TO ADOPT OR NOT TO ADOPT: A LITERATURE REVIEW ON BARRIERS TO CITIZENS’ ADOPTION OF E-GOVERNMENT SERVICES

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Research

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Abstract

The use of technologies has changed daily life considerably. Nearly all life areas are affected by the widespread availability and ever growing use of the Internet. In the last few years, there has been an increasing interest in how to best implement the benefits of new technologies within public administrations – not only to reform the work of administrations, but also to provide their stakeholders with public services in a way that fits their demands. But compared to other electronic services like e-commerce public administrations are still confronted with low adoption rates, notably on the part of citizens. We conducted a literature review to identify possible barriers to citizens’ adoption of electronic government services and gathered data from 197 journals that published articles on the non-adoption or rejection of electronic government services. Although the results are quite heterogeneous, our findings reveal six superordinate categories of barriers: technological, socioeconomic, communication, cultural, individual and service-related barriers. Moreover, this review reveals considerable gaps in the research on electronic government rejection. Finally, we can show that there is no common ground on barriers to adoption. Thus, we provide an agenda that encourages further research concerning the interaction between citizens and public administrations via electronic channels.

Keywords: e-government rejection, IT rejection, technology, diffusion of innovations, literature review
1 Introduction

Inspired by the immense success of electronic services (e-services), like e-commerce or online banking, public agencies and governments have started using Information and Communication Technologies (ICT) to interact with their stakeholders (e-government) and now offer a variety of services online or at least electronically (Belanger and Carter, 2009). In contrast to other e-services, public administrations are still facing low usage rates (Akkaya et al., 2011; Anastasopoulou and Kokolakis, 2013; Belanche et al., 2012; Hofmann et al., 2012; Rana et al., 2015). For example, in Germany only 39% of people aged 18 or older used an e-government service during 2014 (Initiative D21 e.V. and Institute for Public Information Management, 2015). The average usage rate of e-government services by citizens for OECD countries was 40% in 2012 (United Nations, 2014) and in the European Union 31% in 2010, with above average outliers like Iceland (77%) and under average outliers like Turkey (9%) (Eurostat, 2016).

Governments and politicians are not the only ones showing increasing interest in the provision of online-services; interest in the development of online-services spans the world and various disciplines. There is a growing body of research engaged in identifying benefits, drawbacks or risks, as well as the societal and political changes that accompany the use of ICT in the context of public administrations (Arduini and Zanfei, 2014; Rana et al., 2012). Besides disciplines like the science of Public Administration (PA) and Political Science (PS), the Information Systems (IS) discipline in particular has made great strides in electronic government (e-government) research. While PA is mostly interested in the changes that accompany the use of ICT in general and e-government in particular, IS investigates reasons for the low adoption rates of e-services. Most of this research draws on widely accepted models of technology acceptance to explain why government stakeholders are reluctant to use e-government. The most frequently used models in the e-government context include the Technology Acceptance Model (TAM, Davis, 1986), the Unified Theory of Acceptance and Use of Technology (UTAUT, Venkatesh et al., 2003), the Diffusion of Innovation Theory (DOI) by Rogers (2003) and the IS Success Model by DeLone and McLean (2003) (e.g. Rana et al., 2012; Rana et al., 2015). These models and approaches investigate the factors that lead to the adoption of technologies. They focus on the success of (technological) innovations and can therefore be described as having a positivistic tenor (c.f. Figure 1). They are mainly based on the Theory of Planned Behavior (Ajzen, 1991). The theory states that actual behavior is primarily shaped by behavioral intention which in turn is highly influenced by attitudes, norms and the perceived behavioral control. A vast body of research, also in the e-government context, has shown that factors like perceived usefulness and perceived ease of use or the quality of information influence the potential users’ willingness to actually adopt a service (Rana et al., 2012).

