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# The Role of Trust in E-Government Adoption: A Literature Review

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## ABSTRACT

Citizens'<sup>1</sup> decision to use online services is influenced by their trust in technology and the agency involved. Low levels of citizen trust towards e-Government services in Germany create concerns in the Government. However, neither the issue of trust nor its influence on the willingness of citizens for using online public services has been examined thoroughly till now. Literature in similar contexts including e-Commerce and computer mediated transactions has already recognized the importance of considering cultural characteristics in online trust research. This paper reveals results of an extensive literature review screening the existing literature of trust research in e-Government. We conclude that, despite its critical importance, no comprehensive study has been conducted in Germany disclosing the decision making mechanism of citizens for using e-Government services – especially concentrating on the aspect of trust.

## Keywords

E-Government, Trust, Culture, Germany, Citizen

## INTRODUCTION

Public administrations are transforming to become more efficient, transparent and customer-oriented service providers. In order to achieve this transformation, appropriate utilization of ICT plays a crucial role. In recent years, informatisation of public services – known as e-Government – has been identified as a key facilitator for modernization of public administrations. However, offering a wide range of public services does not guarantee their usage by citizens. Successful implementation of e-Government projects depends on the public acceptance. Research studies and experiences confirm that users' acceptance for e-Government services is not granted per se (Lee and Rao, 2005). As a result, the actual usage of e-Government by citizens is much lower than its potential (United Nations, 2008). Besides utilization of newest technology, research and experiences in similar contexts (e.g. e-Commerce) reveal that trust is an important influence factor for the acceptance of online services.

In Germany, the acceptance of e-Government services is also quite low. To increase the success of its initiatives and promote the modernization process in public administrations, the German Government has initiated an action plan. The sensitivity of citizens towards projects involving online transfer of data or personal information is remarkably high. Likewise, public discussions indicate higher levels of concern referring to privacy. This fact creates concerns in the Government for the acceptance of online public services. Some political parties have called for a stricter protection for privacy and personal data (Müller, 2008). Accordingly, increasing trust of citizens for e-Government services has been underlined by the German Federal Government Commissioner for Information Technology as one of the highest priorities of Government in Germany (Beus, 2009). Until now, however, the factors of trust influencing willingness of citizens to use e-Government services in Germany have not yet been fully understood.

Besides clearly identifying this research gap, this paper demonstrates the results of the literature review guiding our ongoing research. The necessity of including cultural differences in online trust research has been proven in e-Commerce (Cyr, 2008;

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<sup>1</sup> In this paper, the term citizen is used to indicate all residents and other potential users of e-Government services.

Gefen and Heart, 2006; Jarvenpaa, Tractinsky and Vitale, 2000; Pavlou and Chai, 2002), m-commerce (Vance, Elie-Dit-Cosaque and Straub, 2008) and computer-mediated transactions (Kim, 2008). In recent years, there has been an increasing interest in trust as a key enabler for the successful adoption of e-Government initiatives (Bavec, 2006; Srivastava and Teo, 2005). Accordingly, the issue of trust and security in e-Government has become the top research priority by both the individual EU member states and the EU as a whole (Wimmer and Codagnone, 2007).

The focal point of our research is finding the specific factors of trust that influence decision making of citizens in Germany concerning the usage of e-Government services. Since global experiences can only provide limited insights due to the cultural variances, our aim is to investigate studies, which are designed and validated specifically for the German citizens. The remainder of this paper is structured as follows. First, we give a short overview of trust and culture as well as their roles concerning the acceptance of e-Government services. Second, we summarize our purpose for conducting this study and the research focus. Next, we discuss the methodology for reviewing the existing literature and then present findings. We finalize the paper with a discussion, which also outlines further areas of research.

## THE ROLE OF TRUST AND CULTURE FOR THE ACCEPTANCE OF E-GOVERNMENT SERVICES

This section briefly introduces the role of trust for the acceptance of e-Government services as well as the impact of cultural characteristics on trust research.

