

# All Citizens are the Same, Aren't They? – Developing an E-government User Typology

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**Abstract.** Taking a closer look at current research on e-government diffusion shows that most studies or conceptual works deal with citizens as one broad mass that is not further described or divided into smaller subgroups. Such efforts are mainly limited to the digital divide discourse and distinguish at most between haves and have-nots or younger and older parts of the population. Understanding why and how citizens use public online services also requires an understanding of how different segments of the population react to IT in general as well as to e-government in particular. To date, no meaningful attempts to develop such an e-government user typology have been undertaken. Therefore, the study at hand aims at developing a user typology for the e-government context. To this end, we chose an explorative design and conducted a qualitative interview study in Germany in 2016 with 18 respondents from all age groups. We qualitatively analyzed the sample regarding usage behavior, variety of use, and e-government specific uses and perceptions. Our research reveals six user types differing in quality and quantity of use with regard to internet-based technologies in general and e-government services in particular. Understanding how different populations perceive e-government and contextualizing their behavior can help explaining why some citizens are making advanced use of e-government while others widely ignore these services.

**Keywords:** E-government · Usage · User typology · Citizens

## 1 Introduction

Although a plethora of electronic government (e-government) services have been available for many years now, most western countries are still facing low adoption rates, despite the fact that citizens are repeatedly referred to as a main stakeholder of e-government. Most current research focuses on ‘the’ citizen, i.e. treating the customers as a broad and rather undefined mass. There are only few exceptions to this approach and these studies typically focus on broad populations like elderly citizens [e.g. 10, 17]. Moreover, research tends to neglect the majority of citizens who are not using e-government services by not distinguishing between users and non-users [e.g. 9]. A common assumption in this context is that citizens expect their governments and administrations to provide their services electronically [e.g. 12], which is striking for two reasons. First,

this assumption is highly normative and treats e-government as an undoubted necessity. Second, it views the citizens as a uniform and unspecified mass. This perspective suppresses the fact that 'the' citizen does not exist and that the population consists of a multitude of different groups with different needs and expectations regarding new technologies. To our best knowledge, a systematic clustering of citizens regarding their e-government specific perceptions has not yet been applied. In the light of the diversity of modern societies, it seems rather short-sighted to not further differentiate populations beyond some socio-demographic factors (e.g. age, income, or education) – a perspective with a long tradition in sociology [e.g. 22], adopted in this paper.

We assume that 'the' citizen can be grouped into user types according to differing needs and requirements regarding the use of information technology (IT), both in general and with regard to public (online) services. Therefore, the present study sets out to answer the following research questions (RQ). *RQ1: What types of e-government users exist? RQ2: How do these types differ in terms of their perceptions off e-government?*

The RQ are answered based on an inductive interview study, conducted in Germany in 2016. We chose an inductive approach, because to date, there is only limited research on user types in the e-government context. The aim of this explorative study is to identify different patterns of e-government use and IT usage behavior and to shed light on the individuals' motivations.

## 2 Background and Literature Review

### 2.1 E-government Diffusion Research

Whenever new technologies enter the market, researchers want to understand how these new technologies diffuse, what influences usage, and also what hinders usage. E-government research is no exception here. Most works in this area are built on commonly used technology acceptance models [e.g. 3, 24]. Institutions like the United Nations conduct their own studies [e.g. 23] to measure the diffusion rates of e-government in general and of certain services. These studies in particular reveal that citizens in many countries are still reluctant to use e-government services [23]. This finding has induced research on non-adoption of e-government as a counterpart to the broad field of adoption and acceptance research [e.g. 2, 13]. Despite the undoubtedly important strides the field has made, there is still need for further research: Studies in current diffusion studies often focus on 'the' citizen without further distinguishing different segments of the population or use only socio-demographic and digital divide factors to describe the citizenry in more detail. One major problem inherent to this approach are the heterogeneous and sometimes contradicting empirical findings when it comes to digital divide factors [11]. E-government research has not yet considered segmenting citizens into more detailed groups to study perceptions about and consequently the diffusion of e-government. Instead, most studies do not distinguish between different user groups [e.g. 4, 5] or focus their attempts on single factors like users' internet competencies [e.g. 1]. This sheds light onto general patterns of adoption decisions but neglects differences in these patterns relating to general usage behavior and different segments in the population.

