wide recognised" (European Comission 2006) format. With these statements, declared by 34 member countries, E-Inclusion in E-Government or inclusive E-Government becomes a key issue in many EU countries. A major measurable goal, set by the Riga Ministerial Declaration – and also motivating this study on barriers for inclusive E-Government – is the ambition to address E-Inclusion by reducing "the differences in Internet usage between current average use by the EU population and use by elderly people, people with disabilities, women, lower education groups, unemployed and 'less-developed' regions" (European Commission 2006b) by half, comparing 2010 to 2005. With our study we seek to contribute to this timely topic and identify possible rationales for existing E-Inclusion gaps, so that future studies can focus on how to properly address these barriers to inclusive E-Government.

Much related work on E-Government and E-Inclusion exist. Core questions in this field are, for instance, of E-Government barriers (Sanchez et al. 2003), user perception of E-Government initiatives (Lee and Kim 2006), Digital Divide in E-Government (Hüsing and Selhofer 2004)

E-INCLUSION GAP MODEL

Starting point for our analysis of the digital divide in Germany and other European countries is the assumption that there are several factors influencing the usage of E-Government by citizens, e.g. costs, qualification or trust (Ryder and Skok 2003). However, not all of these factors are exclusive to E-Government. Some address the participation in the information society in general. In order to perform a more detailed analysis of these factors we introduce an "E-Inclusion gap model". In this model we distinguish different steps of participation in the information society and analyse the gaps between these steps.

The basis for taking part in the information society is access to the internet. Without this access, advanced services like E-Government or E-Commerce cannot be used by citizens. In the literature, access to the internet has been identified as an important factor influencing the adoption of E-Government, as well (Koh et al. 2005; Srivastava and Teo 2004; von Haldenwang 2004).

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[1] http://ec.europa.eu/information_society/eeurope/i2010.

Gap A (Total population – internet usage): Following the explanation above, the first gap in the model is the gap between the total population and the part of it using the internet. People in this gap do not take part in the information society as they are missing the basic requirement of access to the internet. Possible reasons for this gap are costs for internet access or mistrust towards the internet (McKnight et al. 2002; Ryder and Skok 2003).

The second figure used to analyse the barriers to the usage of E-Government is the use of E-Commerce by individuals. The usage of E-Commerce shows that an individual is willing and able to engage in more complex actions in the internet. Literature points out similarities between the adoption of E-Government and E-Commerce (Carter and Bélanger 2004; Srivastava and Teo 2006).

Gap B (Internet usage – E-Commerce usage): The individuals in this gap fulfil the elementary requirement of having access to the internet. However, they do not engage in transactions. Reasons for this might be security aspects (Bélanger et al. 2002; McKnight et al. 2002) or a lack of internet skills (Bonfadelli 2002; Lenz 2000).

The third figure of relevance in the model is the E-Government usage for information retrieval. In common models of E-Government service development the provision of information is the first step when deploying E-Government services (Capgemini 2007). Accordingly the retrieval of this information can be seen as the first step in using E-Government services.

Gap C (E-Commerce usage – E-Government usage for Information): People in this gap are performing transactions using the internet. Therefore they have the qualification necessary to engage in more complex actions and also no trust issues with the internet. However they do not participate in E-Government at all. This gap could be explained through a general preference for personal contact when performing government transactions or missing knowledge about the available E-Government information and services.

The fourth and last measure of the model is the usage of E-Government transaction. The use of transactional E-Government services by an individual marks the full usage of the potential of E-Government services. It therefore represents the desired for all individuals of an inclusive information society.

Gap D: (E-Government usage for Information – E-Government usage for transaction): Individuals belonging to this gap are aware of the presence of E-Government as they use it as an information source. However, they do not use E-Government for transactions. Possible explanations for this gap are missing trust in E-Government services (Carter and Bélanger 2005; Warkentin et al. 2002), deficits in the implementation of E-Government services or even the lack of transactional E-Government services.

