

A Long and Winding Road? Analyzing E-Government Website Maturity in Germany

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Abstract. The fundamental changes, occurring in modern societies through the digitalization, are also changing the way citizens interact with their governments. With more than 70% of citizens using the internet to retrieve information, websites become a crucial touchpoint for the public's interaction with administrations. The design and quality of these websites and services offered through them may have a considerable impact on the user's willingness to further engage with public administrations online. This article sets out to evaluate the German state capitals' websites with regard to their e-government maturity. We use a maturity evaluation scheme that considers five aspects of e-government: information, communication, transaction, integration, and participation. The results indicate that there is a substantial variety in the websites' maturity, horizontally as well as vertically. All cities perform well in furnishing information and make use of various communication channels. Transactional services, however, are less developed across all analyzed cities.

Keywords: e-government, maturity, citizen, website

1 Introduction

Digitalization, though influencing humanity for decades now, is still a buzzword and object of interest in many societal areas. The tremendous effect of the digitalization has also changed the way governments and administrations work, function and interact with their stakeholders. Understood as the “government's use of ICT [information and communication technologies], particularly Web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, and other agencies and entities” [1, p. 718], electronic government (e-government) has created large bodies of research on diverse aspects of the digitalization of public administrations and governments.

One major topic for researchers is to assess the maturity and quality of e-government in different contexts and from different perspectives. The main objective of these studies is to measure the development of e-government, compare e-government projects across contexts and to show gaps and areas for improvement [e.g. 2–4]. Knowledge from this line of research can help explaining how stakeholders can be integrated into political processes [e.g. 5] and, ultimately, raise adoption rates of e-

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government services [e.g. 3]. Especially in Germany, approaching e-government diffusion from a maturity perspective might be helpful as adoption rates of e-government by citizens are generally rather low, varying between 41% and 45% over the years [6].

E-Government can be described as a moving target, something that is in constant development and largely influenced by (changing) politics and even more by policies [e.g. 7, 8]. Therefore, a constant need for measurement arises as well as for small-scale evaluations that do not focus on average values for a nation but that consider and compare smaller entities within each country, e.g. at the state or even the city-level, to come to a more comprehensive understanding of maturity levels.

Against this background, the study at hand sets out to assess and compare the e-government maturity of the websites of the 16 state capitals in Germany. We put forward the research question: *How well do the state capitals' websites perform in terms of e-government maturity?*

To answer the research question, we use the 'criteria model for quantifying the maturity of e-government' as proposed by [5]. This model is based on the works by [9] and [10] and consists of five sections that together make up e-government maturity. While most maturity or development models assume that e-government evolves in stages, the model by [5] comes from the thought that each section can develop on its own and at different paces. The five sections are: information dissemination (I), communication (II), transaction (III), integration (IV), and participation (V). Because this model covers the most important aspects of e-government and is decidedly developed in the context of city websites, we chose this approach as basis for our study.

The remainder of the paper is structured as follows: The next section sheds light on prior research on e-government maturity and the different emphases chosen. Chapter 3 introduces the model and the applied method. After that, in chapter 4, the results are presented and discussed in chapter 5. We conclude with implications for practice and research and a general outlook.

2 Research Background: E-Government Maturity

Although e-government comprises far more elements than websites, the latter can be considered as the most important touch point for citizens. 77% of the German internet users search for information online. Additionally, most e-government services for citizens are provided over the internet. Thus, websites become a crucial point for the success of e-government projects as they presumably are the first touchpoint for those willing to use e-government. If information cannot be accessed with reasonable effort and in an acceptable amount of time, if provided information is not helpful or correct, or if core services cannot be reached, citizens will not adopt e-government. Factors like usability, trust, service or website quality are essential for the successful adoption of e-government [e.g. 1, 11, 12]. The design, structure and content of a website is therefore also important for the overall success of e-government projects.