## 2.2 Media User Typologies

Presumably, the perceptions about IT and internet use can to a certain degree explain how people behave in technological contexts and in turn, why some citizens make use of services like e-government while others still prefer on-site services. We hypothesize that the way citizens perceive e-government is influenced primarily by their general technology behavior rather than by the service itself. Thus, understanding how citizens react to IT in general can add to the understanding of e-government specific behavior. User typologies have a long tradition, especially in communication and media research and exist for diverse media [e.g. 7], the internet in general [e.g. 16, 26], and different media like online news [e.g. 25]. Up until now, most works on in the IS discipline focus rather on e-democracy and e-participation than e-government [e.g. 18]. Others use the digital divide framework – a perspective focusing solely on demographic patterns [e.g. 19] or single user groups [e.g. 10, 20]. Therefore, the present study aims at creating a specific e-government typology but uses media user typologies as a starting point. For example, Brandtzæg [6] developed a unified media-user typology, which distinguishes *non-users* (no use at all), *sporadic users* (occasional and rare use, low interest), *debaters* (information search, information exchange with others), *entertainment users* (use for entertainment purposes), *socializers* (seeking social contacts, spontaneous and flexible usage), *lurkers* (use to while away the time), *instrumental users* (utility-oriented use and information search), and *advanced users* (all purposes). To build the different user types, frequency and variety of use, typical activities and used media platforms were considered.

Similarly, a German study reveals six different types of media users [14]. Socio-demographic factors, the access to the internet and e-services, digital competencies and knowledge, intensity of use and variety of use, and openness towards digital trends and innovation, were used as indicators for one's type of usage. As the study at hand also was conducted in Germany, we take this typology into account, with its types ranging from *outside skeptics*, described as having the lowest digital potential, *conservative occasional users*, *cautious pragmatists*, *reflecting professionals* and *progressive users* to *technique enthusiasts*, described as having the highest digital potential.

Although both these exemplarily cited and other typologies [e.g. 16, 26] use different labels, they are mainly based on similar concepts. The main category used to identify different user types can be labeled *resources*, encompassing financial resources [e.g. 21], the available infrastructure [e.g. 14], i.e. number of internet enabled devices but also more intangible resources like knowledge and experience [e.g. 6]. Besides the *perceived importance of the internet*, major influences seem to be the *media behavior* and the *variety of use*. The media behavior can best be described with the question: Why and for what purposes are certain technologies or e-services used? *Variety of use* [14] describes the number of different platforms or applications a person regularly uses. Additionally, the *frequency or intensity of use* [14] plays a major role in defining user types. Even though this is not a comprehensive summary, it still offers a reasonable starting point for the development of an e-government user typology.

### 3 Method

To answer the RQ, we conducted a *qualitative* and *exploratory* interview study with 18 German participants. Since we know little about different types of e-government users, such a research design seems appropriate. Qualitative interviews are used to uncover patterns or relations that have not yet been researched or are considered to be influential [e.g. 8]. The interview guideline was semi-structured, meaning that we predefined a set of important questions but kept the interview open for topics and aspects that were important to the interviewee. The guideline consisted of five major blocks: general use of IT and the internet (1), reasons for (non-)adoption of electronic services (2) and e-government (3), image of public administrations (4), and concluding remarks (5). The interviews, taking on average half an hour, were recorded, transcribed and analyzed using inductive qualitative content analysis [15].

As a sample, we chose eight men and ten women from different parts of Germany, aged between 23 and 63 years. Unfortunately, the sample was not as well distributed over other socio-demographic variables as we would have expected. Thus, the influence of socio-demographic variables should be interpreted carefully, if this is possible at all.