### Trust

Trust is a very broad issue which spans several disciplinary perspectives; including psychology, philosophy, social science, business and management (Bhattacharya, Devinney and Pillutla, 1998; Carbo, 2007; Gambetta, 1998). Nonetheless, these different disciplinary areas share common values of trust. The considerable overlap and synthesis in understanding of trust across disciplines (Rousseau, Sitkin, Burt and Camerer, 1998) enables researchers to reuse outcomes among various contexts.

Many definitions of trust have been proposed until now. In most of them, the vulnerability of the trustor of losing something of importance by engaging in a trusting relationship was emphasized as a key element (Goffman, 1972; Hosmer, 1995; Rotter, 1971; Zucker, 1986). A frequently cited definition of trust is the one suggested by Mayer, Davis and Shoorman (1995), which defines trust as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (p.712).

Regardless of its context, trust has specific characteristics. First of all, it is closely related to risk in question and the need for trust arises only in the presence of risk (Adams, 1995; Coleman, 1990; Luhmann, 1989). Risk causes uncertainty and insecurities, whereas trust is an effective instrument to deal with them. It is important to mention that trust does not eliminate the risk itself. Rather it helps to overcome risk by changing its perception. This brings us to the second characteristics of trust, its subjectivity. Trust is situation and person specific (Bhattacharya et al., 1998). It is dependent on the subjective judgment of perceived risk in question. There is a difference between actual and perceived risk. Perceived risk is the subjective judgment of people about the existence and severity of the actual risk. The necessary level of trust depends on perceived risk, hence differs from one individual to another. People judge the risk involved in a specific situation subjectively and may decide to take the risk, if they see higher amount of benefits than risks. Perception of risk is a complex phenomenon and depends on several factors including past experiences. Too much trust can even increase the existing risk by blocking its perception (Krcmar, 2009). The third characteristic of trust is its future-oriented nature. It is necessary for the risky situations in future and involves expectancy that the trusted partner will not behave opportunistically.

### Culture

According to Taylor (1889) culture is “that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society” (p. 1). Consequently, nations are societies with common values and norms. National culture and trust are proven to be closely related (Doney, Cannon and Mullen, 1998; Fukuyama, 1995; Jarvenpaa et al., 2000). It is even argued that one cannot be understood without considering the other (Hofstede, 1980). Doney et al. (1998) argued that each culture’s collective programming results in different cultural norms, which directly influence the decision mechanisms used to decide whether and whom to trust. According to Hofstede (1980), the development of trust in a culture depends on the societal norms and values that guide people’s behavior and beliefs. As a result, nations react to risk and handle trust differently. Therefore, the concept of trust should be analyzed from the perspective of national culture. Recently, it has also been proven empirically that “research on trust should include national culture as a prime aspect” (Gefen et al., 2006).

Cultural characteristics reveal important aspects that may account for the beliefs about government and privacy concerns. Hofstede (1980) identified national cultures in a taxonomy of five dimensions: power distance, uncertainty avoidance, individualism (vs. collectivism), masculinity (vs. femininity) and time orientation. His framework of cultural classification is widely recognized and used for cross-cultural research. In the area of trust, it is used to depict how cultural norms and values influence trust-building processes of societies (Doney et al., 1998). Especially relevant for trust research are the factors of “power distance” and “uncertainty avoidance”. These factors have also been subject to other trust studies (El Said, Hone and Ali, 2005; Warkentin, Gefen, Pavlou and Rose, 2002). Power distance measures how a society deals with levels of status and distribution of power. In high power distance societies, less powerful members accept the unequal distribution of social power and are more likely to obey policy-makers. Therefore people in these societies are more likely to accept e-Government services. Uncertainty avoidance deals with a society’s tolerance for uncertainty and ambiguity. Cultures with low uncertainty avoidance tolerate risk easily and are likely to take risks (Hofstede, 1980; Kale and Barnes, 1992). On the other hand, cultures with high uncertainty avoidance are more concerned about uncertainty and desire higher level of trust to avoid uncertainty. As a result, they are less likely to accept e-Government services due to the existence of inherent risks and threats to privacy. According to Hofstede’s analysis (2007), Germany has considerably low power distance – 38 % below the world average – and slightly high uncertainty avoidance – 1.5 % above the world average. Both factors imply that the citizens of Germany are less likely to accept e-Government services.