In this regard, maturity of e-government "may be defined as the extent to which a government has established an online presence [...]" [13, p. 416]. To determine this

rather unspecific extent, e-government stage models have been developed that expatiate these varying degrees of maturity, commonly ranging from presenting information online to offering interactional services that integrate several functions [e.g. 14]. While these models offer evaluations on a rather high and generic level, critics have pointed out some weaknesses of these models, especially regarding the stepwise evolution these models suggest. Lately, scholars propose to view the different stages of e-government as evolving simultaneously and as equal in importance [e.g. 15].

Whereas these contributions are more conceptual, another set of studies focuses on the user-perspective, mostly applying surveys [e.g. 16] to estimate the usability or other quality aspects of e-government services, especially of websites. Overlapping with other research fields like adoption research, the studies focus on how e-government is perceived and on the stakeholders' needs or evaluations of the technology [e.g. 17, 18].

Tools to evaluate websites 'objectively' and without relying on perceptions have been proposed to a lesser degree although they offer several advantages: Quality measures are less tied to personal evaluations that may depend on uncontrollable heuristics. They rather provide a description of the current state and show areas for improvement, based on what has commonly been denominated as making up a qualitative and mature website. In contrast, opinion-based approaches like surveys leave room for personal interpretation and the degree to which a certain criterion is evaluated as being fulfilled may depend on experiences with the internet, administrations or e-government or may even depend on criteria that are unrelated to the technology in question. While surveys are to some degree context-sensitive, the chosen approach in this study, based on rather objective measures, is comparable across contexts.

3 Method

In this study we focus on the 16 state capitals' websites in Germany as these cities commonly have more inhabitants (and thus more potential users) and also more resources. Therefore, we assume that these websites should have a rather high quality, high accessibility of information relevant for citizens and that they also provide transactional services.

Starting point of this investigation is the maturity model proposed by [5] that is not only an instrument detached from personal experiences but also focuses on cities. The authors develop a model of e-government that does not contain stages but five different pillars that equally make up e-government, namely *information dissemination*, *communication*, *transaction*, *interoperability*, and *participation* [5]. The evaluation of websites is based on these pillars and consists of analyzing the website's e-government maturity, usability and handling of boundary documents. As discussed earlier, usability aspects are out of scope of this study, wherefore only the proposed maturity instrument was applied. The authors developed several criteria for each segment of e-government and divided a total of 500 achievable points (high maturity) on the segments and criteria (c.f. Table 1) [5].

Table 1. E-Government Maturity Model, adapted from Fietkiewicz et al. 2017 (p. 82)

<i>Pillar</i>	<i>Maturity aspects</i>	<i>Points per criterion</i>	<i>Total points</i>
Information (I)	Availability of press releases, basic information, information on healthcare, politics and on services/information for various user-groups/availability of forms, applications for smartphones, push services, information in English and the languages of the three most important immigrant groups/accessibility via smartphones	8,3	100
Communication (II)	Use of social media/making appointments online/*single government service telephone number/contacting via e-mail/leaving feedback or complaints	20	100
Transaction (III)	Forms can be filled out online/taxes, fees or penalties can be payed online/library services are online/availability of a personal portal	16,6	100
Integration (IV)	Availability of an entry homepage/*links to or integration of agencies at the same level/*links to or integration of agencies at other levels	33,3	100
Participation (V)	Availability of online questionnaires, forums or platforms/possibility to participate in community meetings online, *to launch petitions or referendums online	25	100

To analyze the state capitals' websites, we changed three aspects in the original maturity model (marked with * in Table 1): Instead of asking the administrations themselves to report on vertical and horizontal integration (interoperability), we used the definitions by [5] to operationalize integration as *links to or integration of agencies at other hierarchy levels* (vertical integration) as well as *links to or integration of agencies within the city level* (horizontal integration). This way, we are able to take the user's view, solely focusing on the outer perspective on administrations, while at the same time keeping the measurement as objective as possible. Additionally, we excluded the question of whether e-mails are answered. Both aspects are highly dependent on the administration's willingness share information (interoperability) and on who and which department respectively is contacted (e-mailing). Requests for information on certain topics may not be answered immediately, because of politics, other responses may take longer due to the department's work load. Instead of this measure, we focused on the so called single government service telephone number ("Behördennummer"), a number similar to emergency calls that leads the caller to a call center that either immediately answers the questions and gives basic information on services, e.g. which documents

are needed, or puts the caller through to the respective department. It can be assumed that calling this number may lead to faster results than e-mailing. Finally, we also excluded online voting as an evaluation criterion as currently it is not possible to vote online or electronically in Germany. Instead, we evaluated the possibilities to launch petitions or a referendum.

