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Marko M. Skoric, Peter Parycek, Michael Sachs (Editors)

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CeDEM Asia 2016 Editorial

November 2016

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The International Conference on E-Democracy and Open Government Asia 2016 (CeDEM Asia 2016) follows the success of ten previous conferences in Europe and two groundbreaking conferences in Asia, and is hosted this year in Daegu, South Korea, from December 7-9th, 2016. Thanks to the generous support of our hosts, the City of Daegu, Daegu Convention Bureau, Daegu Techno Park and Korea Tourism Organization, we were able to bring this conference for the first time to South Korea, a country that has been one of the leaders in e-governance for the past several years. We are also excited about the opportunity to learn about the efforts of the City of Daegu to transform its governance, economy and civil society and make them more participatory, open, and creative.

CeDEM Asia 2016 brings together researchers, policy-makers, industry professionals, and civil society activists to discuss the role of social media, mobile technology, open data and digital innovation in the future of citizenship and governance. The conference adopts an interdisciplinary perspective to analyze current research, best practices, and emerging topics that are shaping the future of e-government, e-democracy, civic participation, and open government in Asia and around the world.

This year's conference features speakers from academic, civil society, think-tank and consultancy sectors, with an aim of establishing an open forum for the exchange of ideas and research findings. Compared to CeDEM Asia 2014 held in Hong Kong, the conference has become more diverse and open, with our participants hailing from 20 different countries. For this year, we have programmed three distinguished keynote talks, 23 research and reflection papers, and several thematic workshops focused on citizen participation, social media and open publishing, including a panel jointly organized with our partner, Daegu Gyeongbuk International Social Network Conference (DISC 2016).

Finally, we are very thankful to our conference partners who made our meeting in Daegu possible: City University of Hong Kong, Cyber Emotions Research Center (YeungNam University), Danube University Krems, World Association for Triple Helix and Future Strategy Studies, Nam Center for Korean Studies (University of Michigan), Singapore Internet Research Centre (Nanyang Technological University), and Eurasia Pacific Uninet.

Research Papers

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The Promises of Digital Political Communication and the Reality in South Korea

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***Abstract:** The internet and social media have been credited with the potential to reinvigorate democracy by offering new avenues of political participation and communication with politicians. Empirical studies, however, brought more cautious results, as many politicians refrain from fully exploring the interactive potential. The focus on established patterns of participation and their top-down approach in such studies have been criticized. This paper seeks to place South Korea in this debate. South Korean citizens are frequent social media users and have experience in using digital media for mobilization to change policies. Politicians, however, remain distant from citizens and do not reach out to citizens via social media, not living up to the promise of a reinvigorated democracy envisaged by some scholars. While present, communication via the new media remains a one-way street. These findings coincide with those of a growing number of similar case studies, supporting in the reinforcement theory. The case study also highlights the need to develop detailed frameworks to fully explore the activities of both citizens and politicians on social media, beyond the simple counting of posts and connections.*

Keywords: politicians' digital presence, political communication, direct democracy, South Korea, National Assembly

The theoretical debate on democracy and its components intensified in the final decades of the 20th century, driven by two seemingly contradictory developments. On the one hand, a rising number of countries turned to democracy, yet on the other, a crisis of democracy in mature democracies was identified. Indicators for this crisis are falling voter turn-out, growing apathy and declining party identification as well as the rise of populist parties and movements (e.g. Putnam, 2000, Dalton & Wattenberg, 2000). Political participation is often reduced to voting in elections, removing citizens from policy-making processes. As politics professionalised, the direct connection to citizens weakened, leading to dissatisfaction with political processes and the growth of non-traditional political activities, such as social movements and boycotts. The notion of a democratic decline has been challenged for the underlying normative assumptions concerning democracy, representation and participation which are based on the mid-20th century, such as high levels of party membership and party hierarchies (Blühdorn, 2014). Instead, the changing political activities and different expectations from political institutions need to be taken into account and expectations of form and function of political participation adjusted. This invokes the need to change behaviour and expectations by both political actors and theorists.

As new information and communication technologies (ICT) and social networking services (SNS) emerged around the time the democratic decline caught attention, the effect of new technologies on the quality of democracy became part of this debate. Social media have been suggested as a solution to the participation problem, opening new avenues of communication between politicians and citizens. Such direct deliberation, it was suggested, could reinvigorate democracy by cutting out the middle man and bringing citizens and politicians closer (e.g. Coleman, 1999). Similar claims have been made with each new hardware and software innovation, ranging from the telephone, radio, and television, to discussion portals, blogs, and SNS. The analyses of such changes is often less conclusive. Political scientists tend to focus on either established actors such as political parties or citizen activities but the connection between the two is explored less frequently (see also Wright, 2012). In light of this lacuna, this paper explores if and how ICT enhanced, changed or maintained established patterns of political participation and representation in the Republic of Korea (hereafter South Korea or Korea). The broader goal is to explore the connection between the theoretical considerations on ICT with the debate on digital democracy, using Korea as a case study. The results show the limitations of the techno-determinist view that ICT will bring direct democracy. Politicians' use of ICT to encourage participation is limited but citizens are also less likely to engage on such platforms with politicians.

1. Democracy and the internet

Since the 1990s, the opportunities and effects of ICT has been subject to many studies, both theoretical and empirical. The focus of attention shifted from e-government and e-voting to the provision of information, deliberative spaces and ICT's mobilization potential. The work can be broadly categorised into two contrasting perspectives, the optimistic 'revolution' and the 'reinforcement' and 'normalization' perspective. The former welcomes new ICT as a force to revive democracy, by offering easy access to information, and opening new public spheres for discussion and deliberation, and inclusive and broad citizen participation in the decision-making process (Davis, 2009, Shane, 2004). The spread of information is seen as revolutionising (Trippi, 2004), as the internet emerged as a fifth estate (e.g. Morris, 1999). Public deliberation is described as the cornerstone of participatory democracy which could overcome some of the noted problems of policy-making and representation in established democracies (e.g. Blumler & Coleman, 2011). Optimists highlight the democratizing potential of ICT, allowing for fast and direct communication between politicians and citizens (e.g. Blumler & Kavanagh, 1999; Coleman 2005). Internet forums as spaces of deliberation have gained attention, not just for debate but also for the creation of new networks and civil spirit (e.g. Coleman & Blumler 2009, Wright, 2012).

The reinforcement perspective takes a more cautious tone, highlighting the digital divide (Norris, 2001) and the danger of fractionalization (van Alstyne & Bryndfissoo, 1997). As the internet incorporated into daily life, some concerns over exclusion were dispersed but critics in the reinforcement camp remained skeptical of the transformative power of ICT, claiming, for instance, that existing patterns of participation and communication are simply reinforced (e.g. Norris, 2000, Margolis & Resnick 2000). Traditional media continue to play a role of trendsetters and multipliers (e.g. Farrell & Drezner, 2008). Reports on trending topics in social media on TV or in news reports, for instance, reach a wider audience than the actual messages (see, for instance, Choi & Chang, 2015). While ICT have reduced the role of gatekeepers in traditional media, popular bloggers, Facebook and Twitter posters take a similar function as multiplier of posts. As ICT have become

part of everyday life in many countries, many politicians treat the internet as an extension of established pathways and settings (e.g. Ward et al., 2003). This added the normalization perspective to the more recent body of work.

The opportunities offered by the internet to change democracy and political activities are the topic of many empirical studies. Initially, the focus lay on activities by political actors, such as intra-party communication and campaigning (e.g. Kluver et al., 2007, Gibson et al., 2008; Vergeer et al., 2011). With the development of 'Web 2.0' regular internet users are given much greater opportunity to produce content, leading to the proliferation of participatory activities, including blogs and discussion sites (Valenzuela et al., 2012). Gibson (2015) also notes the outsourcing of US-campaign activities, facilitated by the spread of SNS. In the study of politicians' digital presence, there has been a focus on output, the existence and availability of websites among politicians, their service features and hyperlinks. The uptake of online communication, the vertical connection with citizens, has been studied less frequently (e.g. Gibson & McAllister, 2006), although more recently, the growth of Facebook and Twitter changed this. Outside campaign periods, there is less activity on social media (e.g. Vergeer et al., 2011). Looking at American politicians on Twitter, Hong and Nadler (2011) find that their presence of Twitter had little impact on public opinion. Research on politicians' activities on Twitter and Facebook draws similar conclusions (Larsson & Moe, 2011, Ross et al., 2015), although at least one study on Denmark finds that the comment sections on politicians' Facebook pages have developed into discussion spaces (Sørensen, 2016).

The most notable change, however, relates to citizens' roles in organising and mobilizing activities, often using SNS. Such horizontal communication played a vital role in recent political events, like the Arab Spring (Chebib & Sohail, 2011) and the Occupy Movement (Jensen & Bang, 2013). Protesters focus generally on specific goals and aim for direct action by the executive rather than representatives. While this is a form of direct democracy it certainly does not offer means for day-to-day administration or provide for key elements of democracy such as minority protection. The role of ICT in short-term participation is widely acknowledged, but the long-term effects on political participation and citizen representation remain subject to debate. The emergence of different models of democracy, like direct or deliberative democracy, is by no means guaranteed. Representative democracy remains the norm in most democracies, so politicians' willingness to engage through the medium of new media is crucial (for a debate, see Blühdorn, 2014). Such willingness is by no means guaranteed (e.g. Lilleker et al., 2011). The analysis of the effects of ICT and SNS with their dialogic character on vertical communication and the opening of new participatory avenues in representative democracy thus warrants further study.

To this end, this paper turns to South Korea as an empirical study, a relatively young democracy (since 1988). Democratic political institutions are well-established although there remain some short-comings, such as a weak party system and the personalized style of politics (e.g. You, 2015). South Korea is an early adapter to new ICT infrastructure as well as usage of digital media in all spheres of life, including politics. ICT and social media have increased mobilization and organization on a horizontal level among citizens, while established political actors are adapting to new ICT at a much slower pace (Kim & Kim, 2009). This is been described as a divide between 'digital citizens' and 'analog politicians' (Min, 2008). The growth of social media has opened new means of vertical communication to overcome this gap. It is nearly twenty years that Korean citizens are using digital media to organize political activities and large scale demonstrations, so

this research started with the assumption that in the intervening years, Korean politicians had strived to engage citizens through ICT and social media.

In line with other studies on politicians' use of ICT in established democracies, this paper looks at the social media presence of Korean parliamentarians and how they use such media to connect with citizens (e.g. Gibson & McAllister, 2006; Gibson et al., 2008; Larsson & Moe, 2011; Hansen & Kosiara-Pedersen, 2014). Building on Stein's typology (2009, 752-3) online communication is taken to include a number of variables, namely, whether it provides information, promotes interaction and dialog, and promotes fundraising and resource generation. Using these factors, this study aims to analyse whether and how politicians actively use ICT and social media as a (genuine) means of communication to engage with citizens. This leads to the two research questions.

RQ1: Which features or attributes do Korean parliamentarians include on their websites and social media presence and how prevalent are these features?

RQ2: To what level do Korean parliamentarians use the web to engage in primary communication functions?

The first question explores the online presence of National Assembly members (NAM) and whether they use this as an authentic means to communicate or just as an information channel. The second question looks at the parliamentarians' communication across a number of popular platforms. Social media in particular offer a number of ways to connect with citizens to identify emerging issues and trends. Korean NAM are a well-studied group, but the focus tends to be on quantitative analyses, such as Twitter networks (Hsu & Park, 2011) and the connection to finance (Lim & Park, 2013). This paper is less interested in the sheer number of posts and tweets but in the audience of such output and the interaction with this audience. The remainder of the paper first introduces Korean IT development and recent cases where digital media have affected mobilization and political outcomes. The main part focuses on the analysis of the social media presence of parliamentarians in early 2016, an explorative study rather than in-depth quantitative analysis. This is followed by a discussion of the challenges to democratic representation and methodological considerations raised by the case study.

2. Internet usage in South Korea

South Korea is often referred to as the 'most wired country' in the world, due to the early and widespread adaption of ICT. In the late 1990s, the government launched the development of the necessary infrastructure for fast broadband and wireless connections, which have become (almost) ubiquitous, at home and in public places. South Koreans are avid users of their smart phones, which offer easy and constant access to social media through relatively cheap data plans. Over the last decade, there has been a shift from domestic applications to overseas ones. While social networking service cyworld and its personal homepages called mini-hompy were hugely popular in the mid-2000s, the company has ended its services in 2015. The big portal services, daum.net and naver.com, offer community sites called "café" which are losing in popularity to blogs, Facebook and Twitter. About two thirds of Koreans used social networking services (SNS) in 2015, with profile-based services such as Facebook and kakao story being very popular (88.4% of SNS users). Facebook users amount to around 16 million (Internet Statistics, 2016), while Korean-

developed kakao story reportedly had 14 million users by February 2016 (Lee, 2016). Kakao story gained popularity due to its connection with kakao talk, an instant messaging service that is used almost universally in Korea (in 2015, over 90% of Koreans had an account and 88% had accessed it within the last week [MSIFP 2016]. Kakao talk itself states it user number for the first quarter of 2015 at 38,158,000 in a country of roughly 50 million; daumkakao, 2015). Four out of ten social media users participate in online cafés and clubs while over a quarter have a blog (MSIFP, 2016). Micro-blogging site Twitter is less popular, it is believed there are around 7.5 million subscribers but only one million active accounts, mostly among the younger generation (in 2013; emarketer, 2014).

2.1. Social media and political mobilization

The role of ICT and social media in political activities and discussion has been growing over the last twenty years. In the late 1990s, discussion sites and political commentators opened new spaces for debate as well as the provision of information (Chang, 2005). Online newspapers, most notably Ohmynews, opened new forms of journalism and created new platforms for debate (e.g. Yun, 2003). Online fan clubs are credited with the electoral success of President Roh Moo-hyun in 2002 (Chang & Lee, 2006). The growth of mobile phone usage changed mobilization processes as text messages proved useful to galvanize friends and acquaintances to join protests, like the 2002 demonstrations against the presence of US-troops and the 2004 protests against the impeachment of the President (ibid.). Mobile devices also help to provide further direct information as photos and videos could be taken and uploaded in real time for further discussion and mobilization. The later 2000s saw a shift from text messages to online communication on blogs and in chat rooms, facilitated by the spread of smart phones and ubiquitous Wi-Fi. This aided the mobilization of numerous protests, most notably the 2008 anti-beef demonstrations. After watching a TV-program on the potential risk from imported beef, users in online forums discussed the threats and organized demonstrations in the streets of Seoul that lasted for several month. The initiative originated in diverse forums, such as fan clubs for boy bands or shopping advice sites (Kim & Kim, 2009, Min, 2008). Although reluctant to embrace new media for communication, political parties have used ICT in the candidate selection process by opening primaries beyond party members through phone voting (e.g. Park, 2014). While popular among Koreans, this method reduces the role of political parties as gatekeepers to political office and turns the nomination process into a popularity contest. Most of the online activities are, however, citizen-driven, aiming to make their voices heard. They are seeking direct influence on government policy, rather than relying on the means provided by representative democracy. This highlights the gap between 'analog politicians and digital citizens' (Min, 2008). The following aims to analyze if this statement still hold eight years later, or if politicians have adapted to the high social media use among citizens and opened new avenues of communication and participation.

3. Methodology

This paper focuses on politicians elected to the national Assembly, leaving aside other actors engaged in political communication, such as other politicians, civil activists, academics, and political pundits. In 2012, 300 representatives were elected to the 19th National Assembly; 246 directly in districts, 54 appointed from proportional lists. At the time of data collection in February 2016, the Korean parliament had 294 members, including 53 members appointed on proportional

seats, forming the data set used here. A pilot had been run in June 2015 with a number of researchers to test data collection and coding. The website of the National Assembly has a directory of all representatives, which includes a link to their homepage and email address, but no other social media contacts. Therefore, the online directory of search engine naver.com was consulted to provide further details on parliamentarian's social media presence. The data analysis included all major social media used, except kakao talk, which is restricting open access and thus data collection. The National Assembly was not in session at the time of data collection, so additional data for a week in November 2015, when parliament was sitting, was included to gain further insights into activity patterns. Put simply, are politicians reducing their online presence for parliamentary work or are they informing and consulting citizens about such sessions? Due to time restraints, the collection was limited to two one-week windows, although a longer period would be desirable. The number of activities within the set time frame is coded as frequency, ranging from one to two posts a week ('occasional') to over 34 ('heavy', referring to 'super users'). The time of the last update is noted, ranging from never to within the last day ('most recent'), with slight difference between blogs, Facebook and Twitter to reflect different usage patterns. The study enumerates features and activities, but does not attempt more sophisticated statistical analyses, as the results for many variables are too small to produce statistically relevant results. In the next step, a qualitative content analysis of communication is planned.

4. Findings

4.1. The National Assembly members

Among the representatives are 250 men and 44 women, ranging in age from 35 to 74 years. Just over 13% are below fifty years old, while 46% are in their fifties and 37% in their sixties. Ten representatives are over 70 years old (3.4%). The data was collected after the main opposition party, the New Democracy Party, had split in early 2016: the Minjoo Party of Korea with 105 representatives and the People's Party (17). In addition to the ruling conservative Saenuridang (161 representatives), there are five representatives of the left-wing Justice Party. There are also six independents in the sample. More than half sat in the National Assembly for their first term, while 22% served a second term and 16% their third. 29 members had served four times or more, including one representative, who has served seven terms in the National Assembly since 1981 (and was elected for his 8th term in April 2016). The personalized style of Korean politics had little effect on the usage of SNS by individual politicians.

With one exception, all NAM had some form of web presence; Facebook and personal web sites being the most popular (283 and 282 respectively). Most representatives also had a blog (161) and a Twitter account (242), although they were less frequently updated than Facebook accounts. In addition, an array of other social media were used, including You Tube (43), Instagram (23) and kakao story (18). Representatives have established a presence on a wide variety of social media, but, as Strandberg (2013) highlights, presence is not the same as engagement with citizens (for further discussion, see also Hsu et al., 2013). Indeed, the key observation is the limited number of Korean parliamentarians who are active on the social media beyond establishing a presence.

4.2. Personal websites and blogs

All but three of the 294 members have some form of personal website or blog but usage frequency varies substantially between within the last day to three years prior. A further eight

representatives' websites were found to be not working. Although 202 parliamentarians had their own web domain, two thirds of these used a blog as their main site of activities. Other NAM relied on a blogging platform as their main web presence (81, 27%). However, the relative low update frequency (less than once a week) indicates a shift toward SNS where more posts can be found. Over one third of parliamentarians have no updates on their website within the last month, while only 8.5% update more than once a day. Representatives under 45 are less likely to update their website or blog although among the general population their age group is more active online. Female NAM are more likely to update at least once a week. But the 'super updaters' who post more than 19 updates in the previous week are all male representatives. In terms of content, there were no clear preferences for information or visual contents but a detailed content analysis may draw out some further insights beyond the observation that news reports on the politicians and posts on activities are frequently posted. More than half did not provide a link for donations, a key feature in many other countries (e.g. Kløver et al. 2007).