## 4 Analysis – Developing an E-government User Typology

### 4.1 Approach

For the development of the typology, we compared every respondent with each other. At first, we only considered the *variety of use*, i.e. the different online services that were actually used, and grouped respondents with similar service use together. Then we also considered the *time spent online*, *personal importance of the internet*, *frequency of use*, *number of internet enabled devices*, and the *perceived own competencies* in handling (new) IT. Respondents were regrouped if considerable differences occurred. Finally, we included all remaining variables (*age*, *gender*, *size of household*, *net income*, *education*, *profession*, and *employment status*) and formed the final types with these variables. While the assignment of each respondent to one type changed from the first to the second step, the consideration of socio-demographic variables did not change this mapping. This may be due to the fact that the sample was biased. In total, six different user types were defined, which overall fit the typologies discussed in the previous chapter. After we assigned every respondent to one type, we analyzed their general and e-government specific usage behavior using MAXQDA, a software for qualitative analyses.

### 4.2 User Types

The analysis of the citizens' perception of e-services in general and e-government in particular is based on visual tools. The distribution of the different factors across the user types is shown in Figs. 1 and 2. All descriptions are based on these displays.

**Minimal Users** (Type 1) are characterized by a limited time spent online (<7 h per week) and a very low variety of use, which is focused on functional services like online

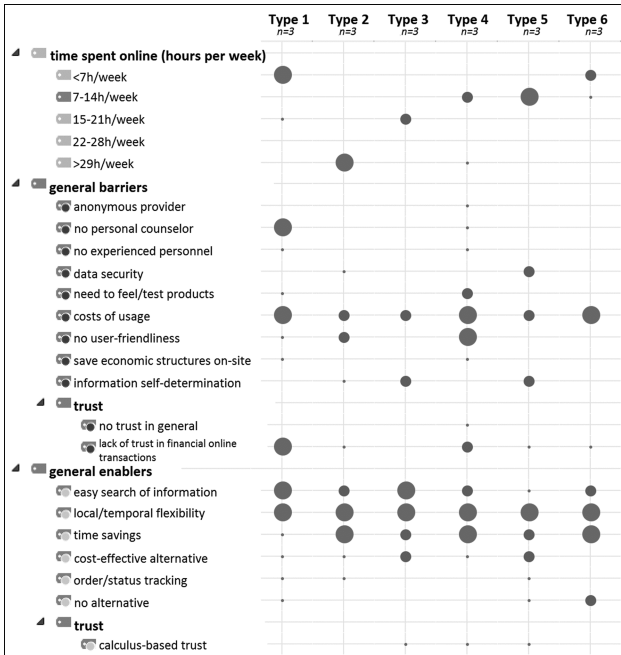


Fig. 1. Perceptions of enablers and barriers to technology adoption by user types

banking and e-mails. The internet is of small importance in their life and they describe themselves as having low technological competencies. Regarding their perceptions of e-services in general, not having *personal contact* and a *physical experience* are the main barriers to IT adoption. Additionally, they name *costs of usage* and a *lack of trust in financial online transactions* as inhibitors. Thus, the online environment is perceived as uncomfortable. Their aversion is also reflected in the main use they see in the internet which is the *ease of information search* and a *local/temporal flexibility*.

Regarding their e-government specific perceptions, their general behavior is partially reflected. The main barriers to e-government use are *convenience* and *no need to use*. For this type, the offline services work well and their sporadic contact with public administrations (no/one contact during the last year) does not make the use of e-services necessary, although two of the respondents work full-time and have already used an e-government service. As enablers to e-government use, the respondents stated a *reduced workload* and *time savings*. For this type, e-government services are not out of question in general but have to fulfill needs and are used only if it seems to be indispensable or in all respects beneficial. In addition, this type *prefers paper documents* over digital documents and also *prefers the personal contact* to administration employees, especially if problems or questions occur. Furthermore, this user type expresses a high degree of trust towards administrations concerning data security: All respondents think that public administrations handle their data carefully and can guarantee data security.

Type 2: **Power Users** can be described as the very opposite to minimal users. They use the internet and IT for all purposes, value the internet as a very important part of