We analyzed the state capitals' websites using the adapted Table 1 by [5], denoting zero points (criterion not full-filled) or full amount of points (criterion full-filled). For each city, the total amount of points and the points for each category were calculated as indicated in Table 2. The analysis of the criteria always started from the entry page of each city and was conducted in September 2017.

4 Results

Analyzing the German state city's websites shows that the German capital Berlin offers its citizens the most mature website, while Erfurt, capital of the central German state Thuringia, brings up the rear. With a difference of more than 100 points between the two (min=306.5, max=416.5, SD=31.47), the differences between the websites' maturity are in general considerable. It is noteworthy that none of the websites reaches the total of 500 points, which leaves room for improvement for all analyzed websites.

As can be seen from Table 2, mostly all websites perform very well in communication and integration, with a mean of 91.25 and 97.91 points, respectively (see Table 3). 12 cities out of 16 offer their citizens different communication channels like social media, contact through the single government service telephone number, and contacting via e-mail. Also, most websites provide forms to leave feedback or complaints and offer systems to make appointments online. Those cities with less than 100 points in this category do not offer contact to the administration through the nationwide service telephone number or do not integrate feedback options. Additionally, Erfurt does not use social media to communicate with its citizens.

Integration (IV) is the second pillar where all cities, except Schwerin, score very high, but this result should not be overrated. By taking the citizens' perspective on the websites' maturity, we set the demands for this pillar quite low, only evaluating whether offers of other agencies were integrated or at least linked to. The results do not say anything about interoperability.

Regarding the other three pillars, some aspects stand out. First, it seems that each of the sections is developed in parallel rather than successively as is assumed by most e-government stage models [e.g. 14]. Although most models regard information dissemination as the most basic e-government service, the analyzed websites still can improve. Most of the websites with 91.7 points do not provide their websites in the languages of the three most important immigrant groups. Other cities do also not provide information for different user groups. Instead, contents of their websites are rather structured according to different situations in life or broader categories like tourism, economy, businesses and citizens.

Table 2. Evaluation of the website maturity

<i>City (state)</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Total</i>
Berlin (Berlin)	91.7	100	49.8	100	75	416.5
Stuttgart (Baden-Württemberg)	91.7	100	66.4	100	50	408.1
Magdeburg (Saxony-Anhalt)	91.7	100	33.2	100	75	399.9
Dresden (Saxony)	100	100	33.2	100	50	383.2
Wiesbaden (Hessen)	91.7	80	33.2	100	75	379.9
Bremen (Bremen)	64.3	100	49.8	100	50	364.1
Düsseldorf (North Rhine-Westphalia)	75.1	100	33.2	100	50	358.3
Munich (Bavaria)	83.4	100	49.8	100	25	358.2
Hamburg (Hamburg)	83.4	100	49.8	100	25	358.2
Schwerin (Mecklenburg-Vorpommern)	74.7	100	66.4	66.6	50	357.7
Potsdam (Brandenburg)	83.4	100	16.6	100	50	350.0
Kiel (Schleswig-Holstein)	83.4	100	33.2	100	25	341.6
Saarbrücken (Saarland)	83.4	100	49.9	100	0	333.2
Mainz (Rhineland-Palatinate)	91.7	80	49.8	100	0	321.5
Hannover (Lower Saxony)	100	60	33.4	100	25	318.4
Erfurt (Thuringia)	91.7	40	49.8	100	25	306.5

I=Information; II=Communication; III=Transaction; IV=Integration; V=Participation

The worst performing city website in this section is the website of Bremen. Bremen as well as Hamburg are city states. Their city government is closely tied to or is the state government at the same time, respectively. Therefore, information especially on the government and administration is not fully listed on the city's website.