4.3. Facebook

Only a small number of NAM had a profile on kakao story, the Korean personal profile site, so it is not covered here. Many parliamentarians are represented on Facebook; only eleven (3.7%) had not joined. 194 (74.3%) NAM have personal site while twenty (7.6%) are presented in the form of a page. A further 69 (26.4%) use both formats but the personal profile is updated more frequently by the majority, as there were 46 updates within the week of analysis on the personal side but only seven on the page. On a personal site, the number of friends is usually cut at 5000, with over two thirds of the NAM with a Facebook site were close to that number. Despite this, over one third only allowed friends to see the main content of their page, thus reducing access for a wider audience. There are two options to overcome this, the opening for followers, who will be more frequent updates in their newsfeed or the creation of a Facebook page which allows more people to follow the page. While 46% of representatives have less than one thousand followers, 14% reach more than 20,000. The other measure of popularity is the number of 'likes' which extends the reach of posts beyond the initial poster into other networks. One third of the NAM stays under 500 likes, while another third have reached up to 1500 likes. (37%) Four NAM have more than 10,000 likes, with prominent opposition politician Moon Jae-in leading with 370,000 likes, four times as many as the politician in the second highest position, Ahn Cheol-soo. Ahn, however, does not have a personal presence, but is represented by a page. In terms of engagement, the trends from Twitter are repeated: many do not engage with their visitors. More than three quarters of the Facebook users did not reply to a post in the previous week. Interestingly, the representatives who replied very frequently are not frequent posters or tweeters.

Personal Facebook sites are frequently updated, with three quarters of users doing so within the previous week. About half posted seven times or less, while 15% posters more than twenty times. Since Twitter accounts can be connected to Facebook, the number of posts may affect the results, but Facebook is the more frequented site of the two. Among the super users of both, no clear pattern emerges, but the top two are also the leaders of opposition parties, Moon Jae-in and Ahn Cheol-soo. The analysis did not look into the number of likes and comments on posts, but the overall impression is that interaction is limited. These features and their use for communication and debate warrant further in-depth analysis, as findings from other countries show different trends (e.g. Ross et al., 2015, Sørensen, 2016).

4.4. Twitter

Twitter shot to fame as a new tool of political communication when Barack Obama sent his first tweet during his election campaign in 2007. Across different countries, researchers note a reinforcement trend, the same group of (already engaged) users communicated with each other (e.g. Larsson & Moe, 2011; Vergeer et al., 2013). In Korea, as in many other countries, Twitter has been credited with affecting election results in recent years, in particular with increasing voter turn-out (e.g. Chang 2014). Among the NAM, 85% had a Twitter account, generally used for self-promotion, such as posting a link to a news piece on the politician or a topic close to their interests. During the off-session week under study, only seven NAM posted more than once on Twitter, while during National Assembly sessions, the number was even lower. Interactivity is measured with the number of retweets and replies. The number of retweets in late February 2016 is low, 85% do not use this feature at all, while around 12% use it occasionally (one to three times). Super posters with more than 30 tweets are not necessarily also retweeting frequently, but the number of frequent Twitter users among NAM is too small to draw meaningful conclusions. With regard to the number of replies sent, the picture is equally inconclusive – frequent tweeters do not reply frequently. The data from the week in the previous November shows similar patterns. Taken together, it is an indication that Twitter is mainly used for self-promotion, rather than as a form of interaction and communication with a broad audience. Consultation during parliamentary sessions does not place on Twitter.

The number of followers should also be treated with caution as a sign of active engagement. It may serve as an indicator of the audience size but not all the accounts following may be active (Strandberg, 2013). In addition, recipients may not read all posts, as it is often considered good etiquette to follow someone who follows one's own account (Cha et al., 2010). A politician following a large number of accounts may become overwhelmed by posts and thus less likely to engage. Looking at the ranking in terms of followers, only two parliamentarians can be found, as political pundits attract more followers (Socialbackers, n.d.). The most popular Twitter user is former presidential candidate Moon Jae-in (with over 900,000 followers). As he was a member of the 19th National Assembly, he also leads the board in this sample. Eleven other representatives have over 100,000 followers while the majority of NAM (nearly 75%) has less than 15,000. The number of accounts followed by politicians is lower, with only ten percent following more than 20,000 people. Overall, this is a small echo chamber, so in early 2016, Twitter was a minor influence on Korean politics.

5. Discussion

Although Koreans are avid users of ICT and social media, their use for political participation and citizen engagement in formal political processes remains limited. Politicians in the National Assembly have built up a broad presence in the digital world, but do not use the interactive features of the new technologies. Communication remains a one-way street, comments, replies and retweets are rare. While no longer simply 'analog', politicians continue to show few signs of engaging and encouraging citizen participation. Citizens, on the other hand, expand their general distrust of politicians to their online presence and are unlikely to seek such avenues of participation. This counters the optimistic assumptions made at the beginning of the paper about the trickle-up effect of social media use.

Online activity in Korea as much as in other countries, is generally driven by the younger generation and, at least initially, favors opposition politicians (e.g. Bakker & de Vreese, 2011). As the representatives in the Korean National Assembly are older, there are few direct connections and little overlap between these two groups. Among the NAM, however, the younger representatives were less active than their slightly older peers. This may well be related to their position, as more than half of them entered the National Assembly on proportional seats without a direct constituency to connect with and thus are take the party leadership as their reference point. Moreover, in the past, very few proportional representatives chose to stand in elections at the end of their term, so they may see less need of social media engagement for campaign purposes. The higher level of engagement among older NAM could also be a result of a team of assistants. A high volume of posts by a politician could also indicate that they are not alone in using their account. In practical terms, such numbers can only be managed with the help of assistants, rather than constant personal attention by the politician themselves. Interviews could clarify this important point, as the use of intermediaries undermines the direct access argument of proponents of direct democracy. Other variables, such as gender, hometown, experience in the National Assembly, and party membership did not offer any further insights into distinguishing features. While in the early 2000s, digital media were dominated by progressive forces, conservatives have caught up in more recent years, normalizing ICT use among politicians. Although the top SNS ranks are filled by opposition politicians, members of the ruling party are as active as other NAM. The parliamentarians are not notably more active while in session, in fact in November 2015, post numbers were lower. The opportunity to inform and consult citizens about parliamentary business and decisions seems to go unused. Income generation is not prioritized by many parliamentarians.

In terms of popularity, already well-known politicians dominate the field, supporting the reinforcement perspective. Among the most popular SNS users, Ahn Cheol-soo is an interesting for his outsider status. Ahn is famous for starting a successful anti-virus software company, and entered politics relatively late in 2011. Although (or because) he was not affiliated with a party, he was hugely popular, in particular among younger people (Sohn & Kang, 2012). Now a National Assembly member, he continues to travel the country for town hall meetings to seek direct contact with citizens. Yet, despite his background in the IT industry and popularity among the tech-savvy young generation, he is not a frequent user of digital media, but favors more personal contact and the traditional media to promote his message. This could be due to personal preferences or an indication of socialization to established patterns of political communication. In recent years, other politicians have followed his example rather than shifting online.

6. Conclusion

The results suggest that the majority of NA members are not utilizing ICT and social media as a communication means to its full potential. Although they have established a presence in the popular SNS of the day, it is mainly used as a one-way channel to distribute information. Engagement and communication are rarely encouraged. As this study finds, the key players – politicians – are not necessarily interested in opening such new avenues, even though they possess the technological means. The high expectations of new media as an invigorative force of democracy may be rooted in technological determinism. Proponents of digital deliberation and digital democracy may well overestimate the openness of politicians - and citizens - toward new practices and behaviors. This does not, however, mean that digital media should be ruled out as

political tools. The dichotomy of representative democracy versus direct democracy may be hindering the debate, as there are communicative elements to representative, encouraged by digital media (Coleman, 2005). ICT and SNS open additional means of engagement that, with some commitment by users, could develop into a more interactive tool. This may include innovative forms of participation outside the established patterns. Rather than bringing a revolution, digital media are bringing slow changes that nevertheless challenge 'politics as usual' (see also Blühdorn, 2014, Wright, 2012).

Each new media development opens new opportunities for participation and communication, but also brings challenges to the researcher. The growth of Facebook and the potential for deliberation in this platform have opened new fields of research. While many users simply click on like or follow a politician there are also other options. Pages and posts by politicians may serve as a starting point for discussion in the comment section that warrants further research, in particular qualitative content analysis. A starting point would be an expansion of existing frameworks used to analyze blogs. The openness of a politician's wall to outside post and the open comment sections offers greater opportunities for engagement, but also raise the problems of moderation. The presence on many digital media may improve the public profile but it also reduces ability to communicate as politicians' time is, after all, limited. This affects the argument that ICT promote direct engagement and remove barriers between politicians and citizens. The case of South Korean NAM shows that the simple presence of SNS in a country does not automatically lead to increasing means and levels of engagement and political participation in representative democracy. Politicians need to use ICT proactively and engage online to make this new approach to politics successful. This is not necessarily a question of numbers but also of depth, which can only be explored in a subsequent qualitative analysis of posts.

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Post 2015 Paris Climate Conference Politics on the Internet

Social media strategies of political institutions on the environment in Germany and Japan

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Abstract: *The outcomes of the climate negotiations of the 21st session of the Conference of the Parties (COP21) by the United Nations Framework Convention on Climate Change is the most important since the enactment of the Kyoto Protocol in 1997. With the development of new information technologies since the 1990s public awareness of environmental issues has increased significantly and not only civil society actors but also political institutions and governmental organizations started to use these new tools. The direct communication with citizens, journalists and other interest groups can provide political representatives with a powerful tool to shape public agenda. However, political institutions are traditionally slow in adapting to new technologies and social media services are dominated by individual (one-person) users. Politicians as well as institutions on the Internet must be careful how to facilitate communication online to ensure their political legitimacy. How do governmental organizations involved in climate change politics use social media? This study focuses on the analysis of the official Twitter profiles by the German (@BMUB) and Japanese (@Kankyo_Jpn) environmental ministries and contributes to the understanding of how governmental organizations facilitate new information technologies in the age of democratic transition. With Twitter data of a seven-month period from the beginning of COP21 on November 30 2015 until July 3, 2016, covering three important international events related to climate change politics in total, besides COP21, the pre-COP session and G7 summit (both in May 2016) the characteristics of social media use is being analyzed. Even though Twitter is more popular in Japan, it has not been played an important role in direct communication and information dissemination for political institutions compared to Germany. Moreover, while previous research conclude institutions would avoid interaction on the Internet, the findings suggest differently.*

Keywords: Climate change, COP, G7, Twitter, Japan, Germany

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Climate change is one of the most important issues nowadays, influencing political decision-making processes that effects various areas and is part of daily discussions. Since the meltdown at the Fukushima Dai'ichi nuclear power plant on March 11, 2011, triggered by a 9.0

earthquake-generated tsunami at the east-coast of Japan, the energy and environmental politics in Japan and Germany are under close public scrutiny. Scholars employ with the question how differences in political decision making processes can be explained. Both countries have strong economic ties, as well as in diplomacy, technology and knowledge exchange. On the occasion of the G7 meeting in May 2016 in Toyama, Japan and Germany signed a joint statement on bilateral cooperation on the dissemination of low carbon technologies towards transformation to decarbonized societies. Both countries recognize their responsibility for leading the challenge of realizing a decarbonized society during this century by utilizing both countries' technological capabilities¹.

While the Abe administration focuses on the promotion of nuclear energy to reduce CO₂ emissions, Germany is known for its strong environmental and green politics. The environmental ministry of Germany was established in 1986 and the green party (*Bündnis 90/Die Grünen*) was founded in 1980. Since 1984 the party is a member of the *Bundestag*, being one of the major opposition parties and experienced the role as ruling party in the coalition with the social democrats (SPD) between 1998 and 2005. Germany is focusing on promoting renewable energies since the late 1980s, gradually moving towards the *Energiewende* since then. Japanese environmental and green politics is in comparison in a different position. The ministry for the environment was established in 2001, being upgraded from the status as an agency and environmental issues are no major issues in political campaigns during general elections. The green party of Japan was founded in 2012. In terms of environment and energy, securing the energy supply and providing a safe infrastructure is one of the main issues. However, since the Fukushima accident, the promotion of renewable energies experienced an increase. In 2012 the Feed-In Tariff law to promote renewable energies went into force. Countries are faced with the challenge to keep the global warming under 1.5°C, managing domestic political and social demands in the wake of the last economic crises at the same time.

The annual conferences held by the United Nations Framework Convention on Climate Change are significant events for international climate change actors. The 21st session of the Conferences of the Parties (COP21) was held between November 30 and December 12, 2015 and the outcomes of COP21 are the most important since the enactment of the Kyoto protocol in 1997. 191 countries out of 197 have signed the agreement on April 22 and according the UNFCCC, 83 countries out of 197 have ratified the Paris agreement by October 5, 2016. This meets the criteria for the agreement to go into force on November 4, 2016. The international regime enforced the importance of COP21, as the environmental ministers of the G7 countries (Canada, Germany, France, Italy, Japan, the United Kingdom, and the United States of America) met on May 15 and 16, 2016 for the first time since 2009, in the advent of the annual G7 summit on May 26 and 27, 2016, in Ise-Shima, Japan. These events have an effect on international and domestic political decision-making processes. However, criticism points towards the publicity effect due to heightened media attention. The measurable effect to formulate definitive political decisions would be negligible, as they lack actual influential power to change climate-related politics (Lück et al. 2016). Based on the last COP sessions since Kyoto in 1997, this argument is valid. Most recent developments require a reassessment of these findings. In general, events on international political cooperation do serve a publicity effect. Yet, they also serve as important means of raising public awareness and interest

¹ Source and access to the statement: <http://www.bmub.bund.de/themen/europa-international/int-umweltpolitik/europa-internationale-umweltpolitik-download/artikel/deutsch-japanische-klimaschutzzerklaerung/> (last access: October 17, 2016).

concerning environmental issues, function as a control mechanism for the international framework and international society, ensure environmental politics remain on the political agenda, and eventually may have a bearing on influencing environmental and energy policy decision-making processes. Moreover, the development of new information and communication technologies (ICT), such as social media services like Facebook or Twitter, increases the range of actors involved in international negotiations to distribute information about their activities and opinions and has increased public awareness of environmental issues (Sampei & Aoyagi-Usui 2009).

The number of governmental organizations using social media has increased in the last few years (Freeman & Quirke 2013) and the main executive institutions of 26 out of 34 OECD countries operate a Twitter profile (Mickoleit 2014). This study contributes to the understanding of how governmental organizations facilitate new ICTs in the age of democratic transition. Using Twitter data of the German (@BMUB) and Japanese (@Kankyo_Jpn) environmental ministries profiles, the analysis examines how these two organizations use the microblogging service in the seven-month period between the start of COP21 on November 30, 2015 until July 3, 2016. Based on the agenda-setting function of governmental organizations, it is vital to analyze the impact and behavior of political organizations to understand how public discourses on the environment in democratic countries are being constructed and change over time.

1. Literature Review

Since the environmental movements in the 1960s and 1970s, climate change and environmental issues take an important part in daily news coverage (Hansen 2015). The function of mass media in influencing public opinion, shaping public discourses and increase public awareness of climate change is particularly salient in Japan (Sampei & Aoyagi-Usui 2009). There is a growing attention in research and academia to analyze the role of Twitter in context of social and political sciences that include politicians and political institutions (Cho & Park 2011, Jungherr 2014). Even though the number of political actors using social media has increased, they are latecomers in this online ground. Moreover, governmental organizations are slow in adapting to social changes (Freeman & Quirke 2013).

Research about social media in politics has thus far focused on politicians and political campaigns. Politicians and individual profiles have a higher popularity in social media than institutions (Mickoleit 2014) and the use of social media has both advantages and disadvantages. Even though politicians are actively engaged in online communication, their communicative behavior and responses show evidence that they are concerned about becoming victims of critical mistakes (Cho & Park 2011) and always try to save their face and not embarrass themselves (Otterbacher et al. 2013). The main objective of institutions is to disseminate information and not to facilitate interaction. Moreover, Otterbacher et al. (2013) conclude they actually try to avoid interaction. Their first goal is to protect themselves and their politics. To open the doors for more interaction and vertical communication poses risk to lose political power. Political institutions need to take online discussions for the policy making process into account (Hsu et al. 2013) and a skilled use of social media by political institutions could contribute to increase transparency and accountability of politicians and governmental organizations (Cho & Park 2013, Hemphill et al. 2013). The motives between individual or personal profiles and institution's or organisation's profiles differ and so do the means of social media communication strategies (Mickoleit 2014). However, Mickoleit (2014) found that only few among OECD countries so far have an actual social

media strategy. This shows not only uncertainty among the governments about the correct use of social media (Mickoleit 2014) but raises the question of personnel and resources.

Governmental organizations in democratic countries rather use ICT primarily as an additional channel to distribute their information than engage in interactive communication (Freeman & Quirke 2013, Hemphill et al. 2013, Mickoleit 2014). Providing information and position taking is most common, while requests for action are negligible (Hemphill et al. 2013). Issues on climate change are complex, which makes it difficult to harness social media for interactive engagement and involve citizens in the political decision-making processes.

Studies about political institutions and their social media behavior are rare and fragmented, because social media and new ICT are fairly young and as such its use by political actors in an early phase of development (Hemphill et al. 2013, Jungherr 2014). With the increasing role of social media in political communication, it is necessary to re-examine how public discourses are being created. Social media can help to increase the awareness of particular messages. Examining online communication and discussions on issues concerning their society can provide better understanding of their reactions to these issues (Hsu et al. 2013).

The effects of climate change on the environment have been scientifically proven and are in itself a major issue. How a society perceives and communicates these issues, in other words, the public's understanding of climate change, and how social problems around climate change are being constructed, differ. The constructivist sociology explains how and why social problems come into existence and it recognizes the importance of the cultural context (cultural resonance perspective) in terms of construction of social problems (Hansen 2015). The government and its related institutions are still the main agenda-setter. Increasing the public understanding of the effects of climate change and the implementation of politics ensures political reliability. Institutions set norms and rules on which people can act. Effective measures against climate change are highly dependent on individual action taking in daily live. Political scientists are being criticized to have ignored the study of discourses (Habermas 2008, Schmidt 2008) and the discursive institutionalism emphasizes the importance of ideas and discourses in the context of institutions and takes a more dynamic perspective of change into account than traditional institutionalists do (Schmidt 2008). According to Habermas, communication is essential for social integration and effective policy implementation. It is important to understand how institutions communicate with the public, how communication strategies change over time and why certain politics are more effective than others. From the study of behavior the actual impact of public communication poses analytical problems. By applying analytical concepts on social media communication, user interaction and the available profile data, this paper proposes an approach to overcome this problem.

2. Characteristics of Twitter

2.1. Twitter demographics

Twitter is a microblogging social network service (SNS) on the World Wide Web with which people can instantly share information, include links to other websites, within a short message called tweet of 140 characters with the Twitter community called tweet. Tweets can be shared (called retweet) by other users. The retweet increases the impact-rate of the original tweet, because it makes the original tweet visible by the retweeter's user network, called "snowball effect" (Mickoleit 2014). Additionally, being "mentioned" (recognizable with the "@" mark in front of a

profile's name in the tweet) in other users' tweets increases popularity and attention (popularity bonus) (Mickoleit 2014). However, previous researches find that political leaders are more popular than institutions (Mickoleit 2014). The character of interaction in new ICTs is changing the nature of communication between politics and citizens (Kahn et al. 2013). Twitter is among the top ten social network services worldwide. In May 2016, Japan ranked four in the number of active Twitter users². According to social media statistics, the daily use of Twitter in Japan in 2015 was higher than in Germany. The impact rate of Twitter in terms of governmental institutions profiles in Japan is higher than in Germany (section 4) and Twitter is the sixth most popular social network in Germany³. In both countries, the under 30 year-old dominate the social network population.