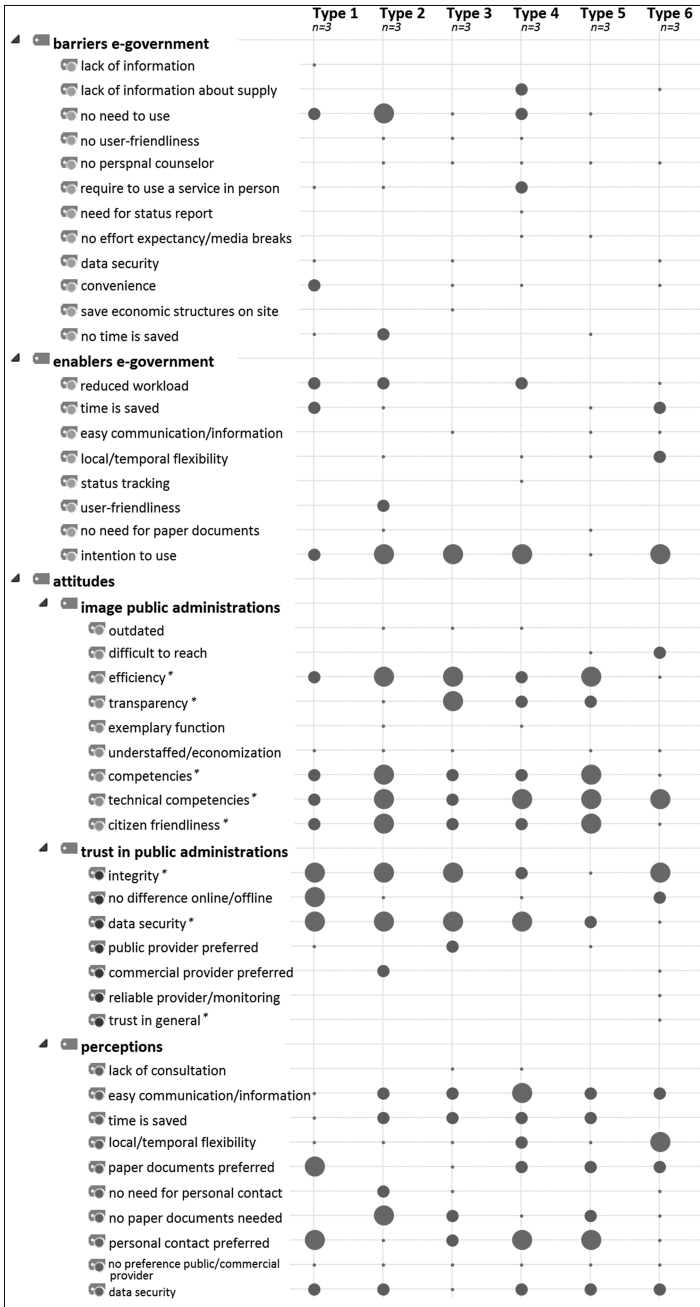


Fig. 2. Perceptions e-government by user types (\*positive or negative evaluation)

their lives and spend a lot of time online (>29 h per week). The internet and new technologies in general are seen as beneficial and sometimes self-evident. Thus, adoption decisions are based on practical considerations: a *lack of user-friendliness* and *high costs* are seen as barriers, whereas *time savings* and a *higher local/temporal flexibility* are the main drivers of adoption. Accordingly, the main barriers to e-government adoption are *no need to use* and the perception that e-government *does not save time*. Enablers are *reduced work-load* and *user-friendliness*.

In total, the respondents stated six enablers, thereby stating the most e-government enablers as compared to the other types. This type also has a rather positive image of public administrations that are perceived as efficient, competent in their field, as having the technical competencies to provide (secure) online services, and as citizen-friendly. Respondents in this group also express high trust in public administrations regarding their integrity and their ability/willingness to obtain data security.

Type 3: **Communicative Users** focus mainly on social media, spend up to 21 h per week online, and have medium to high technological competencies. The focus on social media in this group could explain why *information self-determination* is a major barrier to technology adoption, together with *potential costs of usage*. Perhaps these persons experience threats to their personal data when using social media and are therefore more cautious when adopting new IT. Despite this, no further barriers were stated, indicating that this user type is relatively open-minded to new IT. Accordingly, the interviewees perceive more enablers. They state that the internet can be *easily used to search for information* and increases the *local/temporal flexibility*.

Regarding their e-government specific perceptions, the patterns are less clear: One respondent did not state any barriers at all, while two respondents stated *no need to use*, *no user-friendliness*, *convenience*, *no personal counselor*, *data security*, and *saving economic structures on site* as barriers to e-government adoption. Although they all express the intention to use e-government, only one respondent named an enabler, i.e. *easy communication and information*. This could be explained with their general usage behavior, which is clearly geared towards the maintenance of social contacts. E-government could thus be of lesser importance and may not fit their general usage behavior wherefore perceptions are less structured.