RESEARCH METHODOLOGY

In order to answer the research question and populate the model, a comprehensive quantitative analysis of current Eurostat data from 2006 (Eurostat 2007) on individual internet-based service usage was conducted. A methodological description of the survey is given by the European Commission (European Commission 2006a). While such data is secondary data with the advantages of being collected independently and therefore unbiased and being publicly available, a specific investigation into the in- and exclusiveness in European, and specifically German E-Government has not yet been undertaken. This surprising as the survey contains questions about the E-Government usage by individuals and differentiates different target groups which are important in the context of E-Inclusion. Consequently, the analysis of such comprehensive and high quality and comprehensive data (sample size: n=21 160) offers great potential to shed new light on the question of the status-quo of inclusive E-Government and on the question of which factors could explain possible inclusion gaps. Table 1 shows questions used to collect the data for the different variables.

Analysis Dimension	Question
Internet	I have used the Internet in the last 3 months
E-Commerce	I bought or ordered goods or services, over the Internet, for non-work use, in the last 3 months
E-Government for Information	I have used Internet, in the last 3 months, for obtaining information from public authorities web sites
E-Government for Transaction	I have used Internet, in the last 3 months, for sending filled forms

Table 1. (Individual) Usage of Internet, E-Commerce, E-Banking, and E-Government and Corresponding Questions.

Moreover, in order to allow for a deeper analysis of non-usage of E-Government services, reasons for non-usage (on an individual basis) are taken into account and range from non-availability of services over concerns about data security, privacy or costs to complexity of (electronic) public services (see Table 2).

Reason	Question
Service not available / to difficult to find	I'm not using Internet for dealing with public services or administrations, because: The services I need are not available on-line or difficult to find
Personal contact missed	I'm not using Internet for dealing with public services or administrations, because: I miss personal contact
Immediate response missed	I'm not using Internet for dealing with public services or administrations, because: I miss immediate response
Concerned about data security	I'm not using Internet for dealing with public services or administrations, because: I'm concerned about protection and security of my data
Concerned about additional costs	I'm not using Internet for dealing with public services or administrations, because: I'm concerned about additional costs
Too complex	I'm not using Internet for dealing with public services or administrations, because: it's too complex
Other reasons	I'm not using Internet for dealing with public services or administrations, because of other reasons

Table 2. (Individual) Reasons for Non-Usage of E-Government and Corresponding Questions.

These two analysis dimensions (usage data and reasons for non-usage) are mirrored against potential digital divide group perspectives (besides population[2] average: senior citizens of age 55 to 74, citizens with low education,[3] citizens living in thinly populated areas,[4] and citizens without employment). For further divide groups like individuals with disabilities or with a migration background, no data was available in the survey, probably since data about these groups is hard to capture because of their disabilities or language barriers respectively.

DATA: IN- AND EXCLUSIVENESS IN E-GOVERNMENT

Analysing in- and exclusiveness of electronic public service delivery in Germany, data regarding internet, E-Commerce, and E-Government usage was contrasted. Table 3 shows the percentage of usage of for different groups from the sample. Here, distinct levels of interaction in E-Government were differentiated (E-Government for information, and transaction). Similar Data was also found for the UK (Dutton and Helsper 2007).

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[2] Individuals aged 16 to 74

[3] Areas with up to 100 inhabitants per square kilometre

[4] ISCED Education Levels 0, 1 or 2, http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm.

	Total Population	Senior citizens (55-74)	Citizens with low education	Thinly populated areas	Unem- ployed citizens
Internet	69%	37%	61%	65%	66%
E-Commerce	38%	15%	29%	35%	31%
E-Government for Information	28%	12%	17%	22%	29%
E-Government for Transaction	9%	n.a.	5%	8%	7%

Source: Data based on Eurostat (2006).