However, especially in the context of e-government usage rates, it seems to be a one-sided, limited view to only explain the success of technological innovations. Rana et al. (2015) address this weakness by advocating the development of an e-government-specific model. Furthermore, research should also focus on the failure of these innovations and should ask why people are not willing to use a technology (Cenfetelli and Schwarz, 2011), in this case e-government (c.f. Figure 1). Examining success factors does not explain why usage rates of e-government services are low and stagnate. It seems to be of special importance to understand what stops citizens, for example, from using online government services. Research from such a perspective can help draw a more comprehensive picture of why certain e-service initiatives fail while others succeed. There are studies investigating barriers to adoption, but most rely on adoption models like TAM or are concerned with barriers to implementation of services. Rana et al. (2013) also identify barriers to e-government adoption, but our approach solely focuses on the citizens’ perspective and on studies not relying on technology adoption models. Thus, we treat rejection as an independent research question. It is worth noting that the investigation of the rejection of e-government or technologies in general is not merely opposite to research on e-government.
or technology adoption, but an independent research question. Although models like TAM can explain rejection, they only do so assuming that the user has already had initial contact with the technology or has at least gathered some information about the service. Prior to this information gathering or initial testing of the service, there may be many inhibiting factors, which are not included in these models. That is why they are not considered in this study further.

Thus, the aim of this paper is to revise the existing literature on inhibitors to e-government adoption that has been published in about 200 journals since the beginning of the century. We aim at uncovering all the different inhibitors that research has come across so far in order to provide an overview and to draft an agenda for future research. The remainder of the paper is structured as follows: Section 2 offers a condensed summary of research on the use and adoption of e-government and IT in general. Studies on IT rejection, as a special interest, were integrated, too. Definitions of the core concepts employed in this study are equally provided in this section. Section 3 introduces the methodology and our research process. Results are presented in Section 4, while section 5 discusses them and highlights implications for researchers and practitioners as well.

2 Background literature

2.1 Use of e-government services

Research on the use of ICT in public administrations is gaining more and more importance on national and international levels. The multitude of studies, policy papers, acts or plans of action has produced a variety of definitions of e-government. One core element of a majority of these definitions is the general use of IT or ICT in public administrations. For example, the EU commission describes e-government as a “[…] set of measures aimed at exploiting the benefits of information and communication technologies (ICT) across Europe. At a time of highly constrained public resources, ICT can help the public sector develop innovative ways of delivering its services to citizens while unleashing efficiencies and driving down costs” (European Commission, 2010, p. 2). Other definitions put more emphasis on the use of one form of ICT, the World Wide Web (WWW), to deliver public services to citizens (Martin and Gomes de Andrade, 2013). The study at hand is based on a definition by Wang and Liao (2008) that does not narrow the scope to one stakeholder or one medium. The authors include all stakeholder-perspectives (government-to-government (G2G), government-to-business (G2B) and government-to-citizen (G2C)): “eGovernment can be broadly defined as a government’s use of ICT, particularly Web-based Internet applications, to enhance the access to and delivery of government

1 Icons are kindly provided for use by www.pixabay.com and www.publicdomainpictures.net. (CC-0)
information and service to citizens, business partners, employees, and other agencies and entities” (Wang and Liao, 2008, p. 718).

To monitor the diffusion and success of e-services, administrations and research institutes are publishing data on the quality, usage rates and usage behavior of different stakeholders on a regular basis (European Commission, 2015; Initiative D21 e.V. and Institute for Public Information Management, 2015). The results consistently show that usage rates are rather low, thus failing to meet the high expectations. While most of these studies are more descriptive in nature, academic researchers are keen on explaining why the adoption rates are lagging (Horst et al., 2007; Carter and Bélanger, 2005; Akkaya et al., 2013). To explain the adoption of e-government by citizens and businesses, most researchers investigate the influence of cultural differences (e.g. Carter and Weerakkody, 2008) or socio-demographic variables (e.g. Taipale, 2013) on the intention to use these services. This vast body of research can help to explain why people are willing to use e-government services, but this is only one side of the story, as it only explains the behavior of adopters. Researchers should also analyze why others do not use e-government or e-services in general, thus shedding light on the decision processes and behavior of non-adopters.

2.2 Non-usage and rejection of IT

While most of the research on the use of technological innovations focuses on adoption, very little effort has been exerted to explain why potential users reject new technologies, and only a few researchers have made progress in investigating the possible reasons for (technological) innovation failures (Cenfetelli, 2004; Lapointe and Rivard, 2005; Kim and Kankanhalli, 2009; Laumer and Eckhardt, 2010). Most of these studies are concerned with the rejection of technologies within organizations (e.g. Ferneley and Sobreperez, 2006; Kim and Kankanhalli, 2009; Laumer and Eckhardt, 2010). Moreover, to the best of our knowledge, a theoretical approach or model of individual-based IT rejection does not exist.