2.2. Political institutions on Twitter in Germany and Japan

All eleven ministries of the Japanese government have a Twitter account. In terms of the number of Followers, @Kankyo_Jpn is ranked six. The ministry with the highest number of followers is the Ministry of Defence (@bouei_saigai) with 662.000 followers⁴. One cannot deny a correlation between the creation of profiles and the earthquake-tsunami-nuclear catastrophe in March 2011 on the east-coast of Japan: The Ministry of Defence created its profile in March 2011, the Ministry of Environment in April 2011 and the Ministry of Economy, Trade and Industry (@meti_NIPPON) also in March 2011. Only the Ministry of Health Labor and Welfare (@MHLWitter) is on Twitter since before the catastrophe (since August 2010) and was the first of the eleven ministries to join the microblogging service. From the number of tweets, the Ministry of Foreign Affairs (@MofaJapan_jp) has the highest number of tweets (18.900); more than double as @mextJapan (Ministry of Education, Culture, Sports, Science and Technology) that is on rank two in terms of number of tweets with 7,200. @Kankyo_Jpn however has compared to the other profiles the fewest number of Tweets; 1,331 by October 2016. This is not necessarily typical for the Twitter community in Japan. These numbers can provide insights, what topics the Twitter community in Japan is interested in: Security, Welfare, Education & Culture, Foreign Affairs, Infrastructure & Tourism, Environment, Economy & Industry, Internal Affairs, Finance, Justice and Forestry & Fisheries – in that order (based on the number of followers). Even though the @Kankyo_Jpn is in the average in terms of followers, the rather passive social media activity raises the question whether the ministry misses an opportunity (political opportunity structure) to increase their reach. Similar to Japan, the Federal Ministry for Defence (@bundeswehrinfo) and the Federal Foreign Office (@AuswaertigesAmt) dominate Twitter in terms of number of tweets among the 14 federal ministries. All of them facilitate a Twitter profile and some more than one. The Federal Foreign Office operates a profile in German (@AuswaertigesAmt) and in English (@GermanyDiplo). The number of tweets over time in relation to the time the profile is active is compared to the Japanese institutions not much different. In terms of the number of followers, the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (@BMUB) is on rank two, after the Federal Foreign Office.

² <https://www.statista.com/statistics/242606/number-of-active-twitter-users-in-selected-countries/> (last access: October 17, 2016)

³ <https://www.statista.com/statistics/429496/frequency-of-social-media-usage-in-germany-by-social-media-site/> (last access: October 28, 2016)

⁴ The numbers reflect the situation of October 2016. It is important to note that a situational description of social media data experiences changes in short time. But the general tendencies in this analysis is not expected to experience a drastic change in the general core.

3. Method

3.1. Variables

A mixed method approach has been used to analyze the twitter profiles quantitatively in terms of their social interaction and network strategies (sociogram), and number of tweets (impact and behavior), qualitatively in terms of tweet content and hashtags. Hashtags categorize the tweet (Cho & Park 2012), which can be used to analyze the institution's social media strategy. An approach to measure the impact of Twitter profiles has been performed following the quantitative behavioral analysis. The following two variables are the focus of this analysis to measure the environmental ministries' social media behavior and impact by using Twitter data: Number of tweets in a time series analysis to measure the behavior and the number of followers to measure the impact.

3.2. Data collection

Twitter data for the Japanese Ministry of the Environment (@Kankyo_Jpn) and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (@BMUB) were downloaded through the NVivo tool for Windows Internet Explorer: NCapture. Through this tool tweets and profile information were archived as a dataset, including retweets and mentions. Table 1 summarizes the size of the datasets as well as demographic information for both Twitter profiles. Compared to @BMUB, the fewer number of total tweets by @Kankyo_Jpn since the profile's existence to the time this analysis was performed (1,331) allowed to archive (almost) all tweets of this profile (1,212). The number of tweets by @BMUB (8,388) since the profile is active is much higher. The size of the dataset is in relation between total number of tweets and available tweets for archiving fewer (2,986 of 8,388), but compared to @Kankyo_Jpn still higher.

Table 1: Twitter profiles' general information and dataset size for @BMUB and @Kankyo_Jpn.

| | @BMUB | @Kankyo_Jpn |
|---|--------------|--------------|
| Profile online since | July 2010 | April 2011 |
| Total number of tweets by October 27, 2016 | 8,388 | 1,331 |
| Dataset size (number of available Tweets) | 2,986 | 1,212 |
| Number of tweets in the seven- month period | 1,853 | 212 |
| Date of oldest Tweet archived | Aug. 8, 2015 | May 27, 2013 |
| Number of followers by October 27, 2016 | 58,500 | 152,000 |
| Number following by October 27, 2016 | 459 | 43 |

3.3. Data preparation

Identifying main international events to define the time frame for analysis helps to understand how governmental organizations are using social media. Prior to the G7 Summit on May 26 and 27 2016 in Ise-Shima, Japan, environment ministers from G7 countries and the European Union held a meeting on May 15 and 16 in Toyama, Japan. The datasets have been filtered first for the main time frame of a seven-month period between November 30 2015 and July 3 2016, as well as for each event as summarized in Table 2. The main dataset consists of *tweet ID*, *username* (recognized with

the “@” sign), *tweet*, *time*, *tweet type*, *retweeted by* (name of Twitter profile that shared the original tweet), *number of retweets*, *hashtags*, *mentions*, *name* (different from username), *location*, *web* (link to a website, if included in the Tweet), *bio* (description of the profile that either created the Tweet, retweeted or mentioned a Tweet), *number of tweets*, *number of followers*, *number following*, and *location coordinates*. In terms of security and privacy policies, case sensitive information has been cleared from the dataset.

Table 2: Events used for pinpointing the Twitter dataset.

| Event | Time | Place |
|---|----------------------------------|------------------|
| COP21 | November 30 to December 12, 2015 | Paris, France |
| Pre-COP (COP22) | May 16 to 26, 2016 | Bonn, Germany |
| G7 Toyama, Environment Minister’s Meeting | May 15 & 16, 2016 | Toyama, Japan |
| G7 Summit | May 26 & 27, 2016 | Ise-Shima, Japan |

4. Results

4.1. Variable: Number of tweets in a time series (behavior)

To provide a better understanding of Germany’s and Japan’s environmental ministries’ social media behavior, the Twitter profiles of all G7 countries’ environmental ministries are being compared in terms of number of tweets in a time series analysis for the aforementioned seven-month period. The difference between @BMUB and @Kankyo_Jpn represents two extremes. While @BMUB is rather active and makes strategic use of international events as the tweet-frequency increases during the defined time frames, @Kankyo_Jpn on the other hand has besides Italy the lowest tweet-frequency and shows no significant reaction at the time of the events. The content of Twitter is changing in a matter of minutes or sometimes seconds, depending on the topic and size of user network involved in tweeting. There is a risk a tweet can be overlooked, if the timing is ill chosen or a large community shares tweets at the same time.

In general, COP21 was an important event that effected social media behavior, while G7 and the environment ministers’ meeting had less effect. 15.7% of all tweets during the seven-month period by @BMUB was made during COP21 (1,853), and 13.2% (212 tweets in total during the seven-month period) in case of @Kankyo_Jpn. As for the pre-COP22 session between May 16, 2016 and May 26, 2016, the number of tweets by @BMUB is 4.6%, and 8.0% for @Kankyo_Jpn in relation to the total number of tweets in the seven-month period. Even though, the G7 environmental ministers met for the first time since 2009, this meeting can be considered negligible in terms of its effect on the social media behavior. Because environmental issues are only one part of the G7 agenda, and even though G7 Summits attract media attention, it is not an issue to be introduced to the Twitter community by the governmental organizations.

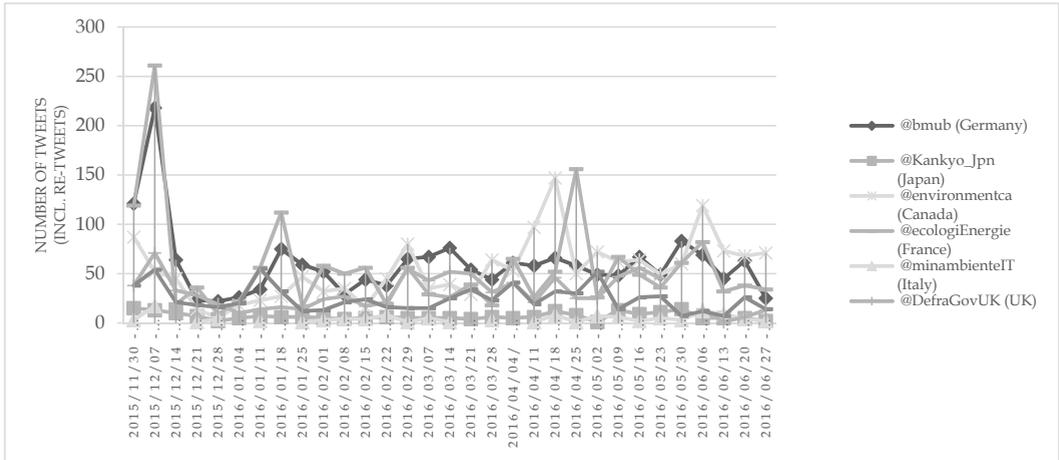


Figure 1: Time series of G7 countries' environmental ministries' Twitter profiles tweeting behavior.

4.2. Variable: Number of followers (impact)

This section proposes a methodology to measure the impact rate of political institutions on Twitter. Mickoleit (2014) provided the general approach to analyze the number of followers in relation to the general population. As discussed above, Twitter is more popular in Japan than in Germany, thus, the impact rate is higher through all eleven ministries compared to their German counterparts. The high impact rate of @BMUB (ranked two among all 14 ministries) reflects general findings of the importance of environmental issues in Germany as shown in Table 3. However, the measure of the impact rate based on the number of followers must be treated with caution as it represents only one side of the interaction. It is not possible to evaluate, whether users actually follow the ministries' profiles. Sections 4.3 and 4.4 aim to shed light on the interaction behind the follower-following relationship.

Table 3: Twitter impact rate (%) of German and Japanese ministries.

| Japan | Impact rate | Germany | Impact rate |
|---|-------------|---|-------------|
| Ministry of Defence (@bouei_saigai) | 0.53 | Federal Foreign Office (@AsuwaertigesAmt) | 0.56 |
| Ministry of Health, Labour and Welfare (@MHLWitter) | 0.33 | Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (@BMUB) | 0.07 |
| Ministry for Education, Culture Sports, Science and Technology (@mextjapan) | 0.23 | Federal Ministry for Family, Elderly, Women and Youth (@BMFSFJ) | 0.06 |
| Ministry of Foreign Affairs (@MofaJapan_jp) | 0.17 | Federal Ministry for Economic Affairs and Energy (@BMWi_Bund) | 0.06 |
| Ministry of Land, Infrastructure, Transport and Tourism (@MLIT_JAPAN) | 0.13 | Federal Ministry of Defence (@bundeswehrinfo) | 0.05 |

| | | | |
|---|-------------|---|------|
| Ministry of the Environment (@Kankyo_Jpn) | 0.12 | Federal Ministry for Economic Cooperation and Development (@BMZ_Bund) | 0.04 |
| Ministry of Economy, Trade and Industry (@meti_NIPPON) | 0.12 | Federal Ministry of Finance (@BMF_Bund) | 0.03 |
| Ministry of Internal Affairs and Communication (@MIC_JAPAN) | 0.10 | Federal Ministry of Justice and Consumer Protection (@BMJV_Bund) | 0.02 |
| Ministry of Finance (@MOF_Japan) | 0.10 | Federal Ministry of Food and Agriculture (@bmel) | 0.02 |
| Ministry of Justice (@MOJ_HOUMU) | 0.09 | Federal Ministry of Education and Research (@BMBF_Bund) | 0.02 |
| Ministry of Agriculture, Forestry and Fisheries (@MAFF_JAPAN) | 0.03 | Federal Ministry of Health (@BMG_Bund) | 0.02 |
| | | Federal Ministry of the Interior (@BMI_Bund) | 0.02 |
| | | Federal Ministry of Transport and Digital Infrastructure (@BMVI) | 0.02 |
| | | Federal Ministry of Labour and Social Affairs (@BMAS_Bund) | 0.01 |

*Impact rate=Number of followers in relation to the general population. Germany: 81,292,400 (Source: DeStatis); Japan: 125,891,742 (Source: Soumu).

4.3. Analytical approach of communicative interaction (network strategy)

This section explores the graphical representation (sociogram) of the online communication interaction of the Japanese and German environmental ministries' Twitter user profiles to find out to whom the governmental organizations maintain connections and what it can say about their social media behavior. Based on the findings in the previous section in terms of impact rate and popularity of Twitter in general, the network strategy analysis adds value to the previous analyses.

Figure 2 shows a highly interactive communication network by @BMUB with ties to mainly profiles of mass media companies and journalists. This supports the agenda-setting function of the ministry and the strong position within politics in Germany.

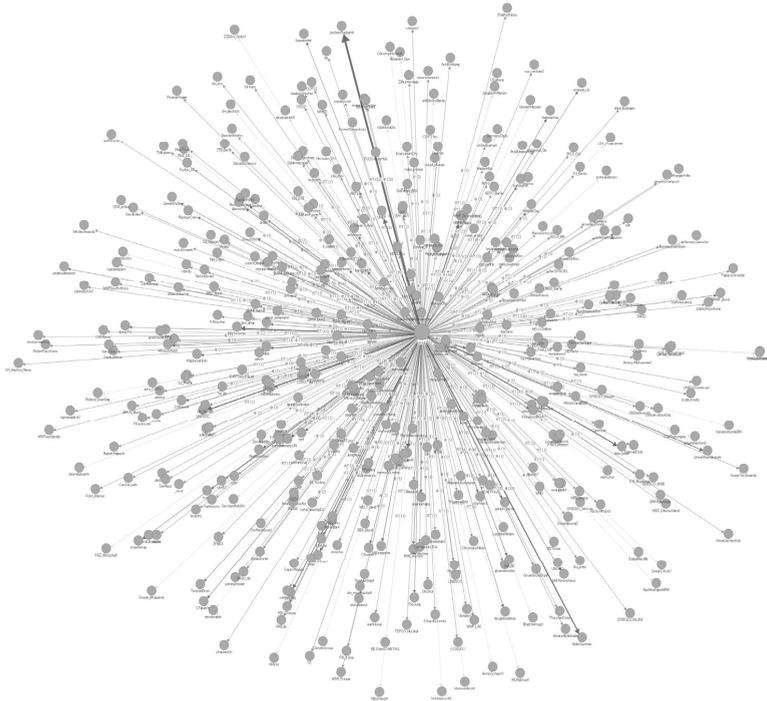


Figure 2: Twitter sociogram of @BMUB.

@Kankyo_Jpn revealed a quite different shape, compared to @BMUB, as shown in Figure 3. It is strikingly different in terms of the number of connections. A communicative interaction network is negligible. It maintains its strongest tie to the Twitter profile of the Ministry of Health, Labor and Welfare of Japan (@MHLWitter), but due to the few number of retweets and mentions it has no notable range in the Twitter community. Based on these findings, the MoE could be considered as weak and not influential in terms of shaping public opinion on the Internet.

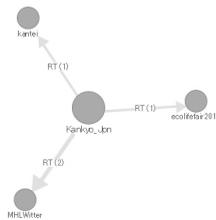


Figure 3 Twitter sociogram of @Kankyo_Jpn.

4.4. Tweet content and hashtags: A qualitative approach

Hashtags describe keywords Twitter user assign when using the hashtag sign (#) in front of the term. With this method a Twitter user puts emphasis on a topic he/she wants to share with the Twitter community. Looking more qualitatively into the content of the Tweets by @BMUB showed and extensive use of hashtags compared to @Kankyo_Jpn, while @Kankyo_Jpn practically does not use hashtags at all. Even though @BMUB creates a comparatively great amount of hashtagged terms (143 alone during COP21), because almost all of them are used only ones, these issues have a short life-span. However, the available data does not contain information, whether a wider Twitter community is adapting these hashtags, which would support an agenda-setting function in social media by the ministry.

In terms of tweet content, the qualitative analysis may suggest slightly different conclusions than the quantitative analysis. @BMUB mainly focuses on informing about the environment minister's activities and the ministries' achievements in terms of projects and campaigns. After "COP21", the name of the German environmental minister "Hendricks" is the most often used hashtag term. The hashtagged term "Klima" (climate) comes third. With the intense use of hashtags, the formulation of a complete (even short) sentence is very rare. Sometimes tweets by @BMUB would consist only of hashtags. This way of using social media suggests, that @BMUB is focusing its activities strongly around popular issues and (local) events, which produces the image of being actively engaged and promoting interaction. However, this behavior actually questions the sustainability of discussed issues and thus, may have less influential power to shape public opinion than initial results would suggest.

@Kankyo_Jpn on the other hand may present itself fairly passive in social media, but might be more sustainable. It tries to promote general behavioral shifts in the society by publishing tweets requesting specific activities directly, that increases the awareness of environmental issues and climate change politics at the same time, instead of focusing their messages on (local) short-lived events. For example, requests for saving water, energy and CO2 emissions by informing about released campaigns: "Think about global warming - Starting 'CO2 reduction/Light down campaign' Please cooperate", "Be eco when do every day shopping", "Not only NPOs, corporations or economic organisations, individual people can help create a system where society and environment have a good life together, too"⁵. Considering the number of followers (111,881) this may suggest that despite the quantitative findings discussed above, @Kankyo_Jpn could have more influential power in shaping public discourse through social media than first results would indicate.

5. Conclusion

The findings suggest main differences in means and motivation of social media use by political institutions in Japan and Germany. The Twitter community in Japan is more fragmented and has no unified social media strategy of any. Based on the findings Germany seems to facilitate a more outlined social media strategy across institutions and is more interactive based on the number of followers and following, as well as likes, among the G7 countries. @BMUB's ties are dominated by mass media and journalists, which supports the ministry's agenda-setting function. But the

⁵ Translation from Japanese into English by the author.

character of the interaction suggests a rather closed network in terms of connections that might hinder individuals to be part in the exchange of thoughts, opinions and ideas. Additionally, an alleged high interaction rate does not necessarily prove to have more influence, as the passive receiver of a message must be taken into account as well as the content of the message. Yet, the effect on the passive receiver is analytically difficult to grasp, but based on communication and media studies, it is known that active engagement alone is not the main factor to shape public opinion (for example TV) (Otterbacher et al. 2013). The results suggest similarities between online and offline agenda setting role of environmental ministries in both countries. This confirms Hemphill et al.'s findings that public officials do not alter their communication strategies between media but rather use a common strategy across different media.