Table 3. Descriptive Statistics

<i>Measure</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Total</i>
SD	9.14	17.28	12.95	8.08	23.18	31.47
Min	64.3	40	16.6	66.6	0	306.5
Max	100	100	66.4	100	75	416.5
Median	87.55	100	49.8	100	50	358.2
Mean	86.33	91.25	43.59	97.91	40.63	358.36

I=Information; II=Communication; III=Transaction; IV=Integration; V=Participation

Second, the section with the most backlog seems to be transaction (III). Here, only one city offers at least four out of six transactional services (Schwerin; filling out forms online, paying fees online (partially), services for libraries, personalized portal). This result is especially important for the citizens' perspective. Repeatedly, researchers have claimed that citizens expect their administrations to provide them with electronic services [19] and that they are presumably the user group getting the most benefits out of e-government [e.g. 20]. Providing services beyond informing the citizenry can therefore be considered as critical for the success of e-government initiatives [14]. Still,

this pillar offers most room for improvement across all city websites, which could be one explanation for why a lot of citizens in Germany still hesitate to use the online channel and rather prefer (or are forced) to go to the office.

Third, the participation section catches one's eye as it is the pillar with the most variation ($SD=23.18$) and lowest mean ($=40.63$). While Berlin, Wiesbaden, capital of the middle German state Hessen, and Magdeburg, capital of the eastern state Saxony-Anhalt, perform very well with 75 out of 100 points, seven websites offer no or very few possibilities to participate electronically. Most websites (4 out of 16) offer online questionnaires, but only very few and very infrequently. Those cities with more than 25 points additionally offer platforms or online forums to engage in discussions on city politics and to start initiatives. Few cities also provide the opportunity to launch petitions online or provide interactive portals on participation opportunities.

[5], on whose article this analysis is based, also measured the maturity of Berlin and Munich wherefore a comparison of these two cities and analyses seems appropriate. While Berlin and Munich both range in the middle when compared with other world cities [c.f. 5], Berlin is top-performing when compared to German cities, while Munich is still in the middle. Although we slightly changed the original evaluation scheme, the scores can be compared and it appears that both Berlin and Munich have improved considerably from 310.8 to 416.5 points and from 278.8 to 358.2 points, respectively. Most of the increase in points is due to the improved provision of communication channels. Although we used the availability of the single government telephone number as a measure for communication maturity instead of responses to e-mails, the scores are still comparable and show that both cities have improved the ways citizens can contact the administrations. With regard to the transaction pillar, Munich doubled the scores while Berlin only slightly improved the provision of transactional services. Even though Munich improved in this section, the city's website still only gets roughly half of the available points. While practically no changes can be observed with regard to the integration of services, it is very interesting to see that while Berlin improved e-participation for citizens from formerly 40 points to 75 points, Munich even impairs the score from 50 points to 25 points. Again, although we exchanged one criterion, the scores can be compared and it is surprising that Munich provides less ways to participate in politics than before.

5 Discussion

This article started by asking how well the state capitals' websites perform with regard to e-government maturity. The analysis reveals that there is considerable variance between the cities and also between each of the sections. In the following, the results are discussed in the light of prior research on e-government from the citizens' perspective.

The most obvious result from the analysis is the variation of the cities' performance (vertical). German citizens do not receive the same service level – depending on their residence and their administrations' ability or willingness to provide fully functional e-services. Although Germany has been rated among the leading countries in e-

government development by the United Nations [21], this trend does not account for the complete country. Instead, the provision of e-government seems to depend on local or regional circumstances, such as financial resources, political volition and legal constraints.