As mentioned, understanding why people reject technologies is to be seen as an independent research question; understanding rejection is not merely the opposite of understanding adoption. This assumption is mainly based on work by Cenfetelli and Schwarz (2011), who found that factors inhibiting the intention to use a technology are distinct from enablers that positively influence this intention and presumably lead to technology use. Adoption and rejection have different antecedents and are therefore distinct constructs. The exploratory study by Cenfetelli and Schwarz (2011) indeed reveals factors that lead to resisting or rejecting technologies. They further show that these factors are not the converse of the enablers which already have been identified by previous literature. Amongst these inhibitors are, for example, information overload, effort redundancy or intrusiveness (Cenfetelli and Schwarz, 2011).

In a revision of models on IT rejection, Lapointe and Rivard (2005, p. 463) find that “the models consider resistance to be neither good nor bad.” Depending on the context and the outcomes of resistance to or rejection of technologies, they suggest this behavior to be either dysfunctional or functional – a view which is adopted in this paper.

In compliance with these studies, we define the rejection of e-government services in this context as citizens’ intention to not use (not even once) any given e-government service based on cognitive and affective evaluations of the object, the provider and the context. Thus, the definition also includes factors that are not directly technology-related, but may stem from other backgrounds, like culture or personality. Most studies focus on the intention to use (or reject) a given technology, based on the assumption that actual behavior is mainly influenced by attitude and intentions (e.g. Horst et al., 2007; Hofmann et al., 2012). Thus, we also decided to limit our focus to intentions rather than actual behavior.
3 Methodology

3.1 Approach

The approach of this literature review mainly follows the propositions offered by Webster and Watson (2002). We decided to use this guideline since the authors developed a guideline explicitly on literature reviews for the IS discipline. This guideline has found considerable recognition since its appearance in the MIS Quarterly in 2002 (e.g. Hofmann et al., 2012; Vom Brocke et al., 2009; Benavides et al., 2010). Following their proposal, we did not solely focus on one discipline, but widened the scope of our research: Our study considers outlets of different disciplines that are presumably concerned with electronic public services. This includes the IS discipline, which deals with more technology-based questions; the PA; the communication science (CS), which focuses on communication between governments and their stakeholders; and the PS, which is concerned with the societal aspects of e-government. Since it is a multifaceted phenomenon, much of the published research is interdisciplinary in nature and thus cannot be assigned nor limited to only one of these disciplines. Surely, this selection is not exhaustive, but offers a good overview of the research topic. We also followed the suggestions of Webster and Watson (2002) regarding the selection of relevant sources and initially focused on leading journals. We similarly assume that new and important research is mainly published in international journals and conference proceedings to open the scientific discussion to a broad public. This naturally excludes monographs, doctoral theses and anthologies.

We decided to include only the most relevant international journals in all four disciplines, to get a general overview of literature on adoption barriers, since “The major contributions are likely to be in the leading journals.” (Webster and Watson, 2002, p. xvi). To identify these, we based our review on the median impact factor – published in the InCites Journal Citation Report – as a widely accepted measurement of a journal’s importance. All journals ranked above the median impact factor of each category were included. For IS, we added all A-ranked and B-ranked journals of the VHB-Jourqual 3 ranking to include important conference proceedings, which are not part of the InCites ranking. To the best of our knowledge, comparable rankings are missing for the CS, PA and PS. In total, we researched articles from 197 journals published between January 2000 and August 2015 that were implicitly or explicitly concerned with the non-usage or rejection of e-government services. The time period was selected mainly based on work by Liu and Yuan (2015), who found that research on ICT use and public agencies was only sporadically conducted before the beginning of the twenty-first century. Also, the E-Government Reference Library, established in 2005, listing almost 8,000 articles on e-government, only contains 84 references before the year 2000, which provides a good argument for the selected time period.

The keywords for this research were partially adopted from a literature review on the antecedents of e-government adoption by Hofmann et al. (2012). All keywords on e-government were adopted and some carefully selected keywords on IT usage as well. Furthermore, we added antonyms to e-government acceptance and some keywords on non-usage or rejection from Centfetelli and Schwarz (2011), which can be found in the final set of keywords depicted in Table 1.