Table 3. Usage of Internet and E-Government by population groups in Germany

In order to analyse the role of certain digital divide groups regarding the in- and exclusiveness of German E-Government, group-specific data on internet, E-Commerce, and E-Government usage was examined (Table 4) using the relation between the usage of a service through onliners from a digital divide group and the usage in

	Total population	Senior citizens (55-74)	Citizens with low education	Thinly populated areas	Unem- ployed citizens
Internet	1.00	1.00	1.00	1.00	1.00
E-Commerce	1.00	0.74a	0.87	0.98	0.85
E-Government for Information	1.00	0.78	0.70	0.86	1.10
E-Government for Transaction	1.00	n.a.	0.56	0.91	0.76

Source: Data based on Eurostat (2006).

a   -   eService Usage Ratio describes the relation of specific eService usage within a certain digital divide group to   eService usage among the average population, e.g., (SeniorCit.-   E-CommerceUsers/SeniorCit.Onliners)/(Aver.Pop.E-CommerceUsers/Aver.Pop.Onliners); (15%/37%)/(38%/69%)=0.74

Table 4. eService Usage Ratio of Digital Divide Group Onliners and Population Average in Germany.

All digital divide groups feature generally lower usage numbers in all analysed dimensions compared to the German population average (single exception: informational E-Government by unemployed citizens). Senior citizens are most affected by the digital divide and show lowest usage numbers in all dimensions.

Even though citizens with low education use the internet less often than the average (low educated: 61%, average: 69%), the usage of E-Commerce, and E-Government is over-proportionally little. For instance, 55% (=average E-Commerce Usage/average Internet usage; 32%/69%) of all population Onliners (individuals using the internet) use E-Commerce, while only 47% of the Onliners with low education do so. Comparing these two groups, the Onliners' usage in E-Commerce (population average: 38%, low educated: 29%), and transactional E-Government (population average: 13%, low educated: 8%) provides a similar picture.

Analysing the specific reasons for non-usage in such digital divide group by contrasting their relative frequency in the group with the population average, perspectives led to the following key findings (see Table 5).

As for the population average, missing personal contact, concerns about data security, and the complexity of services are considered as major reasons for E-Government non-usage among digital divide groups in Germany. Concerns about data security were mentioned as reasons for non-usage of E-Government 1.27 times and 1.22 times more often by senior citizens resp. citizens from thinly populated areas than the population average. The complexity of E-Government services was mentioned as a reason for non-usage 1.24 times and 1.13 times more often by senior citizens resp. unemployed citizens than the population average.

Relation to population average	Total population	Senior citizens (55-74)	Citizens with low education	Thinly populated areas	Unem-ployed citizens
Service not available / too difficult to find	1 (21%)	0.78	0.96	0.99	n.a.
Personal contact missed	1 (48%)	1.08	0.92	1.04	1.03
Immediate response missed	1 (13%)	n.a.	1.04	0.94	n.a.
Concerned about data security	1 (40%)	0.93	0.85	1.03	1.11
Concerned about additional costs	1 (13%)	1.27	0.87	1.22	n.a.
Too complex	1 (24%)	1.24	0.95	1.01	1.13
Other reasons	1 (16%)	0.89	1.17	0.90	n.a.

Source: Data based on Eurostat (2006).

a - Relation to population average used to highlight group specific reasons
       E.g., 0,78 (Senior citizens, Reason: Service not available) represents 16% (0,78*21%=16%) of the senior citizens giving that very reason.

Table 5. Reason for Non-Usage by Population Group in Germany.