The existence of ICT and use of social media to promote vertical communication between politics and citizens does not automatically lead to new social systems, because the way communication and interaction happens in a society is being reflected on their online behavior. On the other hand, as @Kankyo_Jpn's Twitter activity is far more passive when comparing the total number of Tweets as well as their network strategies (sociograms) including retweets and mentions with @BMUB, the total number of @Kankyo_Jpn's followers in r can be interpreted as a potential to raise the ministry's public attention on their agenda. In terms of post-COP21 environmental politics, the content of the Tweets show no significant change. However, @BMUB is highly influenced by international and domestic events related to environmental issues and climate change politics in terms of their tweeting activities. The number of followers and following is increasing frequently. This analysis is in that regard limited as it is only capable of explaining a snap-shot and the question remains whether governmental organizations should use social media and increase their "popularity bonus". Considering the relation between @BMUB and mass media on Twitter, its engagement in online public discourses and in case of @Kankyo_Jpn to actively request change of behavior, it is important to reconsider the role of political institutions and governmental organizations in the current phase of democratic transition.

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Twitter analytics as indicator of news engagement

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Abstract: *The rise of popularity of social media (e.g. Facebook, Twitter, Plurk, Mixi) to share opinions about what's on people's mind has opened possibilities to track the public's activities and sentiments. By using generic identifiers (hashtags #journaal and #RTLnieuws) on two of the most watched news programs (NOS journal provided by the public service broadcaster, and RTL Nieuws by commercial broadcaster RTL) we are able to see the audiences' responsiveness to news broadcasts. This study focuses on explaining engagement activity as a function of type of program, the specific airing time of newscasts, the specific weekday the newscast was broadcasted and specific news events. Findings show that the commercial broadcaster's news cast is more popular in terms of engaging on Twitter. This holds for the general level as well as for the daytime programs.*

Keywords: Twitter, social media, news programs, news engagement

Social media have become very popular platforms for people to share updates about their lives as well as venting opinions about societal events. Recurring daily anchor moments are daily news broadcast on television. Watching television is an easy way for people to receive updates about what happens in the smaller and larger world more or less relevant to them.

New and powerful handheld communication devices such as smartphones and tablets allow people to use these as so-called second screen or social TV applications: using social media to communicate opinions on social media about what people watch on television (Wilson, 2016). These data - to some extent readily available through provided APIs - are being used by TV audience measurements companies such as Nielsen (Carmody, 2013; Nielsen, 2015) to report about the reach and evaluations of television programs.

In this study, we study to what extent two important TV news programs attract responses from its viewers over a longer period of time.

1. Theory

In terms of participation in society, consuming the news is one of the most institutionalized and commonly performed activities. Whether it is reading the newspaper in the morning at breakfast or watching the evening news programs on commercial or public service channels. Although reading newspapers declines steadily in the Netherlands, watching the news remains popular. One reason is timeslot that stayed the same for decades, so watching TV news seems to be engrained in the TV watching pattern.

Watching TV can occur in a more or less passive manner, by watching the news as it is, or – somewhat more actively – discussing it with household members – during the broadcast. However, since social media and smart phone apps became popular, social media (cf. Twitter) and dedicated TV program apps became popular to comment on the TV programs while watching. This use of a second screen while watching TV became popular with some specific TV programs. For instance, some studied the use of Twitter during the Eurovision Song contest (Highfield, Harrington, & Bruns, 2013), while others studied Twitter responses during political debates (Trilling, 2015; Vergeer & Franses, 2015), while others compared tweeting across different types of TV programs (Buschow, Schneider, & Ueberheide, 2014).

In studies, mostly a specific episode of a program is singled out for analysis. To understand more about the structural patterns of using Twitter as a second screen application we will focus on a large sample of broadcasts of the NOS Journaal (PBS) and RTL Nieuws (commercial).

Even though Twitter has been analyzed in terms of media use, dynamic analyses – taking account of the time dimension – are scarce. Of the studies that do take account of time, most are about televised election debates (Diakopoulos & Shamma, 2010; Freelon & Karpf, 2015; Pond, 2016; Trilling, 2015; Vergeer & Franses, 2015) but mostly descriptive in nature by visualizing the trends and the spikes of Twitter activity. We will use time series analysis, appropriate for this type of data, to statistically test for structural patterns beyond describing patterns.

Our research questions are as follows:

1. To what extent does activity of social media about public service and commercial newscasts vary over time?
2. How can variation in Twitter activity be explained?

1.1. Television news in the Netherlands

The Netherlands has many channels available through cable TV providers. The three major TV channel providers (NPO, RTL and SBS) have a combined market share of 70.6%, while the primary channels of these three companies have a combined market share of 42.3% (Stichting Kijkonderzoek, 2016).

1.1.1. Watching and engaging in television

Watching TV in the Netherlands is a popular pass time behavior. On average, people on average spend over three hours a day (190 minutes) watching TV (Stichting Kijkonderzoek, 2016). Furthermore, Dutch research (Vergeer, Eisinga, & Franses, 2012) also shows that particularly watching the news and information programs affects total viewing time, suggesting that watching the news is a very important and structural part of watching television.

Although watching TV is explained by psychological factors, often derived from theories such as Uses & Gratifications (Rubin, 1983), watching TV is also a very habitual behavior or routine behavior. Gerbner and Gross (Gerbner & Gross, 1976) already stated quite early on that people watch by the clock and not by the program. Time budget studies have revealed this as well (Broek et al., 2004) as did some time series studies (Vergeer, Eisinga, & Franses, 2012): watching television is structured around obligatory daily activities such as work, study, eat and sleep. Even though obligatory activities have increased throughout the years, spending time has also increased (Broek et al., 2004). Still, to some degree the growth in watching television on public channels is being

slowed down by the increased use of the Internet and digital subscription services for movies and series (e.g. Netflix, HBO). Whether mobile media will further change time use patterns in this respect is quite likely. Specifically, in the Netherlands where many people commute by public transportation with public Wi-Fi and 4G access for mobile devices, it is easy to pass the time by watching media, whether streamed live from TV broadcasting companies or TV on Demand services such as Netflix and YouTube.

In this study, we look at patterns of engaging in news during the television news broadcasts by tweeting about the news. The research question is to what extent does tweeting about news programs follow a regular pattern? And to what extent can deviations from these regular patterns of tweeting be attributed to specific events? To understand these patterns of engagement with television news programs we use insights from time budget theory as well as loosely on agenda setting theory. Time budget theory's basic premise is that there is a zero-sum game between different activities: spending time doing one type of activity is at the cost of doing another type of activity. This is basically called the time-displacement hypothesis. This strictly formulated hypothesis needs to be relaxed because some activities can be performed in tandem. For instance, cooking dinner and listening to the radio go well together, while browsing the Web and commuting by train works well too. Agenda setting theory (Ceron, Curini, & Iacus, 2016; McCombs & Shaw, 1972; Vergeer & Franses, 2016) suggests that what the media has high on the agenda – attaches a lot of attention to on TV – will also be prioritized by viewers. Although we will not perform content analysis on the TV news broadcasts or the tweets, we assume that tweets using the hashtag of TV news programs, will deal with the content of the actual program. This suggests that there should be positive correlations between the time of actual broadcasts and the number of tweets during these broadcasts.

The aforementioned description refers to people watching television and television news. How does this translate to using Twitter? Social media are particularly suited for expressing all kinds of experiences. Ranging from personal accounts about family life, experiences concerning one's hobbies, but also commenting about world affairs. Depending on the specific information people want to share, information is more suited for one or other social media platform. For instance, Facebook is suitable for just passing the time, for socializing as well as being in the loop about what others are up to (Quan-Haase & Young, 2010). LinkedIn is particularly suited for professional information. Twitter use is also relation to connecting with other (as is Facebook) (Chen, 2011), but seems more about news and information than personal even private information. Twitter has been known to disseminate breaking news stories (Bennett, 2016) and is also popular as a second screen device during televised election debates (Vergeer & Franses, 2016). If social media and thus Twitter is about sharing information it can mean only consuming information (cf. lurking), but also contributing to the discussion about events: sharing one's their feelings and opinions more extensively. People have always shared their opinions about world affairs when watching television news. However, this always took place in the confinement of the living room. Using social media, particularly Twitter, people share their opinions publicly. When and how they do this is not clear. Still, because sharing one's opinions about the news must be accompanied by watch the news, we expect that the explanatory model for watching television in general also holds for tweeting about the news. Therefore, we propose the following hypothesis:

1.1.2. Hypotheses

Because people's obligatory activities – which accounted for over 43 hours per week on average - is mostly structured during the daytime. The displacement hypothesis then suggests that audience activity regarding watching news programs (i.e. free time) must also follow a regular daily pattern. These regularities will mostly correlate with the actual TV news broadcasts. Particularly television news programs have timeslots that have not been changed for decades. For instance, the *Journal* by the NPO (formerly known as NOS) is being broadcasted eight o' clock news from 1964. The commercial RTL Nieuws started broadcasting at 19:30 from 1989. Even weekly patterns of working days and weekend days affect how people watch television news and as a result tweet about the news programs.

During the day people have much more obligations than during the evenings. The vast majority of the Dutch people have daytime jobs or visit schools and universities during the day. The evenings are much more leisurely, creating more opportunities to watch television news programs. This suggests that people watch more TV news during the evenings and as a result will also tweet more about these TV news programs during the evenings. This results in the following hypothesis 1.

- H1 Later at night more tweets will appear than during the day

Also, we expect daily regularities correlated for specific days within the week and the distinction between working days and weekend days. During working days (i.e. Mondays to Fridays) people have a lot more time constraints than in weekends. Weekends are much less strictly planned than on working days. This implies that when people want to watch television news they have less options to do so, other than watching the planned broadcasts during the evening in particular. Of course, people may have smart phones to learn about the daily news events and people can watch television news by time shifting, using services such as "Uitzending Gemist" and "RTL XL gemist". However, these services still are relatively not that popular. In weekends the time schedule is much less strict due to less compulsory tasks during the day. This results in watching more television in general (Vergeer et al., 2012). Furthermore, weekend days have fewer TV news broadcasts than working days. As a result, people, will watch less television in the weekend and will tweet less about the news programs than on working days. Hypothesis 2 is as follows:

- H2 Weekdays will show more tweeting activity about the news than weekend days will.

Apart from these aforementioned structural patterns, indicative of behavioral behavior, watching television is also affected strongly by specific irregularly occurring events that take place on a daily basis. Vergeer et al. (2012) show that these events are responsible for the largest portion of explained variance. We distinguish societal and traditional family events and (semi-)religious events that can affect audience activity. The societal events are expected to increase the number of tweets about news broadcasts, because important events will draw people to the TV to watch the news. This argument leads us to the next hypothesis:

- H3 The occurrence of societal events will increase the number of tweets.

Contrary to societal events, family events are expected to decrease the number of tweets about news programs because these events are about quality time with loved ones. This argument leads us to the next hypothesis:

- H4 The occurrence of family events will decrease the number of tweets

Past research has shown that commercial television news shows news with more sensationalist characteristics than news provided by public service broadcasters (Vettehen & Kleemans, 2015; Vettehen, Zhou, Kleemans, D'Haenens, & Lin, 2012). If this is the case it also could affect how people, or at least the extent people tweet about television news. This would particularly lead to more tweets on average for all types of news on commercial news program. Moreover, we particularly expect that when commercial news programs broadcast about sensational events, the number of tweets will increase even more. Sensational events are events that are extraordinary in terms of numbers, impact, violence or damage. Therefore, the hypothesis is as follows:

- H5 The effect of a sensational societal event on the number of tweets will be larger for RTL tweets than for NOS tweets.

2. Data

2.1. Sampling

The data were collected using Twitter's search API. Although the data collection period extended over many months, we selected 22 complete weeks from September 21, 2016 to February 21, 2016. We opted for complete weeks to ensure that all weekdays are equally represented. This resulted in 154 days in total with 506.928 tweets in total.

To sample the tweets about the two major TV news programs, two keywords were used, "journaal" for the NOS public broadcasting news program and "rtlnieuws" for the commercial news broadcast RTL Nieuws. See Table 1 for descriptive measures of the sample.

Table 1: Sample characteristics

| | |
|---------------------------------|---------|
| N tweets | 506.928 |
| N days | 154 |
| N hours | 3.696 |
| Mean daily tweets | 3.292 |
| Median daily tweets | 3.228 |
| Standard deviation daily tweets | 912 |
| Minimum daily tweets | 1.821 |
| Maximum daily tweets | 8.643 |

2.2. Measurements

To measure social media activity pertaining to specific news programs, we counted the total number of tweets per hour over each day in all 22 weeks in the sample.

Furthermore, we used date and time stamps of the tweets for the time. Based on the tweets' date we can distinguish different weekdays.

Events were categorized in events that regular occurring events (e.g. New Year's Eve, Christmas) and unpredictable events (e.g. Paris terrorist attacks). We include events that are relevant for the Netherlands. Mostly these are events that occur in the Netherlands. However this also includes events outside the Netherlands but have a societal impact on people in the

Netherlands. We distinguish several societal events that may have an effect on watching television in general and watching the news specifically.

3. Findings

3.1. Visual explorations of time series

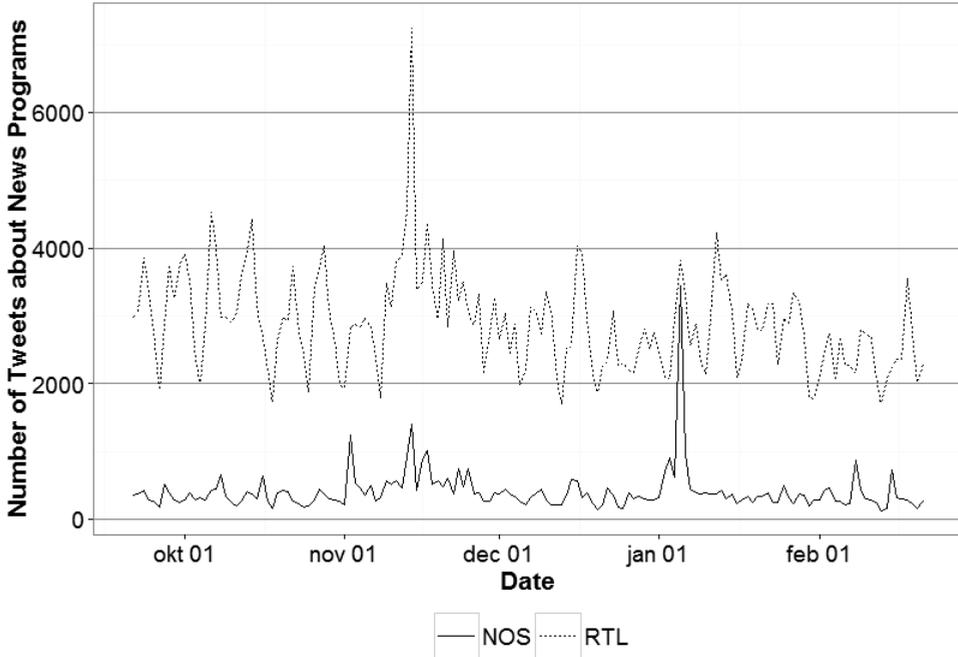


Figure 1: Time series of number of tweets pertaining to TV news broadcasts

Figure x shows a regular pattern for both the NOS and the RTL news broadcasts. However, we see two clear peaks in the time series, one for RTL and one for the NOS. These spikes of tweets are related to two events. The first event is the recent Paris terrorist attacks of November 13, 2015. It particularly spiked on RTL and much less so on NOS. The second spike is exclusively related to the NOS. On January 5, 2016 it celebrated its 60-year anniversary, with a parallel broadcast. On one channel the regular news broadcast took place while on the other channel a live “behind the scenes” report of the regular news broadcast was shown. These spikes of tweets show that it is necessary to take account of events during the

Therefore we have included specific events that occurred in the sampling period that may have affected (positively and negatively) the number of tweets about news broadcasts. These events will be included in the time series analysis.

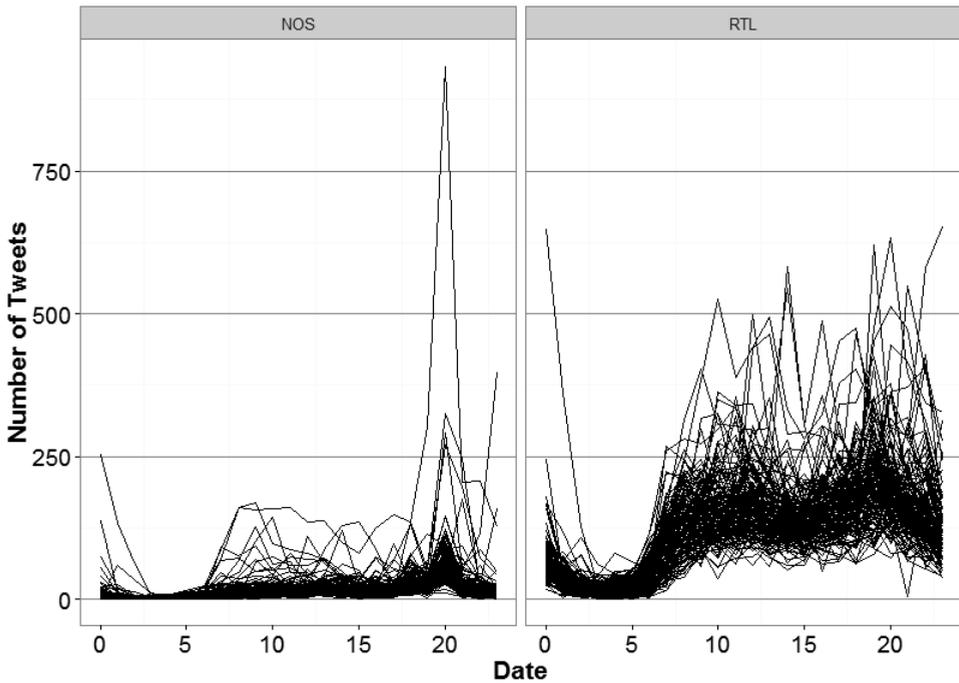


Figure 2: Time series of number of hourly tweets pertaining to specific TV news broadcasts (days overlay)

Figure 2 show that there is a consistent daily pattern regarding the number of tweets per hour. This applies both for the PSB news program NOS as well as for the commercial news program RTL. The correlations for these daily patterns by hour are .287 ($p < .000$) for the NOS news program, and .592 ($p < .000$) for commercial RTL news program.

3.2. Regression analysis

Having some insight in the regular patterns as well as identified some deviations from these patterns, we will test a linear time series model to the variations through time.