Articles with a relevant title, abstract and theoretical approach were included in a backward and forward search, as proposed by Webster and Watson (2002). The forward search was mainly conducted by using the Web of Science and Google Scholar. As Webster and Watson (2002) put it, this kind of research “should ensure that [we] accumulate a relatively complete census of relevant literature” (Webster and Watson, 2002, p. xvi). Articles with a relevant title, abstract or theoretical foundation were read completely and included in the final set of relevant articles.
3.2 Units of analysis and framework

To cover the spectrum of e-government research on the rejection of or barriers to e-government adoption and thus highlight gaps in existing research, we recorded the research topic based on the title, abstract and introduction of the article. Furthermore, we added the author’s geographic origin, the geographical areas covered by the study and the researcher’s discipline. Beyond these more formal aspects, we included information on the methodology and sample sizes. These categories were mostly oriented towards the methodological scheme that Arduini and Zanfei (2014) used in their literature review on public e-services. Categories like the impact factor of the journal or the distinction between front-office and back-office services (Arduini and Zanfei, 2014) were not included since they did not serve the purpose of our study or were redundant regarding the focus of our review (the citizens’ perspective naturally excludes back-office issues and the impact factor of the journal was already determined by the selection of the journals).

In terms of content, we again followed the suggestions of Webster and Watson (2002) to structure the results of our review by developing a concept matrix. This matrix groups the articles according to their examination of different barriers to e-government adoption. The categories for this matrix were not theoretically established, but inductively developed from the material. The final denomination was nonetheless oriented towards existing categorizations. For example, Abdelkader (2015) included in his research the categories “cultural and technological barriers,” whereas Edmiston (2003) labels a set of factors as “digital divide.” Based on our findings, we will conclude by offering a research agenda that highlights gaps in the existing literature and thus gives implications and directions for future research.

4 A Literature Review on barriers to citizens’ e-government adoption

4.1 General results

In total we identified 36 articles that dealt with the rejection of or barriers to the adoption of e-government services. After a thorough reading, a set of 20 articles remained. The 16 omitted articles either took a different perspective than that of the citizen, did not focus on e-government but on IT use in general, even though e-government was mentioned marginally, or they followed an approach that was too positivistic, which does not serve the purpose of this research. Out of these 20 articles, 12

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<thead>
<tr>
<th>Author</th>
<th>Hofmann et al. (2012)</th>
<th>Cenfetelli and Schwarz (2011)</th>
<th>Our additions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topic</td>
<td>eGovernment, e-Government, electronic government, electronic services, online administration, public administration, administration, government</td>
<td></td>
<td>Online government</td>
</tr>
<tr>
<td>IT usage</td>
<td>Intention to use, Behavioural intention, Behavioral intention, Diffusion, Usage, Use</td>
<td>Inhibitor (s) (to), (technology) rejection, Usage intention (s), Non-acceptance</td>
<td>Non-usage, Nonusage Non-adoption, Nonadoption, (technology) refusal Failure, Barrier(s), Obstacle(s)</td>
</tr>
</tbody>
</table>
were published in a total of 9 journals and 8 of them were conference proceedings. All articles were published between 2003 and 2015.

Concerning the research design, we distinguish between quantitative (QNQA) and qualitative analyses (QIA). The former are usually characterized by the use of standardized questionnaires or empirical secondary analyses, i.e. the analysis of data that have been previously gathered by someone else for another purpose. The latter are composed of interviews, workshops, literature reviews and case studies. The most frequently employed research design is quantitative analysis, which appeared in twelve articles. Qualitative analysis was the chosen method in seven articles. One author combined qualitative and quantitative analyses by first conducting two quantitative surveys and then holding a workshop for selected participants.

Most of the research was conducted in the United States of America (USA, six articles), followed by Germany (DE, five articles), whereof one from each region took a two-country perspective. In the case of the USA, one article simultaneously investigated the United Kingdom (UK) and in the case of Germany, one article looked at the situation in Slovakia (SK). Two authors took a broader approach by investigating Europe (EU, one article) and the global level (INT, two articles). The remaining research was done in Egypt (EG), the Netherlands (NL), Poland (PL), Taiwan (TW), Tanzania (TZ) and the UK, represented by one article each.

Table 2 offers a condensed overview of the identified articles, listing the research topic, the chosen research design, the sample size, the geographical origin of the authors according to their institution affiliation (OA), the countries/geographical regions covered by their respective research (CR) and the discipline in which the article was published according to the journal/conference focus, distinguishing between IS, PA and Business and Social Sciences (BSS). Even though we focused on the citizen’s perspective (C), one article combined perspectives from citizens and government employees (G) and some were solely answered by government employees with respect to their assessment of citizens’ perceptions (four articles). Some articles also assessed the perspectives of different stakeholders like businesses or government employees. In those cases, only the relevant parts concerning the citizen’s perspective were extracted and the rest was omitted.