DISCUSSION AND INTERPRETATION: GAP ANALYSIS

Operational strategies for inclusive E-Government necessitate a specification of the inclusion gap. In order to be able to derive toeholds for operational steps to overcome the given inclusion gap in German E-Government, a detailed analysis of the inclusion gap is necessary. Here, full inclusiveness could be understood as (process towards the) ideal state in which the number of actual users of a certain technology or service converges towards the number of all of its potential users. In this context, the total population (100%) can be considered as the full potential of users. On the other hand, only 9% of such total population did use E-Government for transaction (within the given time frame). The resulting inclusion gap concerning E-Government in Germany, in the widest sense, comprises 91%. However, to answer the question of why 91% of the population did not use transactional E-Government needs further explanation and differentiation (Kaplan 2005). Therefore, the E-Inclusion gap model, which was presented in section 3, is applied to the data for detailed analysis (see Figure 1):
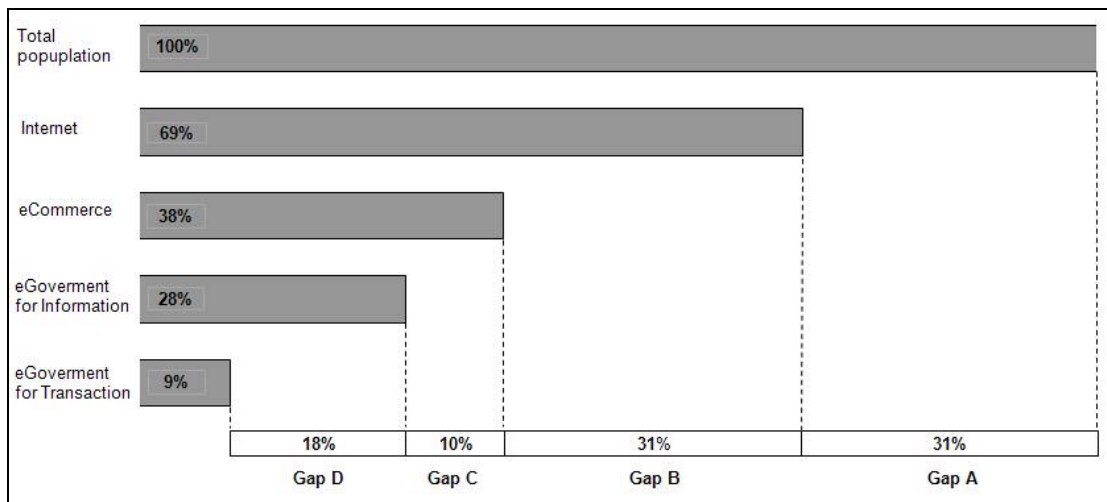

Figure 1. E-Government Inclusion Gaps in Germany.

Gap A: *[Total Population – Internet Usage]* In Germany, only 69% of the total population have used the internet (during the last three months). Consequently, a number of 31% of the population (Gap A) have not used the internet during this time frame. The following aspects could offer toeholds for interpreting such inclusion gap:

Infrastructure. E-Inclusion literature offers several issues which might impact on infrastructure availability. For instance, internet and broadband connection is not given in some under-populated areas (see internet usage in thinly populated areas is 0.65; compared with 0.69 average).

Accessibility. Taking into account the social and socio-demographical view on inclusion, age and education influence internet usage. For instance, senior citizens (of age 55 to 74) did use the internet in only 37% of all cases, citizens with low education in 61% (compared with 69% population average). Especially these target groups need accessible web sites which are designed for their specific needs..

Gap B: *[Internet Usage – E-Commerce Usage]* While 69% of the total population have used the internet (during the last three months) only 38% of the population have used it for buying or ordering goods over the internet. This leaves a number of 31% of the population being online but not utilising E-Commerce services (Gap B). The following aspects could offer toeholds for interpreting this inclusion gap:

Security, trust, complexity. Besides such factors of infrastructure and accessibility (as discussed above), E-Commerce usage involves issues as security, trust, and service complexity (Aldridge et al. 1997). E-Commerce habitually involves financial transactions and monetary investments, often requiring providing credit card details, security mechanisms, personal data etc. Here, for instance, 55% of all population Onliners use E-Commerce, while only 47% of the Onliners with low education do so. Moreover, only 41% of the senior citizen Onliners did use E-Commerce offerings during the last 3 months.