Table 2: Regression of the number of tweets on time of day, weekday, societal events on tweeting about news programs

| | Estimate | Standardized | | t value |
|------------------------------|------------|--------------|-----|---------|
| (Intercept) | -11.625580 | 0.000000 | *** | -5.316 |
| Broadcaster (NOS=0, RTL=1) | 28.233842 | 0.186757 | *** | 12.096 |
| Hour | 1.180952 | 0.107399 | *** | 10.154 |
| Hour*typeRTL | 5.368221 | 0.568177 | *** | 33.535 |
| Weekday | | | | |
| Monday | 17.063061 | 0.079032 | *** | 8.300 |
| Tuesday | 19.688700 | 0.091306 | *** | 9.348 |
| Wednesday | 22.318249 | 0.103288 | *** | 10.850 |
| Thursday | 17.264604 | 0.080064 | *** | 8.302 |
| Friday | 11.843638 | 0.055014 | *** | 5.628 |
| Saturday | 1.237477 | 0.005729 | | 0.587 |
| Events | | | | |
| Paris attacks | 38.400291 | 0.058349 | *** | 5.597 |
| 60y anniversary NOS Journaal | 77.261459 | 0.082858 | *** | 11.170 |
| MH17 report presentation | 13.569181 | 0.014705 | * | 1.981 |
| St. Nicolaus fest | -9.122292 | -0.009679 | | -1.305 |
| Christmas | -8.104888 | -0.012251 | . | -1.655 |
| New Year's Eve | -10.652557 | -0.011544 | | -1.557 |
| New Year's Day | -8.319011 | -0.008922 | | -1.203 |
| Paris attacks*broadcaster | 70.836232 | 0.076765 | *** | 7.412 |
| R-squared: 0.6259 | | | | |

Table 2 shows as expected from the graphs earlier that the general level of tweeting about RTL Nieuws is much higher than for the PSB NOS Journaal. Table 2 also shows that for each hour in the new day the number of tweets increases. Although the unstandardized regression coefficient is relatively low, the standardized effect is relatively large.

Because the program schedule for the commercial broadcaster RTL is different from that of the PSB which airs the NOS journal, we expected that the tweeting activity during the day would differ for people watching RTL channels and people watching the RTL channels. The interaction effect of specific broadcaster and hour of broadcasting shows that the general positive effect of hour is much stronger for RTL channels than for PBS channels. These findings support Hypothesis 1, particularly for RTL.

As for the weekly pattern, we see significant differences of the degree of tweeting with tweeting on Sunday: all days score higher than Sundays with the midweek days (Tuesday, Wednesday and Thursday) the highest in tweeting activity. The finding that Sundays scores lowest in tweeting activity may be due to a different TV watching behavior by the audience, but also with a different program schedule with less news broadcasts than on the other days. As such Hypothesis 2 is supported by the data.

The aforementioned effects can be considered average effects that are constant over time. However, even though all news broadcasts cover many events in society, some events are exceptional. One of these events was the Paris terrorist attacks on November 13 and 14 2015. The expectation that this event would result in more tweets is substantiated by significant positive effect. A third event was the publication of the research report about Malaysia Airlines flight MH17 that was shot down above the Ukraine July 17, 2014, killing all 298 people on board, of which 193 Dutch people. This event also had a significant positive effect on the number of tweets about news broadcasts. These findings support Hypothesis 3.

Besides the events that increase tweeting activity, there are also events that detract from tweeting about news broadcasts. We distinguished four such events: St. Nicolaus children's festivity, Christmas, New Year's Eve and New Year's Day. Although the signs of the effects are negative, the effects are not statistically significant. These findings do not support Hypothesis 4.

Figure 1 showed a large spike in November 14 for RTL Nieuws but a smaller spike for NOS Journaal. The subsequent modeling of an interaction effect in the regression analysis indeed showed that the effects of the Paris attacks is much stronger for RTL than for NOS. This finding supports Hypothesis 5.

4. Conclusion and discussion

The reason why viewers of the NOS journal so little as compared to the RT audience has most likely to do with a) differences in audience composition and b) attitudes to the use of "trivial" new media. The NOS Journal is a true media institution in the sociological sense of the word: almost 60 years broadcasting the news, and part of the traditional culture of the Netherlands, inducing habitual behavior (i.e. always watching the o'clock news). The RTL Nieuws only came into being in 1989 as the first commercial TV news program in the Netherlands. Research has shown that people mostly use media they grew up with. This has resulted in an older and more traditional audience for the NOS Journal as compared to the RTL Nieuws. It is therefore likely the older and more traditional NOS audience is less inclined to use Twitter to comment on the news, while the younger audience is more inclined to adopt Twitter and use it to comment on the news. Another positive effect was the 60-year anniversary of the NOS Journaal, which has a simultaneous broadcast on two channels. On one channel the regular program was broadcasted while on the other channel a behind-the-scenes program was broadcasted.

It is surprising to see that tweeting activities are so regular as demonstrated in these analyses. Although not all hypotheses were confirmed, the predictability is quite high. Still there is still much to win. For instance, although we singled out some noteworthy and exceptional events, there are uncountable events on a daily basis that could become news and be tweeted about. A systematic analysis of types of events during the entire sample of days could show additional relations between these events and tweeting behavior. Also, not only the issues discussed in the news (cf. agenda setting's issue salience) could not only be assessed at the level of the news broadcasts but also at the level of the tweets. As such the relations between the media and audience agenda could be assessed.

All in all, these findings show that the Twitter audiences are quite responsive to and engaging with news broadcasts.

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eGovernment and Governance: The Danish-Japanese models and timelines compared

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Abstract: *In 2012, Meyerhoff Nielsen and Igari compared the eGovernment efforts and governance models of Denmark and Japan. Their analysis concluded that Japan could learn from the Danish approach to standardized formats and processes; share components and contents, especially basic technologies such as unique identifiers and digital signatures for coordinated, convenient services for the users; involve users to develop user-centric services; and establish inter-agency collaboration to achieve those goals. Here we find that Denmark and Japan have since followed different trajectories. Denmark has focused on online services, welfare technology, key enablers including standards and the backoffice, benefit realization and management of information technology projects. Whereas Japan has largely focused on key enablers, mainly electronic identifications, open data and open government. Both countries have largely retained their governance models for eGovernment. While both countries have successfully launched and completed various information communication technology initiatives since 2012, our analysis highlight the continued strength of the Danish governance and joint-governmental cooperation model over the more fragmented Japanese approach.*

Keywords: Digitization, eGovernment, eGovernance, efficiency, effectiveness, good practice, ICT, citizen-centric, innovation, Japan and Denmark

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The strategies for applying information communication technology (ICT) to public administration differ between countries. ICT and electronic government (eGovernment) strategies are generally aimed at increasing the efficiency and effectiveness of public sector service delivery, or modernizing or even transforming public administration. The governance and intra-governmental corporation models differ.

Focusing on electronic service provision (eServices) and eGovernment achievements in Japan and Denmark, Meyerhoff Nielsen and Igari (2012) identified governance and intergovernmental cooperation as key factors for successful eService supply and citizen take-up. Japan generally had better infrastructure than Denmark, but lacked unique identifiers for individuals, businesses, property and national one-stop-shops for services. Denmark's systems of unique identifiers and digital signature systems, such as the population register (the CPR registry) and business register (the CVR and BBR registries), enabled the creation of user-centric web services on thematic portals, for example Borger.dk, Virk.dk or Sundhed.dk (national portals for citizens, businesses and health, respectively) (Meyerhoff Nielsen and Igari 2012). The comparatively higher level of strategic governance and intergovernmental cooperation in Denmark suggests their importance for the successful roll-out and subsequent citizen use of eServices.

In relation to standardization and sharing of common components, Japan lacked national standards for interoperability and enterprise architecture, and generally did not develop, share or reuse common components and contents. Thus Japan was unable to avoid the duplication of investment, or achieve the efficiency in spending and operation seen in Denmark (Meyerhoff Nielsen and Igari 2012).

Japan repeatedly failed to develop user-centric and user-friendly online services (eServices). In contrast, Denmark saw usability, common look-and-feel, participatory design and testing as key principles in the eGovernment Strategy, and essential for ensuring eService use (Meyerhoff Nielsen and Igari 2012).

The Japanese also held security concerns about governmental ICT use; Japan was ranked the lowest of 12 countries for perceived security associated with government ICT usage (MIC 2009, Symatec 2009). Whereas Danish authorities actively marketed their online content as updated and trustworthy. Moreover, the Japanese citizens' distrust of government institutions was a barrier to take-up of both eServices and key enablers (e.g., eIDs and digital signatures). The lack for trust in authorities also limited the sharing of personal and company data between government agencies, as well as between the public and private sectors. In comparison, Danes typically place a high level of trust in public institutions, civil servants and eServices. Thus, Japan ranked 17th on the 2012 Corruption Perceptions Index (CPI) while Denmark ranked 1st (Meyerhoff Nielsen and Igari 2012, Transparency International 2012).

In relation to governance and cross-governmental cooperation models, Japan's IT Strategy Council/CIOs Council (ITSC) and IT Strategic Headquarters (ITSH) – a cross-agency, cross-staffed organization (under the Cabinet Secretariat) – was found to have limited influence in setting the political influence and limited leadership and impact on the strategic direction of eGovernment. Whereas the Danish counterpart, the steering committee for Joint Cross-Government Cooperation (STS), the steering committee for the eGovernment strategy, and the Danish Agency for Digitization within the Ministry of Finance established the holistic political direction, horizontal and vertical leadership, strategies and coordination required for joint initiatives and cooperation between national, regional and local authorities – giving citizens and businesses a sense of institutions speaking with a “single voice” (Meyerhoff Nielsen 2011, Meyerhoff Nielsen and Igari 2012).

While neither this nor the Meyerhoff Nielsen and Igari (2012) paper specifically address cultural, social, political, economic or strategic differences, it is worth keeping these in mind when revisiting Danish and Japanese eGovernment. Here we focus on the Japanese and Danish

governance models in place and their potential impact on eGovernment achievements and eService take-up, to test whether the 2012 observations still hold true.

1. Methodology

To address the research gaps in relation to eGovernment governance and cross-governmental cooperation identified by Meyerhoff Nielsen (2016), we apply a classical exploratory, qualitative, two-case comparative study methodology (Benbasat, Goldstein et al. 1987, Rohlfig 2012, Yin 2013). The method establishes a framework for with-in case analysis. The aim of the with-in case analysis is to identify the governance mechanisms in play in each of the selected cases and enable the cross-case comparison between the two. The aim of the cross-case comparison is to determine the correlation (i.e., the more of Y, the more X) between a strong cooperative governance model (cause) and the introduction of online services (effect 1) and subsequent citizen use of the online service delivery channel (effect 2).

Here we utilize an adapted version of Krimmer's context, content, process model (CCP model) [28] consisting of four macro-dimensions: 1) background indicators; 2) the national governance and cooperation model; 3) the national approach to eGovernment; and 4) effect measurements and preconditions. Each dimension explains a key area that influences processes, choices and outcomes in relation to eService supply and take-up. Using the framework, the paper compares Denmark and Japan to identify their respective strengths and weaknesses in relation to their respective governance models and eGovernment experiences, particularly in the period since 2012.

Denmark and Japan were chosen based on the "most similar" but "most different" principle (Benbasat, Goldstein et al. 1987, Collier and Mahoney 1996, Yin 2013). The countries have similar levels of socio-economic development and infrastructural sophistication, but different population sizes, and different organizational, cultural and linguistic traditions. The difference in administrative traditions and culture in particular, will help isolate the potential role played by the existing governance models, level of intergovernmental cooperation, and strategic focus for the 2010–2016 period – and with particular reference to Meyerhoff Nielsen and Igari's previous comparison (2012). Several quantitative precondition and effect measurements, like internet availability and penetration, the use of online banking and shopping (i.e., indirect measurements of digital skills), eIDs and a basket of eServices and international benchmarks are included to provide the empirical basis for the effect of a given governance model.

Primary sources include relevant policy documents, national and international statistical sources (e.g., International Telecommunications Union (ITU) (ITU 2014), UNDESA's eGovernment Readiness Index (UNDESA 2010, UNDESA 2012, UNDESA 2014) and www.internetworldstats.com) and relevant academic and international references (e.g., UN and EU).

2. Background

Denmark and Japan offer vastly different perspectives, experiences, population size, administrative systems and levels of complexity.

2.1. Socio-economic factors

Socio-economically, the two countries are high-income nation states (Table 1). Denmark is a small country, with an open-expert lead economy with low GDP and productivity growth. Japan is large country in the midst of a decade long recession. The population is ageing in both countries, although faster in Japan.

Table 1: Socio-economic data 2015 (CIA 2015)

| | Denmark | Japan |
|--------------------|---------------------------|---------------------------|
| Population | 5,581,503 | 126,919,659 |
| Territorial size | 43,094 km ² | 377,915 km ² |
| Population density | 129.5 per km ² | 335.8 per km ² |
| Official languages | Danish | Japanese |
| GDP (billion) | €260.74 bill (est'15) | 3,697.82 (est'15) |
| GDP per capita | €46,715 (est'15) | €29,315 (est'15) |
| GDP growth | 1.6% (est'15) | 0.6% (est'15) |
| Unemployment | 4.7% (est'15) | 3.3% (est'15) |
| Imports (billion) | €75.12 (est'15) | €560.45 (est'15) |
| Exports (billion) | €84.32 (est'15) | €559.03 (est'15) |

2.2. Internet access and use

Access to, and the skills to use, the internet are prerequisites for successful eGovernment and the uptake of provided eServices. Both Denmark and Japan have successfully rolled out internet infrastructure (Table 2), with similarly high rates of household penetration (93% and 97% in Denmark and Japan respectively). OECD data from 2014 show that broadband prices are lower in Japan (at US\$ 21.74 – 51.96) than in Denmark (US\$ 22.24 – 62.68, both adjusted to purchasing price parity) – and Japan offer faster internet speeds and uses superior technology (such as FTTH, Fiber/LAN and fiber connections) than Denmark (OECD 2016).

Table 2: Number of mobile and broadband subscriptions per 100 inhabitants 2000–2014 (selected years) (ITU 2014)

| | 2000 | 2005 | 2010 | 2014 |
|---------|--------------|----------------|----------------|----------------|
| Denmark | 63,01 / 1,26 | 100,58 / 24,80 | 115,67 / 38,44 | 125,89 / 42,34 |
| Japan | 53,12 / 0,68 | 75,98 / 18,35 | 96,81 / 28,04 | 120,23 / 29,31 |

Similarly, government policies have facilitated the development of a digitally literate population and society, as illustrated by the growth of internet use since 2000 (Table 3).

Table 3: Individual use of the internet per 100 inhabitants 2000–2014 (selected years) (ITU 2014)

| | 2000 | 2005 | 2010 | 2014 |
|---------|-------|-------|-------|-------|
| Denmark | 39,17 | 82,74 | 88,72 | 95,99 |
| Japan | 29,99 | 66,92 | 78,21 | 90,58 |

3. eGovernment focus

ICT has long been used in public administrations in Denmark and Japan, but policy and strategy focus vary, as expected. A historic overview is helpful for comparing the two national governance models.

3.1. Denmark

As a plan for maximizing the ability of management to achieve a set of organizational objectives (Heeks 2005), Danish eGovernment strategies have followed a similar trajectory as most countries around the world. While the focus has shifted from defining and implementing relevant standards, infrastructure, and services to benefit realization (Table 4), the key objectives of the Danish eGovernment strategies have been to make Denmark a leading information and knowledge society, and to increase efficiency and productivity while preserving the welfare-state model and associated values (DIGST 2011, Meyerhoff Nielsen 2011, Meyerhoff Nielsen 2016)

The Danish eGovernment policies have evolved over time, and since 2011 have focused on cost-savings and benefit realization through mandatory self-service and the business case model, plus the strengthening of cross-governmental cooperation and management in IT projects. Thus ensuring a data exchange and a high degree of interoperability (Meyerhoff Nielsen 2014).

The 5th eGovernment Strategy for 2016–2020 follows a similar pattern and builds on previous strategies. The focus is on increased effectiveness and usability of eServices, as well as the value added; welfare technologies; private sector growth through public sector digitization, administrative burden reduction, data sharing and reuse (including the once only principle); a more coherent eGovernment framework (i.e., less silos); maintaining and improving the IT infrastructure; privacy and data protection; and improving the management of IT projects and common public programs and efforts (DIGST 2016, Meyerhoff Nielsen 2016).

Table 4: eGovernment in Denmark 2000–2020 (DIGST 2011, DIGST 2016)

| | |
|---|---|
| 2001-2003: Digital collaboration | Allowing citizens to send e-mail to the public sector and authorities to adopt digital channels of communication. Examples: Digital signatures. |
| 2004-2006: Internal digitalization and efficient payments | Focus on secure e-mail between authorities, joint government standards, and portals. Examples: eFaktura (eInvoice), NemKonto (single bank account for government use), Virk.dk (business portal), Sundhed.dk (health portal), and digital document and archive systems. |
| 2007-2010: Shared infrastructure and one point of access | Mandatory use of shared infrastructure; components and standards; increased cooperation; value added services; and efficiency. Examples: Borger.dk (the citizen portal), NemID (digital signature), NemLog-in (single, sign-on), eIndkomst (electronic income registry), Digital Post, NemSMS (SMS service component), and business case model. |
| 2011-2015: The path to future welfare | Focus on benefit realization; mandatory use of Digital Post and selected eServices; reuse of data; increased cooperation. Examples: Data distribution, investment in IT and digital teaching aids, tested welfare technology, digital literacy, and campaigns. |
| 2016-2020: A stronger and more secure digital society | Focus on better, more coherent, user-friendly online services, ICT-led growth and efficiency, security, cross-government cooperation, and benefit realization. Examples: User-journeys for e.g. moving, business reporting and company registration, administrative burden reduction, once-only-principle, data driven growth, SMART cities, legal framework, security, cloud computing, ICT support and joint service center for portals and joint-government components like NemID, Digital Post, etc. |

3.2. Japan

The December 1994 Cabinet “Master plan for promoting government-wide use of IT” can be considered as the first coordinated Japanese national strategy; clear strategy documents for the promotion of ICT use in public administration and eGovernment have been in place ever since (Table 5). Japan initially followed a similar policy path as many other countries. Focus has foremost been on the roll-out of government networks and broadband infrastructure while focusing on ICT enabled efficiency and effectiveness initiatives and public sector reform and governance of ICT initiatives and strategies (Jain 2002, Meyerhoff Nielsen and Igari 2012, Igari 2014). Similarly, there has been a focus on front-office services and portals. The approach remains unnecessarily complex, with strategies for ICT and open data added in 2010 and 2012 respectively (ITSH 2010, ITSH 2012), with limited focus on benefit realization and usability, and only recent emphasis on strengthening the governance model guiding ICT investments (Jain 2002, Meyerhoff Nielsen and Igari 2012, Igari 2014).