Two articles took a meta-view (M), i.e. they were concerned with the different perspectives of the involved stakeholders. Missing values are denoted with (-), which means that no information was provided on this item.

For a better overview of the plethora of mentioned obstacles, we clustered them, as far as possible, either according to their classification in the original 20 articles or inductively and established six different categories:

1. Technological barriers (TB): These barriers concern all features that deal with the access characteristics, features of technology and perceived risks that occur when using a technology, as well as the general trust in the Internet.

2. Socioeconomic barriers/digital divide (DD): The barriers in this category group all elements such as age, educational level, employment status, income, etc. According to Bélanger and Carter (2009, p. 132): “The digital divide refers to the distinction between the information haves and have-nots; the gap between the computer literate and the computer illiterate. More specifically, it can be argued that two major divides exist: an access divide and a skills divide.” Regarding the access divide, the authors refer to nearly the same variables that others employ to describe the digital divide.

3. Communication barriers (CoB): This category concerns all obstacles that arise through a lack of communication, like the lack of awareness.
<table>
<thead>
<tr>
<th>Article</th>
<th>Research Topic</th>
<th>Research Design</th>
<th>Perspective</th>
<th>Sample Size</th>
<th>OA</th>
<th>CR</th>
<th>Discipline</th>
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<tr>
<td>Bélanger and Carter (2009)</td>
<td>Effects of the digital divide on e-gov</td>
<td>QnA</td>
<td>C</td>
<td>105</td>
<td>USA</td>
<td>USA</td>
<td>IS</td>
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<td>Cabinakova et al. (2013)</td>
<td>Cultural influence factors of citizen use of e-gov websites</td>
<td>QnA</td>
<td>C</td>
<td>576</td>
<td>DE</td>
<td>DE</td>
<td>IS</td>
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<td>Edmiston (2003)</td>
<td>Local e-gov adoption</td>
<td>QnA</td>
<td>C</td>
<td>-</td>
<td>USA</td>
<td>USA</td>
<td>PA</td>
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<tr>
<td>Fu et al. (2006)</td>
<td>Citizens’ acceptance of e-gov services</td>
<td>QnA</td>
<td>C</td>
<td>59.166</td>
<td>TW</td>
<td>TW</td>
<td>IS</td>
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<tr>
<td>Hall and Owens (2011)</td>
<td>Use of e-gov among low income groups</td>
<td>QnA</td>
<td>C</td>
<td>-</td>
<td>USA</td>
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<td>How to increase the use of e-gov</td>
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<td>DE</td>
<td>DE</td>
<td>IS</td>
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<td>Lassnig and Markus (2003)</td>
<td>Use of e-gov services</td>
<td>QnA</td>
<td>C</td>
<td>11.300</td>
<td>AT</td>
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<td>Meijer (2015)</td>
<td>e-governance strategies and barriers</td>
<td>QIA</td>
<td>G</td>
<td>9</td>
<td>NL</td>
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<td>PA</td>
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<td>Mkude and Wimmer (2015)</td>
<td>Challenges to e-gov implementation</td>
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<td>G</td>
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<td>TZ</td>
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<td>Pilling and Boeltzig (2007)</td>
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<td>QIA</td>
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<td>QnA</td>
<td>C</td>
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<td>USA, IE</td>
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Key: QnA - Quantitative Analysis; QIA – Qualitative Analysis; G – Government; C – Citizen; M – Meta; OA – Authors’ origin; CR – covered region
4. Cultural barriers (CuB): This group is composed of all obstacles shaped by an individual’s culture, such as norms and traditions, as defined by (Hofstede et al., 2010), and trust in the government.

5. Individual barriers (IB): These barriers concern personal preferences/attitudes, etc., like lack of time, perceived usefulness and habits.

6. Service-related barriers (SB): These barriers deal with the complexity of certain processes and the necessity of interaction with a government employee.

As already mentioned, we chose these categories deliberately according to their appearance within the different articles and the authors’ respective classification. This is also the reason why some variables are context-sensitive and are grouped into different categories.