Until now most trust research for online environments has been conducted in the US. Due to the exceptionally high degree of individualism and low degree of uncertainty avoidance of the US culture, it has been questioned in literature whether these studies can readily be generalized to other cultures (Bagozzi, Wong, Abe and Bergami, 2000; Benbasat, Gefen and Pavlou, 2008). Hofstede’s cultural dimensions (2007) also yield similar insights. For example, his framework implies ample differences between the German and US cultures. Firstly, the uncertainty avoidance index of Germany is only 1.5 % above the world average but 46 % higher than the US. This remarkable difference indicates that risk toleration of two cultures is considerably different. Germans cannot tolerate risk easily and are much more resistant to change than Americans. This follows from the fact that people in high uncertainty avoidance cultures show a strong resistance to change (Kale et al., 1992). Secondly, Germany has 12.5 % lower power distance index than the US, which constitutes another challenge for the acceptance of e-Government services in Germany. Therefore, the special characteristics of nations necessitate consideration of cultural aspects for a better understanding of their trust related behavior.

## PURPOSE OF THE LITERATURE REVIEW

As discussed above, the importance of trust research influencing the willingness to use online services has already been confirmed. Although e-Government services are a type of online services, there are also specific characteristics of it. Governments have to serve all citizens without exceptions, whereas businesses are free to choose their customers and customize their services accordingly. The expectations of citizens towards government cannot be compared with other organizations. Consequently, the dynamics of e-Government services are similar to, but not the same as the other online services, which results in a specific research area. The increasing popularity of trust in recent years – for the acceptance of e-Government services as well as other online environments – is not without its reasons. The recurring news in the global media about phishing cases, data scandals, selling customer data and revealing employee records intensify concerns of citizens over protecting their privacy and personal data. This fact increases the sensitivity of citizens and slows down the acceptance of e-Government initiatives.

It should be noted that the acceptance of e-Government services depends on various factors including trust in government and the medium. However, the increasing sensitivity of citizens and media regarding trust is remarkable. This being the case, it should be clear to governments that an advanced technical infrastructure is not enough for the acceptance of e-Government services. Without a comprehensive analysis of factors such as trust – including trust in government –, privacy, perceived risk and their role referring to the decision making of citizens, the promised potential of e-Government cannot be reached. After all, the success of government leaders is measured by the benefits created for citizens and the success of their initiatives. Therefore gaining the trust of citizens is of utmost importance to governments, which directly influences the acceptance of their e-Government services. This is also valid for the German government.

The focus of this research is to identify the studies that discuss the factors of trust influencing e-Government acceptance by the German citizens. To tackle this issue, our first step is performing an extensive literature analysis to find the existing studies, which examine the factors of trust influencing acceptance of e-Government services by citizens. Second, we analyze these studies more precisely in terms of their discussion of integrating cultural constructs into trust research. Next, we screen them to find out the ones that have explored specifically the German citizens.

## METHODOLOGY

It is crucial to conduct a literature review before proceeding with any research study (Hart, 1998). Webster and Watson (2002) emphasize that review of prior relevant research is essential for any academic project and “it facilitates theory development, closes areas where a plethora of research exists, and uncovers areas where research is needed” (p 13).