Table 5: eGovernment in Japan 1995-2015 (ITSH 2001, ITSH 2003, ITSH 2009, MIC 2009, ITSH 2010, ITSH 2012, MIC 2012, ITSH 2016)

| | |
|---|--|
| 1995-2000: Master plan for promoting government-wide use of IT (rev. 1997) | ICT enabled public sector reforms. Promotion of the information society. Examples: Roll-out |
| 2001-2003: e-Japan strategy | Emphasis on key IT infrastructure and use, including broadband roll-out nationally, increased use of IT and internet, plus eService development. Examples: Government portal, Public Key Infrastructure (PKI), establishment of Strategic Steering Committee in PM’s office. IT Basic Law on the formation of an advanced IT network society. |
| 2003-2009: e-Japan II | Focus on eGovernment promotion for increased efficiency and effectiveness, including ICT enabled public sector reform. Examples: one-stop services, optimization plans for business process and systems. |
| 2009-2015: i-Japan II | Focus on ICT use and solutions at national and local level, in healthcare and education. Coordination and cooperation for implementation of eGovernment, which should be user-centric and secure. Examples: eID, digital PO Box, Electronic Health Record, create a governance structure including appointment of CIOs. |
| 2016-2020: Declaration to be the World’s Most Advanced IT Nation | Focus on back-office reform, including business process reengineering and systems elimination (up to 908 systems) and 100 billion yen cost saving. Reform of employment security and pensions. Front-end services including roll-out of national ID cards and numbers to improve social security and tax number systems and user-friendliness. Promotion of safe and secure data exchange, including open data and cybersecurity. Improvement of national governance structures. Examples: Eliminate up to 908 systems, save Yen 100 billion annually in operation costs. ID card and eID, launch user-orientated data and AI platform, updated open data platform. Promote reforms by Deputy Directors-General for Cybersecurity & Information Technology. |

The i-Japan Strategy 2009–2015 has been replaced by the Declaration to be the World’s Most Advanced IT Nation for 2016–2020, which was revised in mid-2016. Considering that the introduction a unique electronic identity (eID) was scheduled for 2013, but was only agreed upon in late 2015, it is not surprising that eIDs are a key focal point of the current strategy. The lack of progress on one-stop services, an absence of intergovernmental corporation on ICT issues, and scandals surrounding “missing pensions records”, have damaged public confidence in ICT in Japan (Meyerhoff Nielsen and Igari 2012, Hiramoto 2013, Igari 2014). To address the strategy aims

of achieving a safe, secure, and comfortable life for citizens by creating a society in which all citizens are dynamically engaged, the 2016–2020 strategic focus is on breaking down barriers between ministries to achieve cross-cutting coordination, with the Government CIO acting in a guiding capacity, and the deployment of successful national initiatives to regional and local level – which are considered promising developments (ITSH 2016).

3.3. Governance models and institutional frameworks in place

As illustrated by the varying degrees of focus on intergovernmental cooperation, management and governance of eGovernment, policies and initiatives are prioritized differently in Denmark and Japan – and with different results (Table 6).

Table 6: General governance and institutional frameworks in Denmark and Japan (Meyerhoff Nielsen 2011, Meyerhoff Nielsen and Igari 2012, Igari 2014, Meyerhoff Nielsen 2014, DIGST 2016, ITSH 2016)

| | Denmark | Japan |
|---|--|---|
| National institutional framework and governance | Centralized model. National, regional and local government level. Consists of 5 regions and 98 municipalities. | Centralized model. National, regional and local government level. Complex system of 47 prefecturas, multiple sub-prefectures and districts, 1719 municipalities of four “Kanje” types including cities, towns, wards, non-municipalities. |
| Decentralization of government authority | Large degree of local autonomy and decision making including tax and budget spending. C.70-80% of citizen services are provided by municipalities. Degree of central control via annual budget negotiations. | National government control prefecturas and municipalities including tax collection, borrowing. C. 70% of budget is allocated to municipalities. Lack of progress on intergovernmental cooperation and decentralization. |

Japan and Denmark also take different approach to governance, decision making, and the degree of cooperation between authorities and levels of government, the private sector, civil society and research. Despite these differences, similarities also exist. Table 7 summaries the governance of eGovernment strategies and action plans for each of the three countries.

Table 7: eGovernment governance and cooperation models (Meyerhoff Nielsen 2011, Meyerhoff Nielsen and Igari 2012, Igari 2014, Meyerhoff Nielsen 2014, DIGST 2016, ITSH 2016, ITSH 2016)

| | Denmark | Japan |
|--|--|---|
| Responsible authority for eGovernment strategy | Ministry of Finance (MoF), Danish Agency for Digitization (DIGST) including steering committee for Joint Cross-Government Cooperation (SIS) and steering committee for the eGovernment Strategy. | IT Strategy Council/CIOs Council (ITSC) and IT Strategic Headquarters and its national CIO (since 2016) for the promotion of an Advanced Information and Telecommunications Network Society (ITSH - IT Strategic Headquarter), in Cabinet Office. Regulatory responsibility is in the Ministry of Internal Affairs and Communication (MIC). |
| Responsible authority for action plan | DIGST. | ITSH and national CIO (since 2016) responsible for annual priority policy programs, MIC has the regulatory responsibility for eGovernment |
| Responsible authority for initiating and coordinating new eGov strategies and action plans | DIGST. | ITSH, in principle. |

| | Denmark | Japan |
|--|---|--|
| Chairperson organization | DIGST on behalf of MoF. | PM chairs ITSC and ITSH but not MIC, whose responsible minister is a member, despite the regulatory responsibility. National CIO at ITSH (since 2016) is responsible for meetings. |
| Hosting organization and secretariat | DIGST. | Cabinet office host ITSC and the ITSH. |
| Member organizations | Representatives from MoF (i.e. DIGST), key ministries like economy, taxation, justice, science, health and interior, Danish Regions (DR) and Local Government Denmark (LGDK). | PM, Chief cabinet secretary, MIC, Minister of Posts and Telecommunications, Minister of International Trade and Industry plus other key ministries. IT and technology industry representatives and academia represented. |
| National eGovernance and cooperation model | Centralized with mixed features, i.e. process driven by DIGST but representatives from all levels of government, initiatives from all stakeholders, consultative and consensus based with a strong mandate. | Hybrid, i.e. centralized in relation to strategy and policy development, but decentralized and uncoordinated in relation to prefecturas and municipalities – not represented on ITSC or in ITSH. MIC has regulatory responsibility for eGovernment. Weak ITSH mandate compared to MIC. |
| Process of eGovernment strategy and action plan development and approval (from idea to approval by government) | Centralized process coordinated by DIGST but consultation with all relevant state holders including key ministries, DR and LGDK, private and civic interest groups. | Centralized process coordinated by ITSH and with consultation of large IT and technology companies. MIC and other strong ministries does not necessarily comply with ITSH. Lack consultation with prefectura, municipalities and other interests. |
| eGovernment strategy legality | Yes, part of the government program. | Yes, part of the government program. |
| Action plan (i.e. is the strategy underpinned by an action plan) | Yes. | No, annual policy priorities program in place for e-Japan II 2003-2009 but and again for 2016-2020 strategy including KPIs.. |
| Action plan legally binding | Yes, is part of the government program and annual budget negotiations between all levels of government. | No. |

In Denmark, DIGST is responsible for eGovernment strategies and action plans and their daily coordination. This includes a mandate to initiate and ensure benefit realization and compliance. The current framework was introduced following a merger of the key government players, including the Digital Taskforce (established in 2005) and hosted by the Ministry of Finance, the Agency for Governmental Management and the eGovernment related standards, infrastructure and platforms from the National IT- and Telecom Agency. The aim was to improve the efficiency and effectiveness of the governance model (DIGST 2011, Meyerhoff Nielsen 2011, Meyerhoff Nielsen 2014, Meyerhoff Nielsen 2016).

Decision making is generally made in the Steering Committee for the eGovernment strategy. The steering committee meets 10–12 times annually, is chaired by DIGST, and consists of representatives (generally directors and key unit heads) from key ministries, plus Danish Regions (DR) and Local Government Denmark (LGDK) (Figure 1) (Meyerhoff Nielsen 2011, Meyerhoff Nielsen 2014, Meyerhoff Nielsen 2016).

The strategy, action plan (including individual programs and projects), budgets and final reports must be approved by the Joint Committee for Cross Government Cooperation (STS). The

STS is chaired by the Ministry of Finance and meet approximately four times per year and consist of permanent secretaries sitting in the cabinet committees for coordination and economic affairs and management committees of DR and LGDK. The STS members thus advise the individual ministers in the cabinet before an eGovernment strategy is presented to the parliament for approval by the Minister of Finance, on behalf of the government. For national strategies and reform program there is a tradition to have broad parliamentary support, including from opposition, to ensure continuity in the strategic direction of the country (Meyerhoff Nielsen 2011, Meyerhoff Nielsen 2014, Meyerhoff Nielsen 2016).

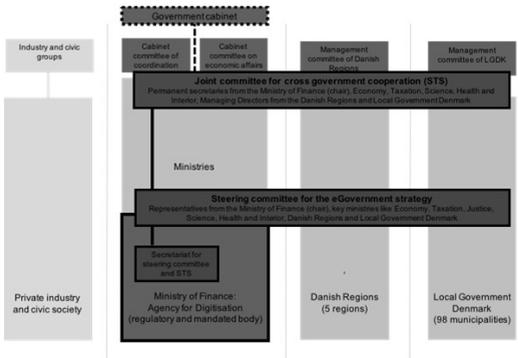


Figure 1: eGovernment governance and coordination model in Denmark

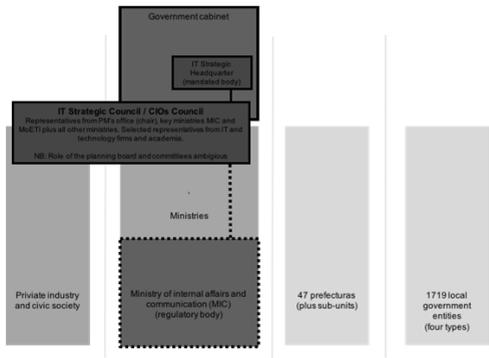


Figure 2: eGovernment governance and coordination model in Japan

In Japan the IT Strategic Headquarter (ITSH) has, since January 2001, been the mandated body and key eGovernment coordinator. The ITSH is located in the cabinet office and acts as the secretariat for the IT Strategic Council/CIOs Council (established September 2002 and henceforth ITSC), the planning board (established March 2010) and various committees. With the 2016–2020 declaration, a national Government CIO position was created within the ITSH. The new government CIO is tasked with the guidance of the national eGovernment strategy, including cooperation with relevant headquarters, development and management of evaluation indicators for monitoring of progress (including KPIs for the strategy). Similarly, the government CIO will evaluate the IT-related measures of ministries and agencies, propose revision of existing initiatives and goals within the overall framework and budget of the eGovernment strategy (Kantei 2015, ITSH 2016, ITSH 2016).

The Ministry of Internal Affairs and Communication is a regulatory authority responsible for ICT, in particular in the prefecturas and municipalities - which are not represented in the ITSH, ITSC, planning board or committees. Selected representatives from large IT and technology firms and academia are represented in the ITSC (Figure 2). Roles, responsibilities and mandates of the planning board in decision making and in relation to the ITSC and the government CIOs appointed in August 2012 is somewhat ambiguous (Jain 2002, Meyerhoff Nielsen and Igari 2012, Igari 2014, ITSH 2016).

4. Available key enablers, citizen eServices their use and impact

Having outlined the eGovernment strategies of Japan and Denmark, as well as their respective governance and cooperation models, we next address the key enablers and citizen eServices that have been rolled-out (supplied) in Denmark and Japan. Moreover, we ask whether these have led to the envisioned impacts (demand and use). Data for citizens' use of key enablers, such as electronic identities (eIDs), digital signatures and the volume of public service delivery online, is available for Denmark but was more difficult to obtain for Japan (Table 8).

Table 8: Individual use of the internet 2000-2014, selected years (MIC 2012, NIA 2015, DIGST 2016, Kantei 2016)

| | eService availability | | Degree of digitization (i.e. % of service delivery volume online) | | | |
|-------------------------------|-----------------------|-------|--|------------|---------|--------|
| | | | 2012 | | 2015 | |
| | Denmark | Japan | Denmark | Japan | Denmark | Japan |
| eID/eSignature | NemID | Yes | 79.1% | -- | 89.2% | *7.9% |
| Digital post | Digital Post | No | -- | -- | 89.2% | -- |
| Tax declaration | Yes | Yes | 100% | □51.4% | 100% | □56.5% |
| Register for school | yes | n/a | #57% | -- | 96% | -- |
| Register for university | yes | n/a | 80% | -- | 100% | -- |
| Apply for student grant | yes | n/a | 100% | -- | 100% | -- |
| Change address | yes | Yes | 63% | 0.0000021% | -- | -- |
| Housing subsidy | yes | n/a | 77% | -- | 79% | -- |
| Apply for pension | yes | Yes | 94% | -- | 95% | -- |
| Report vermin (fix my street) | yes | n/a | #56% | -- | 73% | -- |
| Report theft | yes | n/a | 41% | -- | 84% | -- |

NOTE: * Based on the authors' own calculations (i.e., 10 million eIDs for a population of 126,919,659 (Kantei 2016)). □ Based on the authors' own calculations and nominal volume from the National Tax Agency annual report (NIA 2015).

Similarly, when we sought generic data for the proportion of citizens use of online banking (eBanking), online purchases (eCommerce) and their level of interaction with public authorities online, this data was mainly identifiable for Denmark (Table 9).

Table 9: Citizens use of eBanking, eCommerce and interaction with public authorities online 2000-2015 (at least once per year), selected years (Eurostat 2016)

| | 2010 | | 2015 | |
|--------------------------------------|---------|-------|---------|-------|
| | Denmark | Japan | Denmark | Japan |
| Online banking | 71% | -- | 85% | *16% |
| Online commerce | 68% | **49% | 79% | **52% |
| Interacted with government online | 78% | -- | 88% | -- |
| Obtained info. from a gov. website | 76% | -- | 86% | -- |
| Submitted a complete form (eService) | 51% | -- | 69% | -- |

NOTE: While outdated, 13% of Japanese citizens interaction with authorities is available for 2008 compared to 49% of Danes the same year (Goto 2008, Eurostat 2016). *Figure varies from 13 to 16% depending on source. Mode of contact defined as mobile phone (Kawamoto 2015). ** Online commerce figures based on a different collection methodology and from 2010 and 2014 (OECD 2016).

Although both Denmark and Japan are included in the international eGovernment indexes of the United Nations and the Waseda), neither index address the actual use of the online services offered (UNDESA 2014, Obi 2015). The supply orientated Waseda Index covers network preparedness, eService and national portal availability, and some management and governance issues. In the Waseda, Denmark outscores Japan (Table 10).

Table 10: Waseda Index for eGovernment, 2012 and 2015s (Obi 2012, Obi 2015)

| | 2012 | | 2015 | |
|--|----------|----------|-----------|-----------|
| | Denmark | Japan | Denmark | Japan |
| Overall eGovernment ranking | 5 (86.5) | 8 (81.5) | 3 (91.25) | 6 (87.77) |
| Overall eGovernment score | 3 | <10 | 1 | <10 |
| Network preparedness | 4 | 9 | 1 | <10 |
| eServices/interface (selected services)# | 7 | 7 | 1 | 9 |
| Portal (i.e. national one-stop-shop) | 8 | 10 | 2 | <10 |
| Management optimization | <10 | 5 | 6 | 4 |
| Government CIO (governance aspect) | 9 | 4 | 5 | 8 |
| eGovernment promotion (i.e. strategy) | 5 (86.5) | 8 (81.5) | 3 (91.25) | 6 (87.77) |

* Score for criteria and sub-criteria are not available online. #Title of criteria changed from 2012 "required interphase/application" to "online service" in 2015.

5. Observations and conclusions

The Danish cross-governmental model revolves around the STS and joint-steering committee within DIGST and the Ministry of Finance. The STS creates horizontal connections across the central government agencies, as well as vertical connections among the central government, regions and municipalities. Joint initiatives and cooperation between public authorities at all levels of government gives citizens and businesses a sense of the government and institutions speaking with a "single voice". While public-private cooperation and projects do exist (e.g., the digital postbox, eID and eSignature), there could be better civil society and private sector representation in the joint-steering committee to ensure that the public sector cost saving agenda also benefits citizens and businesses (e.g., through administrative burden reduction and user-centric and proactive service delivery). An unfortunate aspect of the current 2016–2020 strategy is the vague formulation of measurable outcomes and KPIs – a change from the previous strategic periods' very ambitious goals.

Although Japan's ITSH is a cross-agency, cross-staffed organization, its political influence, agenda setting role, budget and leadership are all weak compared to its Danish counterpart. Despite annual priority policy programs supporting the strategic objectives of the eGovernment strategies, there is limited evidence of actual benefit realization in strategic initiatives – the repeated delay of the decision to introduce a unique personal identifier is a key example of this challenge. Japan's 2016–2020 strategy does address the need for a more coordinated approach to governance and intergovernmental cooperation, monitoring of progress, and KPIs (Kantei 2015, ITSH 2016, ITSH 2016). Unfortunately, local and regional authorities remain unrepresented in the relevant decision making, in which only large IT and technology interests are included. Similarly, the Ministry of Internal Affairs and Communication holds the regulatory responsibility, but does neither chair, host nor support the ITSC or the ITSH. Unfortunately, the newly created government

CIO position seems unlikely to address this build-in conflict in the Japanese governance model. These factors may explain the resistance from line ministries, prefecturas and municipalities – especially in light of the complex administrative set-up.

As observed in 2012, the Danish model continues to prove its worth. Not only in providing the strategic direction but also by delivering real and measurable results of digitization. In contrast, the Japanese model has yet to deliver similar measurable results. While, initially delayed Japan is rolling out of eIDs with good results, similarly the volume of online tax submissions is increasing, and the country has a vibrant open data community. The comparatively weak mandate, complex set-up, lack of cross-governmental cooperation, lack of prefectura and municipality representation in Japan seem to continue to limit measurable progress, but this point requires further analysis. The general lack of background and effect indicators (see Section 4) for Japan is unfortunate. That said, three broad conclusions may be drawn: First, the lack of data may imply a lack of eService offer; Second, there is a potential lack of focus on benefit realization (i.e., the actual use of provided eService offers); Third, data is confidential. It will, therefore, be interesting to see whether the mandate of the new government CIO will lead to a more systematic approach to monitoring and measurement of the strategies and initiatives, implementation, and KPIs.

In conclusion, and in relation to Meyerhoff Nielsen and Igari's 2012 findings (Meyerhoff Nielsen and Igari 2012), Japan can still learn from the Danish approach in a number of ways. The governance structure and mandate of Japan could be strengthened, and while the current 2016–2020 strategy emphasizes greater coordination, monitoring and measurable outcomes are yet to be tested and proven in practice. Similarly, representatives from regional and local authorities should be included in the ITSC, especially as the current strategy included the regional and local roll-out of successful national initiatives, use of national ID cards and eIDs. Although the initiatives on standardized formats and processes, shared components and contents, involvement of end-users in developing value adding, personal and user-friendly services based on the eID, and open data initiatives are highlighted by the 2016–2020 strategic period, it remains unclear whether their promise will be realized.

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An Analysis of Japanese Local Government Facebook Profiles

Fans and Engagement by Policy Areas

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Abstract: *Establishment of a collaborative relationship between the public sector and the private sector is a vital issue. One way to mediate the government sector with the private sector is through social media such as the Facebook. Social media is one potential enabler of this kind of “Open Government” and expands possibilities for residents to be more involved in providing public services and affect policy decisions. Through a text mining of all available 425 Facebook pages run by Japanese local governments, this study examines how these social networking sites are being used by local governments to create a more collaborative relationship between the private sector and what policy areas tend to get more fans/followers and engagement on Facebook. This study found that the number of fans/followers and level of engagement of Facebook pages run by Japanese local governments are determined by policy areas.*

Keywords: e-government, local governance, engagement, civic participation, social media

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Currently in the study of public policy, the establishment of a collaborative relationship between the public sector and the private sector has become an important issue (Kanetani, 2007). After World War II in Japan, the demand for social services from citizens on issues related to childcare or nursing care, environmental problems, and employment measures have increased and diversified. However, after the 1970s, the Japanese government has been withdrawing from spending on public policy and has continued reducing their financial role for reasons of financial stringency and the influence of neoliberalism policy. In other words, while there is difficulty for the government itself to address various social needs, the major role that has been held by the public sector until now, needs to be performed in collaboration with the private sector. In attempt to bridge the government sector and the private sector, local or regional social networking services were established in Japan in the 2000s.