Variation also occurs with regard to the cities' performance on a horizontal level. Measured by the scores for each section, the cities' focus still lies more on the provision of information than on the delivery of transactional services (c.f. Table 2). Especially with regard to section IV (integration), it becomes clear that the websites mostly link to other websites instead of integrating different services. Also, even though most cities achieve high scores in the communication section, it remains unclear how the respective channels are used by governments as well as by citizens. In fact, current research indicates that both parties do not fully exploit the potential of social media for example. While citizens are, inter alia, unaware of the governments' social media use [22], governments still use the actually interactive channel to simply disseminate information [23]. Eventually, this leads to only 19% of German citizens actually using social media to get in touch with public administrations [24]. Similarly, it can be assumed that the potential of electronic participation is currently not fully exhausted. 7 out of 16 state capitals do not offer any or only very few possibilities to engage in politics online and even of those cities offering more ways for e-participation, only 3 offer at least three of the required services. Again, this situation is reflected in the actual usage rates of such services – only 22% of the German citizens know about e-participation tools and 10% use them [24].

As already mentioned, the analysis reveals substantial potential for development with regard to transactional services. A core service for citizens is tax filing. 38% of the German citizens use electronic tax filing, 57% intend to do so in the (near) future [24]. Taking this service as an indicator for the citizens' willingness to use e-government services, it can be assumed that citizens actually want to engage with public administrations over the internet but cannot do so due to a lack of services as the website analysis indicates. To give an example, 46% of the citizens would like to pay their penalties online [24], but the analysis revealed that only four cities offers this payment option to their citizens and only for selected services – one city only offers online payment for one single service. Similarly, 71% of the citizens would like to prepare forms online or electronically for their administrative issues, but only 61% are aware of this opportunity and again fewer citizens actually use this option (41%) [24] – although forms are available on every analyzed website. Besides the lack of supply, citizens are perhaps unaware of the various options the cities' administrations currently offer or they need more information and help to find the right forms for their specific matters. What becomes evident, though, is a discrepancy between what citizens expect from and assume about administrations' online services and what the latter in turn actually offer. This incongruity is not only a matter of unfulfilled citizens' expectations, but also a matter of unawareness about e-government services.

Finally, the comparison of the performance of Munich and Berlin between the study at hand and the one by [5] shows improvements in some areas, but it also shows that this development is rather slow as the data of the latter study is from 2012. Five years

later, the situation in both cities has changed but not to the extent one would expect with regard to the general technological developments of the last five years.

Overall, the analysis reveals considerable potential to improve e-government maturity of the German state capitals' websites, even though many of the websites perform very well in some of the analyzed sections. Yet, another aspect surfaces through this analysis, when contrasting the results with current user studies. It is not only the lack of supply (supply-side perspective) that could explain low adoption rates of e-government in Germany. It is also the citizens' unawareness or inaccurate expectancies about the administrations' online presence that leads them to the on-site office rather than to the virtual offices (demand-side perspective). A rationale seems to underlie this situation that prevails on both sides: The administration or government, respectively, is more viewed as service provider (active) and the citizen more as a user (passive). Therefore, provision of information and one-way communication still seems to be the focus of administrations' efforts in developing e-government. At the same time, scholars have recognized that the public can take more than this role when engaging with administrations and becoming more of a partner: "[...T]he provision and the broader pursuit of public ends supposedly occur mostly through networks of private and nonprofit entities, members of the public and governments in a phenomenon that has become known as 'governance' [...]. As a result, across many or most public services and programs, effective production and delivery require partnering with the public. The effectiveness of most regulations, as one example, depends in part on the cooperation of the regulated [...]" [25, p. 788]. Taking the perspective that the public can take different roles and also different roles at the same time, not only requires public administrations to re-think the way they want to develop e-government. It also requires the citizens to re-think their (active) role in shaping this development. While the analysis reveals that at least administrations from their part are on the right track to achieve this goal, it also shows that still a lot has to be done.

6 Conclusion and Outlook

This study set out to answer the question how well German state capitals' website perform with regard to e-government maturity. The analysis of the 16 cities' websites revealed that in some aspects the websites are already quite mature (provision of information, communication, integration). Yet, with regard to the provision of transactional services and ways to participate electronically a backlog has been identified.