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<tr>
<th>Author</th>
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<td>Papinska-Kacperik (2013)</td>
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<td>Pilling and Boeltzig (2007)</td>
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<td>Savoldelli et al. (2012)</td>
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Key: CuB-cultural, CoB-communication, DD-digital divide, IB-individual, TB-technological, SB-service related barriers

Table 3. Identified categories of barriers to e-government adoption

To give an example, Abdelkader (2015, p. 174) conducted a study in Egypt and identified the “lack of motivation to use services” as a cultural barrier, a consequence of the high degree of corruption, whereas the same variable in a Western context can be identified as an individual barrier. Societies that are more focused on individuals, who first look after themselves and their families, are coined individualistic cultures, whereas collectivistic cultures see the individual as part of a bigger entity. Germany and most of the other central European countries can be rather coined as individualistic countries, while the Arab world belongs to the collectivist countries (Hofstede et al., 2010). With regard to trust, we distinguished trust in the Internet as a mainly technological variable, whereas trust
in the government is classified as a cultural variable since in some cultures power and related phenomena like corruption are more accepted and trust in the government therefore coined by culture (Hooker, 2008). The classification of the different variables according to their appearance in the theoretical and empirical sections of the articles is listed in Table 3.

The most often cited barriers belonged to the technological and digital divide/socioeconomic category, which were mentioned in 16 articles. The second most often identified barriers belonged to the communication category (8 articles), followed by cultural and individual barriers (7 articles). The least mentioned obstacles were service-related barriers (3 articles). Service-related barriers are a quite complex phenomenon, which might be a reason for the rather unequal distribution of the categories: Each service has particular requirements which may vary between different contexts. For example, services may vary between countries, states or even communities. We assume that there is no consistent pattern that generally describes these barriers. In contrast, other barriers can be described on a more general basis since they depend, for example, on the technology, which varies only slightly across different contexts.

Examining the empirical findings alone creates a very heterogeneous image. There is no clear pattern amongst the articles for describing obstacles and whether they are significant for the decision on the usage or rejection of e-government. The following sections will give a summary of the main disparities.

4.2 Technological barriers

This category contains many different technological issues, the vast majority (every other article) is concerned with perceived security and privacy risks. However, in some cases these factors are said to be among the most decisive reasons for rejecting the use of e-government (e.g. Barth and Veit, 2011), while in other scenarios perceived risk is found to have no influence on the behavioral intention to use the respective service (e.g. Fu et al., 2006). A look into how the perceived risks are defined reveals that Barth and Veit (2011) and Fu et al. (2006) are the only ones to employ a definition. All others only name the phenomenon. Yet, the two existing definitions demonstrate that the understanding of this variable (security and privacy risks) is not the same. The definition Barth and Veit (2011) use is adapted from Featherman and Pavlou (2003), which states that perceived privacy and security risk is the “potential loss of control over personal information, such as when information about you is used without your knowledge or permission. The extreme case is where a consumer is ‘spoofed’ meaning a criminal uses their identity to perform fraudulent transactions” (Featherman and Pavlou, 2003, p. 455). In contrast, Fu et al. (2006) define security risk as the “taxpayer’s perception of the uncertainty and adverse consequence of a desired outcome” (Fu et al., 2006, p. 113). Other authors like Abdelkader (2015) or Becker et al. (2008) do not employ any definition of this construct at all.

4.3 Digital Divide/Socioeconomic barriers

The issue of different underlying concepts also repeats itself in the case of digital divide/socioeconomic barriers. Even though the majority of authors investigate this variable and find it to be relevant to some degree, its composition takes different forms depending on the author. For example, neither Savoldelli et al. (2012; 2014) nor Meijer (2015) offer a definition for digital divide, but just name the effect. Lassnig and Markus (2003) just refer to extra costs of the Internet as usage obstruction and do not use the term digital divide or socioeconomic barrier. In contrast, there is a common ground among others to at least include variables such as (household) income and education (e.g. Hall and Owens, 2011; Sipior et al., 2011). Besides, age is also named as an important variable that, in some cases, is found to be significant (e.g. Bélanger and Carter, 2006, 2009), whereas according to Sipior et al. (2011) it is not significant. Further variables that were employed in this context were th-
nicity, gender, computer/Internet experience, IT resources, minorities, time spent online, place of residence and employment.