Social experiments for operating bulletin board systems or regional social networking services (regional or local SNS systems) have been conducted by numerous Japanese local governments

and nonprofits in the past. For instance, the Ministry of Internal Affairs and Communications (MIC) has conducted experiments in the past by deploying regional social networking systems in Chiyoda-ku, Tokyo and Nagaoka city in Niigata prefecture from 2005 to 2006. Through these experiments, the notion of regional or local SNS systems have become familiarized nationwide in Japan where regional networks have been established through these local SNSs. Production, distribution, and storage of regional information and usage for community development spread across the country in the 2000s (Shoji, 2012: 68) until their decline in the following decade.

A more recent attempt to mediate the government sector with the private sector is through utilizing social media platforms such as Facebook. Social media is a potential enabler of an open government (Lee & Kwak, 2012) and is opening up new possibilities for residents to be more involved in public services and policy decisions (Linders, 2012). Also, by connecting government and citizens via social media, aspects of a veritable public sphere also become a reality (Wilhelm, 2000; Sassi, 2000; Keane, 2000; Dahlberg, 2001) and it can open a new path for information and knowledge sharing about public issues related to citizens' daily lives (Kavanaugh et al., 2012).

1. Literature review on Facebook, fans and engagement

According to Bonsón, Royo and Ratkai (2015), media genres and content such as Facebook have been found to affect engagement in their study among Western European local governments. Topics related to municipal management are found to be interesting for citizens, so local governments need to devise ways to provide such information. They found that photographs are also beneficial for enhancing participation, that leads to engagement. Facebook was found to be effective because the platform functions have the potential for allowing citizens to interact with the government through posting on government Facebook pages. The findings by Bonsón, Royo and Ratkai (2015) indicate how social media is allowing for citizens to become more empowered and more engaged in local issues.

The study by Hoffman et al. (2013) also provides evidence on how Facebook can be useful for local governments in Germany because the platform provides timely information for citizens. Social media can be a useful communication channel for interacting with citizens and other stakeholders. Hoffman et al. (2013) also agreed that pictures and videos are beneficial for increasing engagement and that Facebook can create new opportunities for more communication behavior. Mossberger, Wu and Crawford (2013) have pointed out how social media has allowed for many of the major U.S. municipal governments to become more open through the adoption of Facebook and other interactive platforms. Being more open has led to more interactivity, and has suggested on how these technologies are allowing for better engagement.

Sobaci (2016) has created an inventory on how social media can be beneficial for local governments. They can improve a) efficiency, b) productivity, c) local public services, d) policy making, e) the strength of local democracy, f) collaboration and g) the management of knowledge. However, risks such as the following accompany social media for local governments, for instance a) resources, b) legal issues, c) security, d) information and content concerns and 3) reputation management.

2. Objective of the study

This study investigates how local governments in Japan use Facebook. Our aim is to examine the specific areas of policy that are focused by each local government Facebook page. We posit that some Facebook pages focusing on some specific policy areas are more likely to have more fans, and that other Facebook pages that focus on other areas of policy are more likely to have more engagement. Our rationale behind this assumption is based on the fact that some policy areas are more locally oriented whereas some are more focused on a wider region. We believe this difference may affect the way that fans or followers interact with each local government Facebook page. Therefore this study investigates the following three research questions.

- RQ1: What is the major focus of local governments in Japan when they use Facebook?
- RQ2: What policy area focused by a local government Facebook page accumulates more fans?
- RQ3: What policy area focused by a local government Facebook page accumulates more engagement?

3. Methodology

3.1. Data extraction method

To analyze the focus of each local governments' Facebook page, we used a list provided by the Regional SNS Research Group (*Chiiki SNS Kenkyukai*) that has a "List of local governments' Facebook page in Japan (as of March, 2013)." Specifically, the list is an inventory of the Facebook pages that are associated with the official webpages of (1) prefectural governments, (2) municipalities in prefectural capital cities and designated cities (the redundant pages with prefectural governments were removed), (3) Tokyo's 23 special wards, and pages put on news sites. A total of 466 Facebook pages are listed. We removed 38 pages that were defunct and 3 pages that were being operated by individuals, not governments. Through this process, we had a remaining total of 425 Facebook pages (See Appendix).

The Facebook profiles of the 425 pages were extracted and analyzed statistically. The profile data analyzed in this study included (1) the total number of people who "liked" the page (fans), (2) people talking about this page (engagement), (3) brief information of the page, and (4) a more concrete description of the profile. By using the Blockspring application, data was extracted from the 425 Facebook pages from July 7th, 2016 to July 15th, 2016¹.

3.2. Data Analysis Method

The area of policy focused by each local government's Facebook page was analyzed through the KH Coder text mining software. The "Brief information of the page" of each Facebook profile was analyzed using KH Coder² that allows for analysis of Japanese language text along with, Chinese, Korean and Russian language texts. KH Coder conducts morphological analysis for the Japanese language utilizing the ChaSen morphological analysis tool developed by the Nara Institute of Science and Technology. This tool can be employed for assisting in conducting computer based content analysis of Japanese text. We used this software for determining co-occurrence patterns in

¹ Blockspring (<https://www.blockspring.com/>) (Access: July 28th, 2016).

² KH Coder (<http://khc.sourceforge.net/>) Access: July 28th, 2016. This software has been developed by Prof. Akira Kawabata.

the paragraphs of the text provided in the Facebook profiles. The text is analyzed based on the following rules to enhance the accuracy of analyzing Japanese.

- (1) The words with inflections are taken out after they are changed to the basic forms.
- (2) The general words that are used in any sentences such as postpositional particles and auxiliary verbs are omitted from the target of analysis.

Only “nouns” and “suru verbs” (verb formed by adding "suru" to a noun in Japanese) are counted because our main focus is to discover the policy areas that local governments are focusing on. In result, the remaining data was extracted and the co-occurrence network (modularity) is illustrated in the following section.

4. Results

4.1. Text frequency and co-occurrence network

For analysis of each local governments' profile on their Facebook page, the “nouns” and “suru verbs” (verb formed by adding "suru" to a noun) were measured. Descriptive statistics on frequencies of “nouns” (名詞) and “suru verbs” (サ変名詞) is shown in Table 1. With regards to nouns, the word “information” (情報) is the most frequent word (184) with “page” (ページ), “municipal halls” (市役所), “events” (イベント), “communities” (地域), “attractive” (魅力), “ward offices” (区役所), “center” (センター), “projects” (プロジェクト) and “accounts” (アカウント) following. Regarding “suru verbs”, “transmit” (発信) is the most frequent word and “sightseeing” (観光), “management” (運営), “public relations” (広報), “introduce” (紹介), “promotion” (進行), “propulsion” (推進), “notice” (お知らせ), “activities” (活動) and “support” (支援) follows.

Table 4: Analysis results of frequency of text

| | 名詞 | | サ変名詞 | | 名詞 | | サ変名詞 | | |
|----|--------|-----|------|----|----|--------|------|------|---|
| 1 | 情報 | 184 | 発信 | 64 | 1 | 県民 | 12 | 共同 | 7 |
| 2 | ページ | 154 | 観光 | 60 | 2 | スポーツ | 10 | 防災 | 7 |
| 3 | 市役所 | 49 | 運営 | 39 | 3 | 県庁 | 10 | 離島 | 7 |
| 4 | イベント | 47 | 広報 | 35 | 4 | 市立 | 10 | PR | 6 |
| 5 | 地域 | 38 | 紹介 | 31 | 5 | 農業 | 10 | 安心 | 6 |
| 6 | 魅力 | 36 | 振興 | 29 | 6 | ネット | 9 | 管理 | 6 |
| 7 | 区役所 | 32 | 推進 | 29 | 7 | 芸術 | 9 | 施設 | 6 |
| 8 | センター | 27 | お知らせ | 23 | 8 | 事務所 | 9 | 試験 | 6 |
| 9 | プロジェクト | 24 | 活動 | 22 | 9 | 王国 | 8 | 消費 | 6 |
| 10 | アカウント | 22 | 支援 | 21 | 10 | 環境 | 8 | 創造 | 6 |
| 11 | 職員 | 22 | 採用 | 17 | 11 | 森林 | 8 | 促進 | 6 |
| 12 | フェイス | 21 | 生活 | 15 | 12 | 団体 | 8 | 提供 | 6 |
| 13 | ブック | 21 | 掲載 | 14 | 13 | 特産 | 8 | 連携 | 6 |
| 14 | ホームページ | 21 | 応援 | 12 | 14 | 農林 | 8 | お願い | 5 |
| 15 | 県立 | 21 | 交流 | 12 | 15 | ネットワーク | 7 | オープン | 5 |
| 16 | サイト | 19 | 子育て | 12 | 16 | 活性 | 7 | コメント | 5 |
| 17 | 行政 | 17 | お伝え | 11 | 17 | 社会 | 7 | 位置 | 5 |
| 18 | 産業 | 17 | 協議 | 11 | 18 | 男女 | 7 | 移住 | 5 |
| 19 | 文化 | 17 | 開催 | 10 | 19 | 動物 | 7 | 運用 | 5 |
| 20 | 協会 | 14 | 対策 | 10 | 20 | 美術館 | 7 | 雇用 | 5 |
| 21 | 事業 | 14 | 参画 | 8 | 21 | 福祉 | 7 | 就職 | 5 |
| 22 | 市民 | 13 | 総合 | 8 | 22 | 本部 | 7 | 選挙 | 5 |
| 23 | 都市 | 13 | ガイド | 7 | 23 | 未来 | 7 | 配信 | 5 |
| 24 | 委員 | 12 | 関連 | 7 | 24 | 目的 | 7 | 復興 | 5 |
| 25 | 企業 | 12 | 企画 | 7 | 25 | ご覧 | 6 | 了承 | 5 |

Figure 1 illustrates the co-occurrence network of Facebook profiles provided by the analysis results of KH Coder. Nodes are displayed larger when frequencies are higher, and edges (lines between the bubbles) are denoted thicker when co-occurrences of the pair of the adjacent nodes are more frequent. It is immediately visible that at the right bottom side of the co-occurrence network, we have community development or community promotion related words such as “community”, “events”, “introduce”, “attractive”, “promotion” etc. With regards to “community”, there are co-occurrence relationships among “promotion”, “information” and “introduce”, and at the same time, each text co-occurs among “events”, “local specialty” and “transmit”. These characters of the co-occurrence network yielded that “community development/ community promotion” is the main focus of public policy of the local government.

At the same time, we can observe (a) agriculture, (b) environment, (c) enterprise, (d) civic engagement, (e) employment, (f) agriculture and forestry, (g) industrial development, (h) sports, (i) childcare (j) art and culture, (k) tourism and (l) public relations as policy areas.

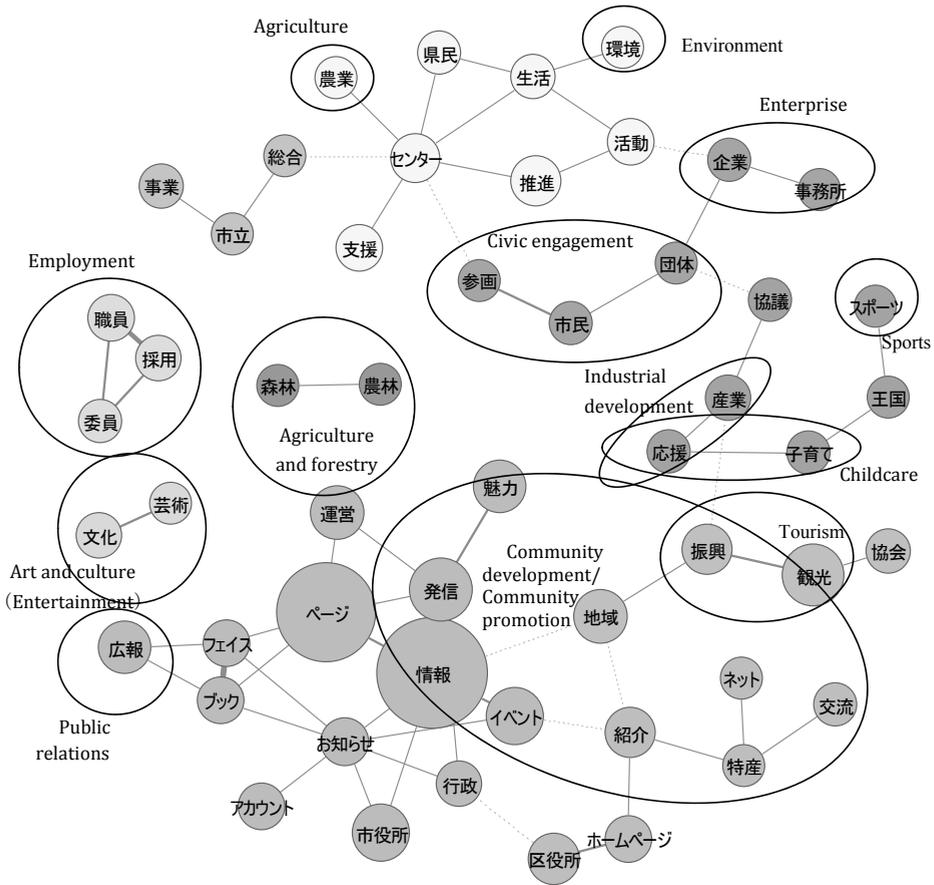


Figure 1: Co-occurrence patterns of Facebook profiles
(modularity, minimum frequency 8)

4.2. Analysis results of policy area

The data shown in Table 2 indicates the analysis result of policy area focused by each Japanese local government³. Community development is the most frequent (157) followed by tourism (53), entertainment (29), childcare, education, and learning (25) public relations (24). Only 6 local governments focused on civic engagement (1.6%).

³ Authors classified all Facebook pages based on the result of 4.1.

Table 5: Policy area

| Areas of policy | | |
|-------------------------------------|-------|-----|
| Community development | 36.9 | 157 |
| Tourism | 12.5 | 53 |
| Entertainment | 6.8 | 29 |
| Childcare, education, and learning | 5.9 | 25 |
| Public relations | 5.6 | 24 |
| Agriculture, forestry and fisheries | 4.9 | 21 |
| Employment | 3.5 | 15 |
| Environment | 3.3 | 14 |
| Health care and sports | 2.6 | 11 |
| Land, infrastructure and transport | 2.6 | 11 |
| Disaster prevention | 2.4 | 10 |
| Foods | 2.1 | 9 |
| Enterprise | 1.6 | 7 |
| Industrial development | 1.6 | 7 |
| Civic engagement | 1.4 | 6 |
| Gender equality | 1.2 | 5 |
| Animal welfare | 0.9 | 4 |
| Social welfare | 0.9 | 4 |
| Election | 0.7 | 3 |
| Multicultural coexistence | 0.7 | 3 |
| Public safety | 0.7 | 3 |
| Consumer safety | 0.5 | 2 |
| International relations | 0.5 | 2 |
| | 100.0 | 425 |

Subsequently, we examined which area of policy would increase fans or engagement of a Facebook page of a Japanese local government. We first analyzed the total number of fans of each local government Facebook page. Figure 2 illustrates the ratio of the size/scale classification of each local government Facebook page. By the following classification created for assisting better interpretation of this analysis result, 46.8% are small-scale (under 1000 fans), 37.2% are mid-scale (1001-5000 fans), and 16% are large-scale (over 5001 fans). Through further inspection of the percentage of various number of fans per page, those with 1001-2000 fans was the highest at 19.3%, followed by 501-1000 fans at 18.8%, and those with under 250 fans at 15.1% and 251-500 fans at 12.9%. The percentage of pages with over 9000 fans was 7.3%. Therefore through our analysis, we can conclude that most Japanese local government Facebook pages have under 1000 fans and their fan base are usually small-scale, however, a noteworthy number of Japanese local government Facebook pages with a large fan base of over 9000 fans do exist.

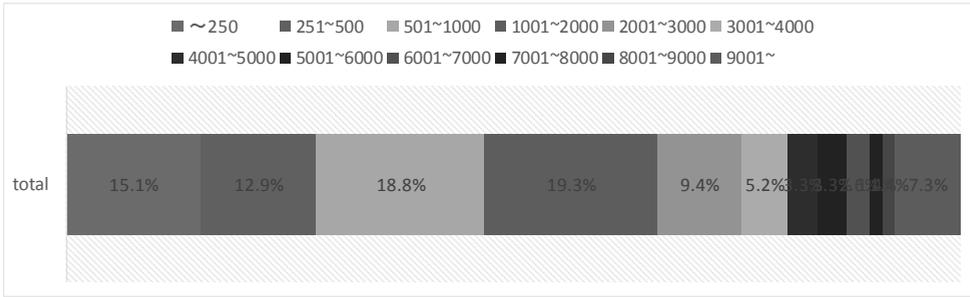


Figure 2 Distributions of number of fans (%)

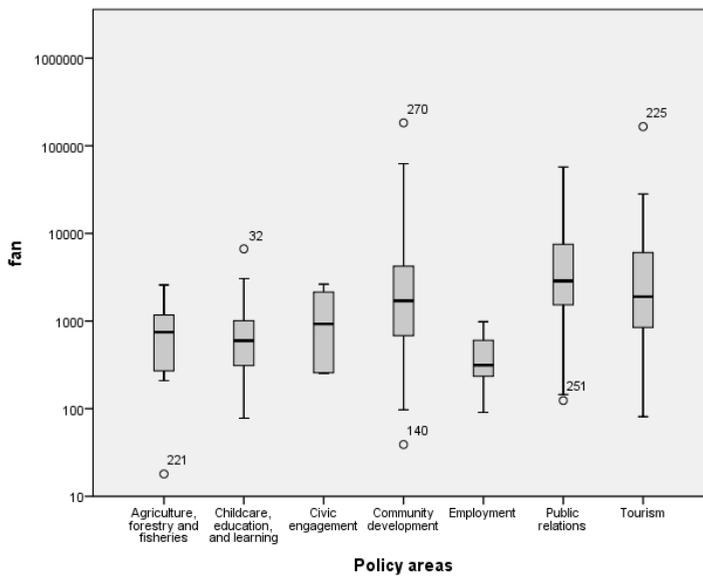


Figure 3 Distribution of number of fans by policy area
Scale= logarithmic scale

We next analyzed each policy area and Figure 3 shows the distribution of number fans based on each area of policy. (The aggregate data of all policy areas are in the Appendix.) First among the policy areas of employment, agriculture, forestry and fisheries, childcare, education, and learning, more than 70% of the pages focused on these areas have less than 1000 fans. Second, in regards to civic engagement, half the pages that focus on this policy area have a fan base of 251-500 fans, however 33.3% have a fan base of 2001-2000 fans and we can see a division in scale in this area. Third, among the policy areas of tourism, public relations, community development and entertainment, these pages have the highest ratio in having a mid-scale fan base. Tourism and public relation related pages have over 15% among the large scale (over 9000 fans) fan base pages, therefore these two policy areas have the largest fan base.