From a researcher's point of view, the analysis raises issues that have to be tackled in the future. So far, scholars have been eager to understand under which premises e-government is developed and to understand how e-government is used by its stakeholders. Less attention has been paid to approaches incorporating both perspectives and highlighting discrepancies between expectations, needs and constraints on both sides. The need for such integrative approaches is highlighted when the results of the maturity analysis are contrasted with current user surveys: As pointed out earlier, some e-services already exist but are not used, while some e-services do not

exist but are desired by citizens. To understand what keeps citizens from using certain e-government services is therefore of great importance. In the same way, a deeper understanding of the public's role within public administrations could help fostering sustainable e-government development.

From a practitioner's point of view, the analysis foremost reveals areas for improvement of e-government provision in the state capitals but presumably also in other cities. Taking the maturity evaluation scheme is an easily applicable tool to evaluate any city website with regard to e-government maturity. Moreover, the results could be taken as a reason to reflect the role citizens have in the administration and to re-think ways of administration-citizen interaction to come to a more transparent, accountable and citizen- (or user-) centered administration that makes the most out of the opportunities the digitalization offers.

The results and the respective analysis are, however, limited in their validity. First, we considered the 16 state capitals. Among them are three city states that reduce, due to their special administrative structure, the comparability among the evaluated cities. Additionally, all cities differ with regard to their size for why the comparisons should be treated with caution. Second, the adjusted maturity evaluation scheme used in this study, focuses on the outer perspective on the website and does, for example, not include issues like interoperability or collaboration between different agencies at the same or at other hierarchy levels. Aspects like these should be considered in future research. Third, we encountered the definition of a threshold to be crucial for the evaluation of e-government maturity. For the information pillar, all cities received full points if the website was available in English, although the information density of these translated websites varied from offering only touristic information to providing services for foreign citizens. A differentiation regarding quantity is therefore needed to better compare websites and the e-government supply of different cities. Also, using social media as a communication channel or providing feedback channels on a website does not say anything about how these services are used by the cities and how they respond to the citizens' requests.

In summary, the e-government maturity of the German state capitals' websites is good to medium with a high variety between the top-performers like Berlin and Stuttgart, and the cities at the lower end of the ranking, Hannover and Erfurt. The comparison of Munich and Berlin with the study by [5] indicates some development but also potential for further changes. In fact, it seems as though the cities are on the right track – but the road to a fully functional e-government is still long and winding.

References

1. Wang, Y.-S., Liao, Y.-W.: Assessing eGovernment systems success: A validation of the DeLone and McLean model of information systems success. *Government Information Quarterly* 25, 717–733 (2008)
2. Garcia, A.C.B., Maciel, C., Pinto, F.B.: A Quality Inspection Method to Evaluate E-Government Sites. In: Hutchison, D., Kanade, T., Kittler, J., Kleinberg, J.M., Mattern, F.,