This user types perceives public administrations as inefficient and rather non-transparent. They express only medium trust towards public administrations, especially regarding integrity and data security, which additionally distinguishes them from power users.

Type 4: **Pragmatic users** reported a medium variety of use and – with one exception – low time spent online ( $\leq 14$  h/week), while they perceive their own competencies as medium to high. The internet and e-services are mainly used for information and job related purposes. This user type is relatively pragmatic. Therefore, the main barriers to technology adoption are potential *costs of usage*, a *lack of user-friendliness*, and the *need to feel/test products*. If the services are hard to use and require more investments with regard to costs and efforts, this type tends to not adopt e-services. In contrast, if the services promises *time savings* or greater *local/temporal flexibility* (enablers), the interviewees are more willing to use them. This user type expresses a *lack of trust in financial online transactions*, which also fits the image of a pragmatic use of IT.

The pragmatism characterizing this type also becomes obvious with regard to the perceptions of e-government. The major barriers for this group are a *lack of information about supply, no need to use*, and the impression that one is *required to use a service in person*, whereas the major enabler is *reduced workload*. Hence, the adoption decision mainly relies on the degree to which an e-government service fulfills the personal needs and fits established usage behavior and routines. This also means that *personal contact* is preferred whenever problems occur. At the same time, respondents think that the use of e-government services can make *communication with and information about public administrations easier*, can *save time*, and can *increase the local/temporal flexibility*.

**Type 5: Goal-oriented occasional user.** Goal-oriented occasional users show a small to medium variety of use and time spent online ( $\leq 14$  h/week) but think that the internet is important. They use the internet and e-services purposefully and mainly for job-related issues. In contrast, entertainment or the maintenance of social contacts takes place offline. Since this type is very goal oriented, one barrier seems to play a major role in the adoption decision: *costs of usage*. The potential use of new IT or e-services has to clearly outweigh its costs. For two respondents, perceptions about *data security* and *information self-determination* are important as well. On the other side, *local/temporal flexibility* is the main driver of adoption decisions for this user type.

Prima facie, this type seems to be a mismatch regarding the e-government perceptions: One interviewee stated only barriers (*no effort expectancy* and *no time savings*), whereas another interviewee stated only enablers (*time is saved, local/temporal flexibility, no need for paper documents, intention to use*). The third respondent named both barriers and enablers (*no need to use, required to use a service in person* and *easy communication/information*). Still, their goal-orientation is the unifying characteristic: For all respondents, reaching a certain goal is of top priority. In the case of one interview, this leads to the perception of barriers, whereas in the case of the other interview, this leads to the perception of enablers. In addition, the respondents reported several contacts with public administrations in private and in job-related contexts. Thus, their image of public administrations is rather balanced: all interviewees tie their perceptions to individual employees and their local administrations instead of rendering a general judgement. In general, they have a positive image of administrations and, accordingly, express high trust in public authorities, especially regarding data security.

**Type 6: Versatile occasional user.** The occasional users spend limited time online ( $< 7$  and  $\leq 14$  h/week), attribute less importance to the internet and describe their technological competencies as low to medium. Although this type of user seems more heterogeneous regarding the variety of use, perceptions of barriers and enablers regarding general as well as e-government specific use are quite similar. The *costs of usage* are the major adoption barrier, whereas *time-savings* and the perception of online services as a *cost-effective alternative* are major enablers. Two respondents also stated as an enabler that, oftentimes, *e-services are without alternative*.

In contrast, the evaluation of the e-government specific perceptions is rather difficult: Two out of three respondents named barriers, however not the same and one interviewee named only one barrier. Since all three respondents have already used e-government, this could explain the differing perceptions of barriers, according to the type of service that has been used and problems that may have been encountered with the respective



services. More of a consensus was reached with regard to the enablers: The most important drivers of e-government adoption for this group are *potential time-savings* and *higher local/temporal flexibility*. Accordingly, all respondents in this group are *willing to use e-government* and perceive public administrations as having the needed competencies to provide secure e-services and as having integrity.