Gap C: *[E-Commerce Usage – E-Government for Information]* While 38% of the Germans used E-Commerce services (during the last three months) only 28% have used it for obtaining information from public authority websites (E-Government for Information). This leaves a number of 10% of the population being willing to utilise E-Commerce but not E-Government (Gap C). The following aspects could offer toeholds for interpreting such inclusion gap:

Marketing and marketability. Besides such factors mentioned above (e.g., accessibility, trust, complexity etc.) marketing and marketability of electronic public services might influence on E-Government non-usage. While commercial services are habitually higher frequented than governmental services, still 21% of the German population state as a reason for not using E-Government that the demanded services would not be available or would be hard to find. This corresponds to the findings of current Accenture study "Leadership in Customer Service" according to which only 29% of all Germans feel informed about government services (accenture 2007). While commercial internet has already developed and made use of technology potential, such as amazon.com, ebay.com or diverse social network services, public sector offerings are still missing such 'killer applications'. The simple fact of missing marketing budgets for advertising E-Government services, at least in German public administrations, adds on to such E-Government inclusion gap (Kaplan 2005).

Personal contact. 48% of the population is reluctant to make use of E-Government services due to missing personal contact. For digital divide groups like senior citizens this reason is even more important. Interpretations could be that a) E-Commerce services are nowadays much more established and perceived to be on an adequate security level, b) E-Government services are a more sensitive field to the citizens, and/or c) E-Government services and their underlying processes are perceived as very complex and intransparent so that people seem to be in need of reliable and personal guidance through the complexity of administrative issues.

Gap D: *[E-Government for Information – E-Government for Transaction]* 28% of the German population made use of informational E-Government during the last three months, while only 9% conducted online transactions in this area. This leaves a number of 19% 'looking, but not booking' (Gap D). The following aspects could offer toeholds for interpreting such inclusion gap (see also West 2004):

Security and service complexity. While factors of security and service complexity have been discussed relating to transactional E-Commerce (38% usage), these issues seem to affect on transactional E-Government in an even stronger manner (only 9% usage). Here, 40% of the population name concerns about data security as a major reason for not using E-Government. Service complexity, mentioned in 24% of the cases, plays an evenly important role in non-usage behaviour. Regarding such complexity concerns, digital divide groups are strongly affected, e.g. senior citizens naming complexity as non-usage reason 1.24 times as often as the population average (unemployed: 1.13 times, thinly populated: 1.01 times).

Costs. Going hand in hand with security issues in E-Government, costs become an important reason of non-usage. This holds specifically true for transactional services which, in governmental fields, require rigid authentification and authorisation mechanisms. While E-Commerce often only relies on password or credit card details and E-Banking often utilises a PIN &

TAN-method, transactional E-Government (in Germany) in most cases requires an electronic/digital signature. Investment costs regarding necessary equipment seem to be a major concern for senior citizens and people from thinly populated areas which mentioned costs as reason for non-usage of E-Government 1.27 respectively 1.22 times as often as the average population (giving this reason in 13% of the cases).

Taking into account these different inclusion gaps in German E-Government and their underlying currents, operational inclusion strategies have to be developed. This may include, for instance, general measures in order to further establish an inclusive information society, e.g. measures to increase internet literacy, infrastructure projects etc. Such measures would increase the web usage among the population and/or specific digital divide groups (Gap A). On the other hand, one might also identify shares of the inclusion gap which might possibly be addressed by E-Government managers. For instance, corresponding measures could address creating a certain awareness among citizens for available services (Gap C) or engineering E-Government services in a way that they are less complex, easier to understand, bundled more accessibly (Wimmer 2002), and/or guided by avatars, e-learning sessions etc. (Gap D).