- Mitchell, J.C., Naor, M., Nierstrasz, O., Pandu Rangan, C., Steffen, B. et al. (eds.) *Electronic Government*, 3591, pp. 198–209. Springer Berlin Heidelberg, Berlin, Heidelberg (2005)
3. Papadomichelaki, X., Mentzas, G.: e-GovQual. A multiple-item scale for assessing e-government service quality. *Government Information Quarterly* 29, 98–109 (2012)
 4. Sørum, H., Normann Andersen, K., Clemmensen, T.: Website quality in government. *Transforming Government* 7, 322–341 (2013)
 5. Fietkiewicz, K.J., Mainka, A., Stock, W.G.: eGovernment in cities of the knowledge society. An empirical investigation of Smart Cities' governmental websites. *Government Information Quarterly* 34, 75–83 (2017)
 6. Initiative D21 e.V. and fortiss GmbH: eGovernment Monitor 2017. Nutzung und Akzeptanz digitaler Verwaltungsangebote - Deutschland, Österreich und Schweiz im Vergleich, <http://www.egovernment-monitor.de/die-studie/2017.html>
 7. Ahn, M.J., Bretschneider, S.: Politics of EGovernment: EGovernment and the Political Control of Bureaucracy. *Public Administration Review* 71, 414–424 (2011)
 8. Jun, K.-N., Weare, C.: Institutional Motivations in the Adoption of Innovations. The Case of E-Government. *Journal of Public Administration Research and Theory* 21, 495–519 (2011)
 9. Hiller, J.S., Bélanger, F.: Privacy strategies for electronic government. In: Abramson, M.A., Means, Grady, E. (eds.) *E-Government 2001*, pp. 162–198. Rowman & Littlefield Publishers, Lanham, Boulder, New York, Oxford (2001)
 10. Moon, M.J.: The Evolution of E-Government among Municipalities: Rhetoric or Reality? *Public Administration Review* 62 (2002)
 11. Hofmann, S., Räckers, M., Becker, J.: Identifying Factors of E-Government Acceptance - A Literature Review. In: *Proceedings of the Thirty Third International Conference on Information Systems (ICIS 2012)*, pp. 1–19 (2012)
 12. Carter, L.: E-government diffusion: a comparison of adoption constructs. *Transforming Government* 2, 147–161 (2008)
 13. Das, A., Singh, H., Joseph, D.: A longitudinal study of e-government maturity. *Information & Management* 54, 415–426 (2017)
 14. Layne, K., Lee, J.: Developing fully functional E-government: A four stage model. *Government Information Quarterly* 18, 122–136 (2001)
 15. Andersen, K.V., Henriksen, H.Z.: E-government maturity models. Extension of the Layne and Lee model. *Government Information Quarterly* 23, 236–248 (2006)
 16. Barnes, S.J., Vidgen, R.T.: Data triangulation and web quality metrics. A case study in e-government. *Information & Management* 43, 767–777 (2006)
 17. Elling, S., Lentz, L., Jong, M. de, van den Bergh, H.: Measuring the quality of governmental websites in a controlled versus an online setting with the 'Website Evaluation Questionnaire'. *Government Information Quarterly* 29, 383–393 (2012)
 18. Kaisara, G., Pather, S.: The e-Government evaluation challenge. A South African Batho Pele-aligned service quality approach. *Government Information Quarterly* 28, 211–221 (2011)
 19. Evans, D., Yen, D.C.: E-Government: Evolving relationship of citizens and government, domestic, and international development. *Government Information Quarterly* 23, 207–235 (2006)

20. Rana, N.P., Dwivedi, Y.K.: Citizen's adoption of an e-government system. Validating extended social cognitive theory (SCT). *Government Information Quarterly* 32, 172–181 (2015)
21. United Nations Department of Economic and Social Affairs: United Nations E-Government Survey 2016. E-Government in Support of Sustainable Development, <http://workspace.unpan.org/sites/Internet/Documents/UNPAN96407.pdf>
22. Hofmann, S.: Becoming Friends With the Government - A Qualitative Analysis of Citizens' Decision To 'like' Government Profiles on Facebook. *ECIS 2016 Proceedings*, 1–15 (2016)
23. Hofmann, S., Rackers, M., Beverungen, D., Becker, J.: Old blunders in new media? How local governments communicate with citizens in online social networks. In: 2013 46th Hawaii International Conference on System Sciences, pp. 2023–2032. IEEE (2013)
24. Initiative D21 e.V. and Institute for Information Public Management (ipima): eGovernment Monitor 2016. Nutzung und Akzeptanz digitaler Verwaltungsangebote - Deutschland, Österreich und Schweiz im Vergleich., http://www.egovernment-monitor.de/fileadmin/uploads/Studien/2016/160915_eGovMon2016_WEB.pdf
25. Thomas, J.C.: Citizen, Customer, Partner. Rethinking the Place of the Public in Public Management. *Public Admin Rev* 73, 786–796 (2013)