### Identification of relevant literature

An effective literature review should involve the leading literature as it is likely to cover the major contributions (Webster et al., 2002). Accordingly, we searched in all Quality IS Literature stated in (Levy and Ellis, 2006) that were accessible from our academic environment. As shown in Table 1, we also included the publicly available academic literature database of Google Scholar in our search, in order to avoid missing any relevant documents.

The search was implemented on all sources that were accessible through these electronic databases: journals, conference proceedings, books, reference works, online reports and magazine articles.

The ACM Digital Library	<a href="http://portal.acm.org">http://portal.acm.org</a>
Business Source Premier (EBSCO)	<a href="http://search.ebscohost.com">http://search.ebscohost.com</a>
ISI Web of Science	<a href="http://apps.isiknowledge.com">http://apps.isiknowledge.com</a>
Elsevier ScienceDirect	<a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a>
IEEE Xplore	<a href="http://ieeexplore.ieee.org">http://ieeexplore.ieee.org</a>
Wiley Interscience	<a href="http://www3.interscience.wiley.com">http://www3.interscience.wiley.com</a>
Online-Contents-Sondersammelgebietsausschnitte (OLC-SSG)	<a href="http://gso.gbv.de">http://gso.gbv.de</a>
Google Scholar	<a href="http://scholar.google.de/">http://scholar.google.de/</a>

**Table 1. Online databases included in the literature review**

### Data collection and evaluation

In order not to miss any relevant documents, we preferred to perform a broad research and eliminate the irrelevant documents manually. As we were interested in conceptual and empirical studies analyzing the role of trust influencing the acceptance of e-Government services, we used the keywords of “trust” and “e-Government”. Each time, we repeated the search also with the keyword “eGovernment” to cover different writing styles. As shown in the table below, the selected keywords resulted in a total of 276 documents.

KEYWORDS	DATABASES							
	The ACM Digital Library	EBSCO	Google Scholar	ISI Web of Science	Elsevier Science-Direct	IEEE Xplore	Wiley Inter-science	OLC-SSG
Trust and e-Government	13	51	77	48	19	39	17	12

**Table 2. Total number of hits**

After removing the duplicates, the remaining 164 publications were screened thoroughly for their relevance. All documents discussing the factors of trust influencing the acceptance of e-Government services by citizens – independent of the discussion of culture and country of analysis – were accepted as relevant. This analysis revealed a total of 24 documents. Each of them was examined further for the aspect of culture and the countries of analysis in the study. The result of our analysis is summarized in Table 3.

	Factors of trust	Acceptance of e-Government services	Cultural constructs	Country of analysis
(Alomari, Sandhu and Woods, 2009)	●	●	○	Jordan
(Alsaghier, Ford, Nguyen and Hexel, 2009)	●	●	○	Saudi Arabia

	Factors of trust	Acceptance of e-Government services	Cultural constructs	Country of analysis
(Bavec, 2006)	●	●	○	EU member states
(Belanger and Carter, 2008)	●	●	○	USA
(Belanger and Carter, 2004)	●	●	○	USA
(Carter and Belanger, 2004)	●	●	○	USA
(Carter and Weerakkody, 2008)	●	●	●	UK, USA
(Chatfield and Alhujran, 2009)	●	●	○	Arab countries
(Colesca, 2009)	●	●	○	Romania
(Cullen and Reilly, 2007)	●	●	○	New Zealand
(Das, DiRienzo and Burbridge, 2009)	●	●	●	140 countries
(Horst, Kuttschreuter and Gutteling, 2007)	●	●	○	The Netherlands
(Hung, Chang and Yu, 2006)	●	●	○	Taiwan
(Li, Hess and Valacich, 2008)	●	●	○	USA
(McLeod and Pippin, 2009)	●	●	○	USA
(Mossberger and Tolbert, 2005)	●	●	○	USA
(Riedl, 2004)	●	●	○	Switzerland
(Srivastava and Teo, 2009)	●	●	○	Singapore
(Tan, Benbasat and Cenfetelli, 2008)	●	●	○	USA
(Tan et al., 2008)	●	●	○	USA
(Teo, Srivastava and Jiang, 2008)	●	●	○	Singapore
(Warkentin et al., 2002)	●	●	●	USA, Latin America, Africa and others
(Weerakkody, Dwivedi and Kurunananda, 2009)	●	●	●	Sri Lanka, UK
(Welch, Hinnant and Moon, 2004)	●	●	○	USA