4.4 Communication barriers

In all articles where communication is mentioned, it constitutes a significant barrier to e-government adoption. Its classification, however, is again a matter of variety. Edmiston (2003) only states it implicitly by suggesting that the success of e-government depends on educating constituents about “[…] the availability of online public services and the benefits of using digital government resources” (Edmiston, 2003, p. 29); constituents should furthermore be made aware of the existence of services. In contrast, other articles explicitly relate to the lack of awareness/knowledge of the existence of e-government services (e.g. Heidemann et al., 2013; Hofmann and Heierhoff, 2012). Finally, Mkude and Wimmer (2015) and Pilling and Boeltzig (2007) see a lack of awareness of the benefits of using e-government services as a barrier, while Papinska-Kacperek (2013) refers to the lack of knowledge about the use of online tax services. This again shows the diffuse understanding of communication barriers.

4.5 Cultural barriers

The barriers identified as cultural offer a diverse picture. Only Cabinakova et al. (2013) refer to the cultural dimensions provided by Hofstede et al. (2010) to classify cultural barriers. Abdelkader (2015) views norms and traditions as cultural barriers, whereas, for example, Mkude and Wimmer (2015) and Meijer (2015) name trust in e-government (services) as a primary cultural barrier. Papinska-Kacperek (2013) classifies traditions, lack of interest and a fear of the Internet as cultural barriers. Again, the different understandings of cultural barriers seem to reflect a largely underdeveloped theoretical understanding of the patterns underlying a rejection. As mentioned, we included trust in the government in this category, as research has shown that there is a significant connection between trust in a (political) system and culture (Hooker, 2008). There are different factors that can harm one’s trust in the government like corruption, bribery or embezzlement of public money. The degree to which these practices are accepted or even actively fostered by a society is to a certain degree dependent on its cultural values (Getz and Volkema, 2001).

4.6 Individual barriers

Based on the authors’ assessments, this category is so diverse that classification becomes impossible. Nearly every author puts individual barriers into a different category. Personal preference of offline services, lack of time and interest in using e-government, as well as habit, perceived sensory requirements, disposition to trust and perceived need and usefulness are just some of the mentioned barriers. One reason for this ambiguity might be due to the fact that we limited our focus to four disciplines (PA, PS, CS, IS) and did not include psychology as a discipline that could help in understanding the individual and behavioral barriers listed here. Moreover, we assume that barriers grounded in one’s character cannot be resolved with changes to the technology, improved communication and information or a stricter adherence to privacy policies. Thus, the practical implications of this category remain rather irrelevant, as public administrations cannot change character traits or personal preferences. This leads us to conclude that research on individual barriers is rather diffuse and lacks a rigorous theoretical foundation.

4.7 Service-related barriers

Only Barth and Veit (2011), Becker et al. (2008) and Papinska-Kacperek (2013) include this kind of barrier in their analysis, but do not name it explicitly. All authors mention that the complexity of and problems with certain processes require further consultation and help. To give an example, Barth and
Veit (2011) researched five different services. They show that the willingness to use services online, is different for each service, depending on diverse requirements, like the need for consultation or personal involvement in the process (e.g. civil marriages). On a side note, it is interesting that roughly one-third of the papers refers to established theories like TPB and TRA or acceptance models like the TAM and UTAUT (Heidemann et al., 2013; Sipior et al., 2011; Carter and Weerakkody, 2008). Three of them even adapt acceptance models in their research to explain the rejection of e-government (Carter and Weerakkody, 2008; Sipior et al., 2011; Fu et al., 2006).

5 Discussion & Outlook

5.1 Research agenda

The purpose of our research was to review literature on antecedents to e-government rejection, which is indispensable for understanding what leads citizens to reject e-government services. The review reveals that in nearly 200 journals only 20 articles were published that at least inter alia took a closer look at barriers to e-government adoption. These findings indicate that e-government rejection is indeed an under-researched issue, which should be further investigated. Regarding the successful implementation and diffusion of public e-services, it is helpful to fully understand citizens’ concerns and needs to provide them with services that are likely to be used. The decision to not use a technology can be as helpful in understanding diffusion processes as the understanding of the decision to use a technology. A broader investigation of non-usage could then also be applied to other contexts. Based on our findings, we developed a research agenda exhibiting the shortcomings and the possible directions for future research. This agenda is shown in Table 4.