SUMMARY AND FUTURE RESEARCH

From the perspective of E-Government managers, there is an uncertainty of which measures to undertake in order to increase inclusiveness of electronic public service delivery. One can identify several problem streams, issues and barriers overlapping and adding upon one another creating the current picture of prevailing E-Government exclusiveness. But which measures are to be undertaken from the perspective of an E-Government manager, maybe on the local administrative level, and to which extent do such measures potentially impact in- and exclusion? Here, an analysis of different inclusion gaps in Germany, based on current Eurostat data, provided a more differentiated picture. 18% of the population make use of informational, but not transactional E-Government services. In this regard, concerns regarding service complexity, data security, and costs are mentioned as major reasons for non-usage. Such issues were even over-proportionally often named by senior citizens, people from thinly populated areas, and citizens without employment. Getting citizens 'from looking to booking' seems to necessitate measures aiming at the general population, but also measures taking into account specific digital divide group needs. Moreover, as 38% of the population utilise E-Commerce services, seemingly, e.g. accessibility, security, and service complexity issues did not hold back more than a third of the Germans from high value internet services. This leaves implications for E-Government managers to further improve electronic public services delivery and maybe also to stimulate an awareness for such services by means of marketing.

Further research might aim at collecting best-practices and successful projects on inclusive E-Government. Here, the analysis undertaken to identify specific inclusion gaps (E-Inclusion Gap Model) might help to structure such efforts.

REFERENCES

1. accenture (2007) Leadership in Customer Service. Delivering on the Promise.
2. Aldridge, A., White, M., and Forcht, K. (1997) Security Considerations of Doing Business Via the Internet: Cautions to Be Considered, *Internet Research*, 7, 1, 9-15.
3. Bélanger, F., Hiller, J., and Smith, W.J. (2002) Trustworthiness in Electronic Commerce: The Role of Proivacy, Security, and Site Attributes, *Journal of Strategic Information Systems*, 11, 3, 245-270.
4. Bonfadelli, H. (2002) The Internet and Knowledge Gaps, *European Journal of Communications*, 17, 1, 65-84.
5. Capgemini (2007) The User Challenge - Benchmarking the Supply of Online Public Services,
6. Carter, L., and Bélanger, F. (2004) The Influence of Perceived Characteristics of Innovating on E-Government Adoption, *Electronic Journal of e-Government*, 2, 1, 11-20.
7. Carter, L., and Bélanger, F. (2005) The Utilization of E-Government Services: Citizens Trust, Innovation and Acceptance Factors, *Information Systems Journal*, 15, 1, 5-25.
8. Choudrie, J., Brinkman, W.-P., and Pathania, R. (2007) Using Diffusion Theory to Determine the Digital Divide in E-Services: Two Uk Local-Area Perspectives, *Electronic Government, an International Journal*, 4, 3, 345-359.
9. Dutton, W.H., and Helsper, E.J. (2007) The Intenet in Britain: 2007, Oxford Internet Insitute, Oxford.
10. European Comission (2006) Revisiting E-Inclusion. From Vision to Action,
11. European Commission (2006a) Methodological Manual for Statistics on the Informations Society, Office for Official Publications of the European Communities, Luxembourg.
12. European Commission (2006b) Ministerial Declaration, Riga, Latvia, 11 June 2006.
13. European Commission (2006c) Revisiting E-Inclusion. From Vision to Action, Office for Official Publications of the European Communities, Luxembourg.
14. European Union (2006) Ministerial Declaration, Riga, Latvia, 11 June 2006.
15. Eurostat (2007) Statistics on Households/Individuals and the Information Society, Eurostat.