○ not covered    ● partially covered    ● fully covered

**Table 3. Results of literature review and analysis of research gap**

## DISCUSSION

The risk commonly perceived in e-Government services is the unauthorized access of data and privacy by third parties. Consequently, the importance of trust in e-Government increases with the amount of shared private data and information. This is often directly related to the maturity of e-Government services. It is discussed in literature that e-Government services

have four stages of maturity: information, interaction, transaction and integration (Chandler and Emanuels, 2002). Governmental organizations seek to reach the stages of transaction and integration for several reasons such as saving time, cost and efforts. Each successive stage represents a higher level of collaboration and integration, hence a higher level of information sharing, reaching to full and seamless integration at the last stage. Consequently, each successive stage creates higher concerns about security and privacy, which increases the critical importance of trust research respectively.

Our literature analysis confirmed that trust research in the area of e-Government is sparse. Only 24 papers out of 164 analyzed factors of trust influencing e-Government adoption by citizens. A few others discussed another aspect of research, namely positive effects of e-Government on citizen trust in government. Being also a very interesting research area, these documents were not examined, as they were considered to be out of scope for this study. Some papers integrated trust into the well-known adoption theories (Ajzen, 1991; Davis, 1989; Fishbein and Ajzen, 1975; Venkatesh, Morris, Davis and Davis, 2003) as an additional construct.

The role of culture was, however, mostly left out in the trust literature of e-Government. Only four papers tackled this issue. Some authors explicitly stated it as a limitation of their studies. We believe integrating culture into trust research is essential for the success of e-Government projects. A service accepted in one culture may be completely rejected in another. This fact decreases the reusability of findings among nations. Therefore, further research in this context should not oversee cultural aspects of individual societies.

Confirming the previous discussion on the dominating role of the US in trust research, approximately 50 % of the papers considered solely the US. Most of them were empirical studies conducted in the US with different examples of e-Government services (e.g. online tax services). A few studies compared national cultures and reported on differences. For the case of Germany, we have found neither a conceptual nor an empirical research analyzing factors of trust specific for the citizens of Germany. Although there are a few collective studies, their main focus was not Germany or the German citizens. As discussed previously, studies conducted in other cultures cannot be directly generalized for Germany, due to the differences among cultures. Instead, a research exploring trust factors influencing adoption of e-Government services explicitly for the German citizens is necessary. Therefore, this study has pointed out to a clear research gap in this area.

In order to address this gap, future research should investigate the existing conceptual models of trust in various contexts and develop a theoretical model of trust influencing e-Government adoption in Germany. This model should include critical factors which can influence the adoption of e-Government services. In such a model, it is essential to distinguish between different types of trust – such as trust in government, the service provider and the medium. Afterwards, an empirical study should be conducted in Germany to validate the factors of trust in this model. In addition, further research could investigate the possible effects of e-Government on citizen trust in government.

## CONCLUSION

This study indicates that trust research in the area of e-Government is still in its infancy. Most of the existing studies in e-Government – as in the case of e-Commerce – have been conducted in the US. Since culture is proven to have direct influences on trust and risk perception of nations, the applicability of these studies to other nations is limited. This suggests that further trust research in e-Government should necessarily consider cultural characteristics of societies. The main finding of this study is the research gap regarding a comprehensive study, which questions the factors of trust influencing the adoption of e-Government services specifically by the German citizens. Further research should tackle this gap by developing a theoretical model of trust and validate it with an empirical research in Germany.

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