It is somehow striking that although most of the studies applied a quantitative approach, only limited results on e-government rejection exist (c.f. Table 4). It could be helpful to initially use more explorative and qualitative methods to reveal any unknown patterns, as Cenfetelli and Schwarz (2011) have done. This would also be helpful in establishing models of technology rejection on which further (quantitative) research could then be grounded. Generally, there seems to be inconsistency in technology and e-government rejection research: Some of the examined articles based their work on technology acceptance models despite the study’s aim to reveal patterns of rejection. As Cenfetelli and Schwarz (2011) show, barriers are not necessarily the mere opposite or absence of enablers, but presumably distinct constructs. Even if the absence of enablers like perceived ease of use may hinder the usage intention, there might be additional factors that impact this decision like the need for credentials or consultation. In the same way that thorough theoretical foundations are needed, empirical evidence needs to be verified by more studies (c.f. Table 4). Furthermore, according to Rana et al. (2015) most studies neglect the peculiarities of the e-government domain. As was shown in the previous section, especially evidence of the digital divide and socioeconomic factors are heterogeneous and future research should take a closer look at how exactly these variables influence an individual’s decision-making processes. The need to base the research on more solid grounds can also be seen when looking at communication barriers. Lack of citizens’ awareness is mentioned a few times, but always with different connotations. Definitional issues are one thing, but the example also shows that there are multiple factors influencing the decision not to adopt an e-government service and that these factors need thorough investigation. Although communication barriers are part of the studies, most simply stated that these barriers seemed to exist; to the best of our knowledge, there is only one study – at least in the German context – that actually investigated the effects of communication on the adoption decision (Hofmann and Heierhoff, 2012).
Table 4. Research Agenda

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<tr>
<th>Topic</th>
<th>Result</th>
<th>Directions for future research</th>
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<tr>
<td>Extent of research</td>
<td>Limited to few studies</td>
<td>put emphasis on barriers to adoption; add to existing knowledge by revising previous research</td>
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<td>Research Design</td>
<td>QnA is the most often chosen design</td>
<td>initial qualitative investigation of barriers, because this method can reveal patterns that cannot necessarily be derived from existing literature</td>
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<td>Involved Disciplines</td>
<td>Only two of the initially included disciplines are concerned with e-government rejection, whereas one article was included from the business and social sciences, which was not part of the selection in the first place</td>
<td>interdisciplinary research; involvement of more disciplines (e.g. communication science should investigate how governments could improve their communication with stakeholders to promote usage of the services)</td>
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<td>Sample Sizes</td>
<td>Sample sizes are usually under 500 researched cases, except for 4 out of 20 articles</td>
<td>need for larger sample sizes to guarantee the statistical significance and generalizability of the results</td>
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<td>Theoretical foundations</td>
<td>Most studies lack a rigorous, comprehensive theoretical foundation and a common theoretical ground</td>
<td>basic research on the development of rejection models/theories of technology rejection</td>
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<tr>
<td>Framework</td>
<td>We proposed a framework of barriers to e-government adoption that sheds light on the existing categories of barriers.</td>
<td>Future research should validate whether the identified barriers actually influence the adoption of e-government</td>
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The reviewed articles also reveal that the context influenced the decision to use the technology. This was shown particularly by the study of Barth and Veit (2011), who researched five different services and found that for each service different factors seem to be relevant in the decision to use it on-site rather than online.

5.2 Conclusion

The purpose of this literature review was to shed light on patterns underlying the decision to reject an e-government-service. By reviewing a comprehensive set of international journals, we were able to show that to date there is no common ground on barriers to adoption in e-government research. Thus, there is a need to further and more thoroughly investigate how technological innovations are adopted or rejected. Compared to literature on technology acceptance, it does not seem to suffice to empirically test hypotheses. Rather, a theoretical framework or model has to be developed that explains the hidden patterns underlying rejection. This could help to draw a more complete picture of the way citizens interact with public administrations via electronic channels.

The study also has some practical implications. Although we have a sound understanding of what is driving the adoption of e-government services – not only by citizens, but also by businesses and governments themselves – the actual adoption rates are still rather low. Governments could benefit from research on rejection to better circumvent these obstacles and help increase the acceptance rate of their services. A high adoption rate not only benefits the governments by saving resources in the long run, but also makes public administrations more accountable and transparent to citizens, saves time and costs and simplifies processes. A significant issue in the sagging adoption rates certainly is a lack of awareness of the services’ existence. Here, governments could already profit from the research and improve their communication strategies to advertise the possibilities e-government services offer and promote their benefits more explicitly.
6 References


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