16. Huijboom, N. (2007) Social Capital and Ict Adoption in the Public Sector, *Proceedings of the 8th annual international conference on Digital government research: bridging disciplines & domains*, Philadelphia, Pennsylvania.
17. Hüsing, T., and Selhofer, H. (2004) Didix: A Digital Divide Index for Measuring Inequality in It Diffusion, *IT & Society*, 1, 7, 21-38.
18. Kaplan, D. (2005) E-Inclusion: New Challenges and Policy Recommendations.
19. Koh, C., Ryan, S., and Prybutok, V.R. (2005) Creating Value through Managing Knowledge in an E-Government to Consituency (G2c) Environment, *Journal of Computer Information Systems*, Summer, 32-41.
20. Korteland, E., and Bekkers, V. (2007) Diffusion of E-Government Innovations in the Dutch Public Sector: The Case of Digital Community Policing, in M. Wimmer, J. Scholl and A. Grönlund (Eds.) *Electronic Government*, Springer Lecture Notes in Computer Science 4656, Berlin, Heidelberg, 252-264.
21. Lee, J., and Kim, J. (2006) Grounded Theory Analysis of E-Government Initiatives: Exploring Perceptions of Government Authorities, *Government Information Quarterly*, 24, 135-147.
22. Lenz, R.G. (2000) The E-Volution of the Digital Divide in the Us: A Mayhem of Competing Metrics, *Info*, 2, 4, 355-377.
23. McKnight, H., Choudhury, V., and Kacmar, C. (2002) Developing and Validating Trust Measures for E-Commerce: An Integrative Typology, *Information Systems Research*, 13, 3, 334-359.
24. Mwangi, W. (2007) The Social Relations of E-Government Diffusion in Developing Countries: The Case of Rwanda, *Proceedings of the 8th annual international conference on Digital government research: bridging disciplines & domains*, Philadelphia, Pennsylvania.
25. Niehaves, B. (2007) Innovation Processes in the Public Sector – New Vistas for an Interdisciplinary Perspective on E-Government Research?, in Wimmer, M. A., J. Scholl and A. Grönlund (Eds.) *Electronic Government*, Springer Lecture Notes in Computer Science 4656, Berlin, Heidelberg, 23-34.
26. Ryder, G., and Skok, W. (2003) Harbinger of a Dilemma: An Evaluation of the Digital Divide and E-Government Strategies on the Isle of Man, *Proceedings of the 7th Pacific Asia Conference on Information Systems (PACIS2003)*, Adelaide, Australia, 29-51.
27. Sanchez, A.D., Koh, C.E., Kappelmann, L.A., and Prybutok, V.R. (2003) The Relationship between It for Communication and E-Government Barriers, *Proceedings of the 9th Americas Conference on Information Systems (AMCIS2003)*, Tampa/Florida, 835-844.
28. Srivastava, S.C., and Teo, T.S.H. (2004) A Framework for Electronic Government: Evolution, Enablers and Rsource Drainers, *Proceedings of the Eighth Pacifica Asia Conference on Information Systems (PACIS 2004)*, Shanghai, China.
29. Srivastava, S.C., and Teo, T.S.H. (2006) Determinants and Impact of E-Government and E-Business Development: A Global Perspective, *Proceedings of the 27th International Conference on Information Systems (ICIS2006)*, Milwaukee, 465-482.
30. Timmers, P. (2006) E-Inclusion in Der Eu: Bedeutung Und Auswirkungen, in Zechner, A. (Ed.) *Handbuch E-Government*.
31. UN (2008) Un Global E-Government Readiness Report 2005. From E-Government to Connected Governance, United Nations, New York.
32. von Haldenwang, C. (2004) Electronic Goverment (E-Government) and Development, *The European Journal of Development Research*, 16, 2, 417-432.
33. Wang, L., Bretschneider, S., and Gant, J. (2005) Evaluating Web-Based E-Government Services with a Citizen-Centric Approach, *Proceedings of the 38th Annual Hawaii International Conference on System Sciences (HICSS2005)*, Hawaii.
34. Warkentin, M., Gefen, D., Pavlou, P., and Rose, G. (2002) Encouraging Citizen Adoption of E-Government by Building Trust, *Electronic Markets*, 12, 3, 157-162.
35. West, D.M. (2004) E-Government and the Transformation of Service Delivery and Citizen Attitudes, *Public Administration Review*, 64, 1, 15-27.
36. Williams, M., and Dwivedi, Y. (2007) The Influence of Demographic Variables on Citizens' Adoption of E-Government, *Proceedings of the 13th Americas Conference on Information Systems (AMCIS2007)*, Keystone/CO.
37. Wimmer, M.A. (2002) Integrated Service Modelling for Online One-Stop Government, *Electronic Markets*, 12, 3, 149-156.