## 5 Discussion

Regarding RQ1, we built six user types (*minimal users, power user, communicative user, pragmatic user, goal-oriented occasional user, versatile occasional user*) using an iterative analysis process. The comparison showed that these types not only behave differently in online or electronic environments but also perceive IT in general differently, primarily according to personal technological needs and established usage routines – a result that is in accordance with prior research on different user types [e.g. 26].

Concerning the second RQ, it becomes clear that the user types also differ with regard to their perceptions of e-government. The first user type, **minimal users**, has a low usage profile and is oriented towards functional services. As described, the use of e-government is not out of question in general but has to fulfill needs. Consequently, this type presumably uses informational services, while more complex transactional services are of less interest due to the respondents' need for personal contact. This type could be also less inclined to e-government use due to the infrequent contacts to administrations and, thus, a lack of necessity. The **power users**, in contrast, have the highest potential to use e-government services, as the internet is an environment in which these persons feel comfortable and which is used, together with IT in general, for multiple purposes and seen as beneficial. Once this user type has the need to use governmental services, it is very likely for him to use them online as long as they are user-friendly and cost-effective, both with regard to material and immaterial resources.

The remaining types lie in between these two poles: The **pragmatic user** also has more potential to use e-government as the services promise time savings and higher flexibility. At present, they lack information about which services are supplied and how they function as they spend less time online and have medium competencies and thus, less experience. But in general, they are open minded towards e-government use.

The **pragmatic** and **goal-oriented users** may be slightly harder to reach with e-government services since the internet and electronic services are used mainly for job-related purposes and, additionally, both types spend limited time online. If administrations' on-site services have the same service level as e-government, both types presumably tend to use the former instead of e-services, especially regarding the pragmatic users' need for personal consultation in case of problems or questions.

The **versatile occasional users** attach great importance to time and cost savings and higher flexibility. For them, e-government usage is tied to benefits, especially time-savings, since this type spends less time with the internet or IT in general. Finally, the **communicative users** are less inclined to use e-government, as they use e-services and the internet mostly for communication and the maintenance of social contacts.

Moreover, they perceive administrations as inefficient and non-transparent, which could affect their perceptions about e-government and make them the least accessible group.

The comparison of the user types highlights two important aspects. First, it becomes obvious that citizens perceive e-government in accordance with their general usage behavior, needs, and attitudes. These perceptions may differ from individual to individual and thus also the importance of e-government for each citizen. Second, this result leads to the conclusion that low adoption rates cannot solely be explained by a lack of usability or usefulness. Research should also re-estimate the population that can actually be reached with e-government services and start evaluating adoption rates not for the complete citizenry but with regard to different segments of the public since, presumably, adoption rates differ from user type to user type.

## 6 Conclusion and Outlook

This study's aim was to uncover what types of e-government users exist (RQ1) and to reveal how these types differ in terms of their perceptions of e-government (RQ2). Our analysis led to the development of six user types: minimal users, power users, pragmatic and goal oriented users, versatile occasional users, and communicative users. These types can be distinguished according to their variety and frequency of use, the importance assigned to the internet, technological competencies, their perceptions about IT/e-services and about e-government and public administrations.

We are aware that our study has some limitations, which are mainly due to its explorative design. Since we have a very small number of respondents and focused solely on Germany, our results are not generalizable, especially since our sample was biased and the influence of socio-demographic variables thus remains unclear. Due to the small sample, it was sometimes difficult to clearly differentiate the user types and to assign each respondent to only one type. Thus, we are aware that the presented typology is by no means comprehensive and should be carefully validated with a larger sample and a quantitative research design. Furthermore, we focused on perceptions of e-government, which omits the effect of these perceptions and other influences on the actual behavior – a research question that should also be investigated with quantitative data.

Nonetheless, our study still contributes to current e-government research by revealing that citizens perceive e-government in accordance with their general IT behavior. From a scientific position, understanding how user groups differ in terms of needs and requirements, helps explaining why e-government adoption rates are stagnating and what impacts citizens' usage behavior. This research can also add to a better understanding of how e-government diffusion research differs from general technology research. From a practical viewpoint, understanding how user groups differ can help creating tailored e-government services that are actually used by a broad mass.

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