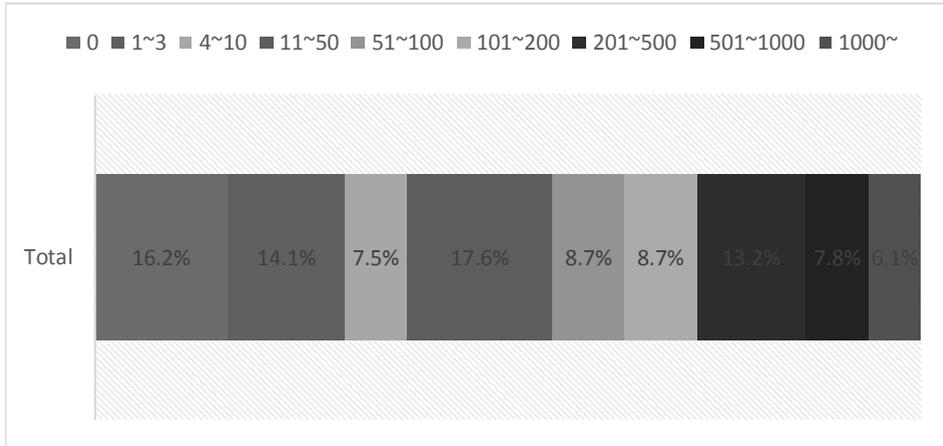


Figure 4: Engagement distribution (%)

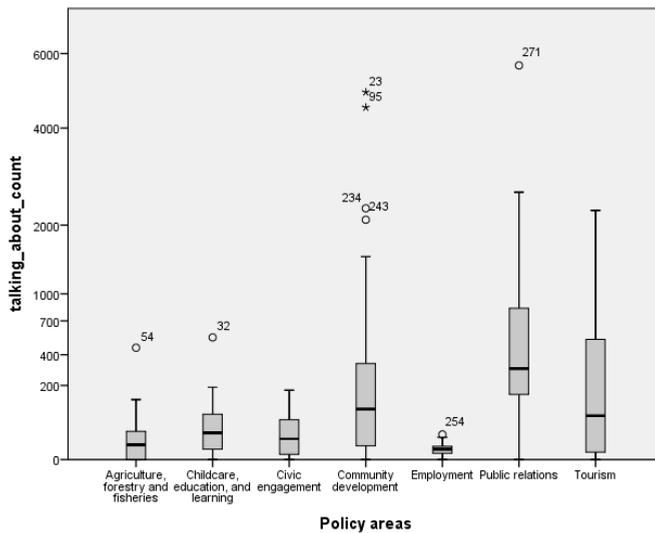


Figure 5: Engagement distribution by policy areas (%)
Scale=exponential scale

Figure 4 illustrates the distribution of degree of engagement and we can observe a fairly even distribution of engagement from 0 to over 1000. Figure 5 illustrates the engagement distribution ratio of each area of policy (%) and for better assessment of the distribution, it was divided into three groups, low engagement (degree of engagement 0-10), mid-scale engagement (degree of engagement 11-200), high engagement (degree of engagement, over 200). Most areas of policy have low engagement, although “childcare, education and learning” have mid-scale engagement and public relations has relatively high engagement.

5. Discussion and conclusion

Establishing collaboration is an important aspect in many areas of society, however, collaboration among citizens, the public sector and private sector is one of the most important issues for many industrialized nations. Social media such as Facebook can provide a possible path for local governments to become more open and allow for such collaboration. In this ideal scenario, citizens can be more involved in public services and policy decisions.

This study investigated how local governments in Japan use Facebook. We examined the specific policy areas focused by local governments in Facebook and found some to have more fans, and others to have more engagement. This study investigated the following three research questions.

- RQ1: What is the major focus of local governments in Japan when they use Facebook?
- RQ2: What policy area focused by a local government Facebook page accumulates more fans?
- RQ3: What policy area focused by a local government Facebook page accumulates more engagement?

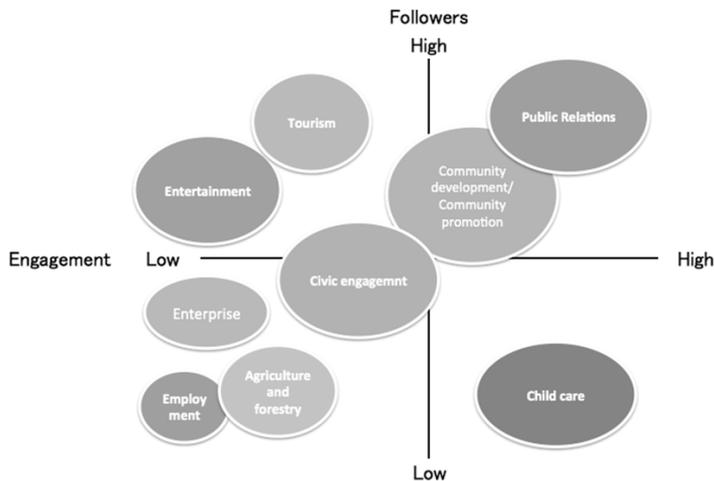


Figure 6 Fans x Engagement x Policy Area

Our study has discovered that Japanese local governments use Facebook for (a) agriculture, (b) environment, (c) enterprise, (d) civic engagement, (e) employment, (f) agriculture and forestry, (g) industrial development, (h) sports, (i) childcare (j) art and culture, (k) tourism and (l) public relations as their focused policy areas. In answering RQ1, among these policy areas, community development and community promotion are the most common policy areas. In regards to RQ2 that makes an inquiry into which area of policy tends to accumulate more fans, employment, agriculture, forestry and fisheries, childcare, education, and learning were found to have a small-scale fan base, whereas tourism and public relations have a large-scale fan base. In regards to RQ3 that inquires which area of policy tends to accumulate more engagement, we found that most policy areas have low engagement, although childcare, education and learning have mid-size engagement and public relations had relatively higher engagement. We can also suggest that the number of fans do not influence the amount of engagement.

For practitioners that operate local government Facebook pages, an appropriate number of fans (fan base scale) according to each focus policy area can be suggested by the result of this study.

Figure 6 illustrates the findings of this study on how the number of followers and engagement fluctuate depending on each policy area. In other words, this study found that the number of fans or followers and level of engagement are determined by the focused policy area.

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6. Appendix

Number of fans by policy areas (%).

| | 250 | 251~500 | 501~1000 | 1001~2000 | 2001~3000 | 3001~4000 | 4001~5000 | 5001~6000 | 6001~7000 | 7001~8000 | 8001~9000 | 9001~ | N |
|-------------------------------------|--------|---------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------|-----|
| Agriculture, forestry and fisheries | 23.8% | 14.3% | 33.3% | 19.0% | 9.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 21 |
| Animal welfare | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 50.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 25.0% | 4 |
| Childcare, education, and learning | 20.0% | 16.0% | 36.0% | 20.0% | 0.0% | 4.0% | 0.0% | 0.0% | 4.0% | 0.0% | 0.0% | 0.0% | 25 |
| Civic engagement | 0.0% | 50.0% | 0.0% | 16.7% | 33.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 6 |
| Community development | 5.1% | 10.2% | 16.6% | 22.9% | 12.1% | 6.4% | 7.6% | 3.2% | 3.8% | 1.9% | 1.3% | 8.9% | 157 |
| Consumer safety | 100.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2 |
| Disaster prevention | 20.0% | 10.0% | 20.0% | 20.0% | 20.0% | 0.0% | 0.0% | 10.0% | 0.0% | 0.0% | 0.0% | 0.0% | 10 |
| Election | 66.7% | 33.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3 |
| Employment | 26.7% | 33.3% | 40.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15 |
| Enterprise | 42.9% | 0.0% | 0.0% | 14.3% | 28.6% | 0.0% | 0.0% | 0.0% | 14.3% | 0.0% | 0.0% | 0.0% | 7 |
| Entertainment | 17.2% | 17.2% | 10.3% | 31.0% | 6.9% | 3.4% | 3.4% | 3.4% | 0.0% | 3.4% | 0.0% | 3.4% | 29 |
| Environment | 57.1% | 21.4% | 14.3% | 7.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 14 |
| Foods | 11.1% | 11.1% | 11.1% | 33.3% | 11.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 22.2% | 9 |
| Gender equality | 80.0% | 0.0% | 0.0% | 20.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5 |
| Health care and sports | 36.4% | 27.3% | 18.2% | 9.1% | 0.0% | 0.0% | 0.0% | 9.1% | 0.0% | 0.0% | 0.0% | 0.0% | 11 |
| Industrial development | 0.0% | 42.9% | 42.9% | 14.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7 |
| International relations | 50.0% | 50.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2 |
| Land, infrastructure and transport | 27.3% | 9.1% | 27.3% | 9.1% | 0.0% | 9.1% | 0.0% | 9.1% | 0.0% | 0.0% | 0.0% | 9.1% | 11 |
| Multicultural coexistence | 0.0% | 66.7% | 33.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3 |
| Public safety | 33.3% | 0.0% | 0.0% | 0.0% | 33.3% | 33.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3 |
| Public Relations | 8.3% | 0.0% | 12.5% | 16.7% | 16.7% | 8.3% | 0.0% | 8.3% | 4.2% | 0.0% | 8.3% | 16.7% | 24 |
| Social welfare | 50.0% | 0.0% | 50.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 4 |
| Tourism | 3.8% | 5.7% | 18.9% | 22.6% | 7.5% | 7.5% | 1.9% | 5.7% | 3.8% | 3.8% | 3.8% | 15.1% | 53 |
| total | 15.1% | 12.9% | 18.8% | 19.3% | 9.4% | 5.2% | 3.3% | 3.3% | 2.6% | 1.4% | 1.4% | 7.3% | 425 |

Number of engagement by policy areas (%)

| | 0 | 1~3 | 4~10 | 11~50 | 51~100 | 101~200 | 201~500 | 501~1000 | 1000~ | N |
|-------------------------------------|-------|-------|-------|-------|--------|---------|---------|----------|-------|-----|
| Agriculture, forestry and fisheries | 28.6% | 4.8% | 19.0% | 33.3% | 0.0% | 9.5% | 4.8% | 0.0% | 0.0% | 21 |
| Animal welfare | 0.0% | 0.0% | 0.0% | 25.0% | 0.0% | 25.0% | 25.0% | 25.0% | 0.0% | 4 |
| Childcare, education, and learning | 12.0% | 12.0% | 8.0% | 28.0% | 20.0% | 16.0% | 0.0% | 4.0% | 0.0% | 25 |
| Civic engagement | 16.7% | 33.3% | 0.0% | 16.7% | 16.7% | 16.7% | 0.0% | 0.0% | 0.0% | 6 |
| Community development | 7.6% | 12.7% | 7.0% | 14.6% | 10.2% | 9.6% | 22.3% | 10.2% | 5.7% | 157 |
| Consumer safety | 50.0% | 50.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2 |
| Disaster prevention | 30.0% | 10.0% | 0.0% | 20.0% | 20.0% | 0.0% | 10.0% | 10.0% | 0.0% | 10 |
| Election | 33.3% | 33.3% | 0.0% | 33.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 3 |
| Employment | 13.3% | 33.3% | 40.0% | 13.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 15 |
| Enterprise | 57.1% | 0.0% | 0.0% | 0.0% | 14.3% | 28.6% | 0.0% | 0.0% | 0.0% | 7 |
| Entertainment | 20.7% | 24.1% | 3.4% | 17.2% | 6.9% | 6.9% | 13.8% | 3.4% | 3.4% | 29 |
| Environment | 42.9% | 7.1% | 14.3% | 28.6% | 7.1% | 0.0% | 0.0% | 0.0% | 0.0% | 14 |
| Foods | 33.3% | 33.3% | 0.0% | 0.0% | 11.1% | 0.0% | 0.0% | 0.0% | 22.2% | 9 |
| Gender equality | 0.0% | 20.0% | 0.0% | 20.0% | 20.0% | 0.0% | 0.0% | 0.0% | 0.0% | 5 |
| Health care and sports | 36.4% | 27.3% | 0.0% | 27.3% | 0.0% | 0.0% | 0.0% | 9.1% | 0.0% | 11 |
| Industrial development | 14.3% | 14.3% | 14.3% | 57.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 7 |
| International relations | 50.0% | 0.0% | 0.0% | 50.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 2 |
| Land, infrastructure and transport | 18.2% | 18.2% | 0.0% | 18.2% | 9.1% | 9.1% | 9.1% | 0.0% | 18.2% | 11 |
| Multicultural coexistence | 0.0% | 0.0% | 33.3% | 33.3% | 0.0% | 33.3% | 0.0% | 0.0% | 0.0% | 3 |
| Public safety | 33.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 33.3% | 33.3% | 0.0% | 3 |
| Public relations | 12.5% | 4.2% | 0.0% | 0.0% | 4.2% | 8.3% | 33.3% | 20.8% | 16.7% | 24 |
| Social welfare | 0.0% | 25.0% | 0.0% | 50.0% | 0.0% | 0.0% | 25.0% | 0.0% | 0.0% | 4 |
| Tourism | 17.0% | 11.3% | 3.8% | 15.1% | 9.4% | 11.3% | 5.7% | 11.3% | 15.1% | 53 |
| Total | 16.2% | 14.1% | 7.5% | 17.6% | 8.7% | 8.7% | 13.2% | 7.8% | 6.1% | 425 |



Using Fuzzy Cognitive Maps as Decision Support Tool for Smart Cities

Application in Smart Mobility

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Abstract: *This contribution aims to demonstrate how Fuzzy Cognitive Maps can be applied as decision support tools in Smart Cities. Simulation as a scientific method represents simplified processes and systems for decision making. Simulating real world scenarios of Smart Mobility on a computer-controlled environment - using Fuzzy Cognitive Maps - allows drawing conclusions from considered alternatives for policy making. In this context Fuzzy Cognitive Maps can be used both as a knowledge and communication tool. Using Fuzzy Cognitive Maps in the framework of Smart Government indicates the need to first conceptualize the domains of Smart Cities. Smart Mobility is one of the dimensions in which ICT plays an important role and can be used to improve the interaction of cities with their citizens. Social media and open data can contribute to the interaction between government and the general public. The benefits and risks in terms of technological, contextual and institutional aspects need to be considered when using social media and open data to create Fuzzy Cognitive Maps. The possibility of integrating them into Fuzzy Cognitive Maps is described as a simple example of a Fuzzy Cognitive Map on urban mobility issues. Finally, arising suggestions from this example, how Fuzzy Cognitive Maps can be used as a decision support tool for Smart Cities, are given for further research.*

Keywords: fuzzy cognitive maps, decision support tool, smart governance, smart city, smart mobility, social media, open data, electronic public services

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Fuzzy Cognitive Maps are used to represent knowledge and analyze complex and dynamic systems. They were proved as powerful support tools to simulate alternative decision scenarios in various research domains: social and political sciences, management, environment and medicine, etc. (Papageorgiou, 2011).

As simulation models, Fuzzy Cognitive Maps allow to frame processes and systems of complex political decision alternatives concerning urban planning, in a simplified way. Mapping real-world scenarios and displaying their relationship in a computerized environment, allows the transfer of the simulation to the real reference system. In this way, the simulation with Fuzzy Cognitive Maps can be seen both: as a knowledge and communication tool (Scheer, 2013).

Following Castelnovo et al. (2015) ICT-enabled solutions, in this case Fuzzy Cognitive Maps, have the power to connect citizens and government. Engaging citizens' and simulating their participation in decision-making processes can help decision makers to make better decisions that fit citizens' needs. Furthermore Khan et al. (2015) point out that using technology not only improves the interaction of cities with their citizens, but also that data-based decision-making can improve urban governance. Use of social media and open data in government can thus support an increased exchange of information between government and citizens, improved and real time communication, greater efficiency and trust, as well as improvement of public services delivery and democratization of public policy making.

However, there are many obstacles in using social and open data: a digital divide in the population, both in terms of social and democratic divide (Norris, 2001); data management - security, privacy, data theft and also the availability of infrastructure and technology - personnel, expertise and skills (Bertot et al., 2012; Burkhardt et al., 2014; Khan et al., 2014).

This paper aims to introduce an ongoing research based on the question how Fuzzy Cognitive Maps can be applied to simulate decision making processes of urban mobility in the context of Smart Cities.

The rest of this paper is structured as follow: In section 2 the concept of Smart Cities are identified and discussed, in the context of a need to improve the quality of government and its constituency, as well as the need to connect government and its citizens through ICT-enabled networks which support smart decisions. Section 3 exploits the potential of social media feedback and open data to support smart cities in decision making. It describes how using Fuzzy Cognitive Maps can include citizens' feedback into public decision making and thereby enables valuable information for public policy makers. Challenges to integrate data from different sources and of different kinds into Fuzzy Cognitive Maps will be described in chapter 4. For this purpose an example of a simple Fuzzy Cognitive Map is applied on urban mobility issues to simulate possible decision scenarios of a pilot city. Conclusion and discussion for further research is presented in the final section of this paper.

1. Conceptualizing Smart City Governance

This section aims to approach initiatives undertaken by the government to become more intelligent and responsive. Governments striving to create a smart city are not only concerned with adopting innovation in technology, but also dealing with overall management, governance and policies. Thereby, the smart governance term is used to describe activities that invest in emerging technologies along with innovative strategies to achieve more agile and resilient government structures and governance infrastructures (Gil-Garcia, Helbig and Ojo 2014). Anthopoulos, Janssen and Weerakkody (2016) synthesized existing smart city conceptualizations into a unified smart city model addressing 8 classes of conceptual models including architecture, governance, planning and management, data and knowledge, energy, health, people and environment, as well as, 6 classes of

benchmarking tool, such as smart city progress, smart city monitoring, city capacity, city sustainability and resilience, and policy impact.

A key point when dealing with a smart governance is that organizations, in addition of increasing efficiency, effectiveness and transparency in the management and provision of public services (Nam and Pardo 2014), can also create a collaborative environment with the public and other organizations (Maheshwari and Janssen 2014; Nam and Pardo 2014). According to Anthopoulos and Reddick (2016), smart cities initiatives are a way for governments to change urban spaces, increasing the provision of public services and democracy.

Castelnovo et al. (2015) have revealed that that most of the concepts in literature acknowledge that smart cities are multidimensional systems. Smart cities are characterized by a new way of governing with the use of technology and the consequent increase in the public administration capacity of improving the quality of life of citizens. Complementary to this traditional objective of e-government, that is optimizing urban services and improving quality of life, Castelnovo et al. (2015) suggest the need for ICT-enabled solutions for increase the quality of the relationship between government and its constituency; and the power of ICT-enabled networks that allow people to get connected to government by electronic public services.

Meijer and Bolívar (2015, p. 7) present the following definition of smart cities: "*the smartness of a city refers to its ability to attract human capital and to mobilize this human capital in collaborations between the various (organized and individual) actors through the use of information and communication technologies*". In this definition, the authors emphasize the three main aspects of a smart city: 1) the technological focus, 2) the focus of human resources, and 3) the focus of governance (collaboration). In the same sense, Osella, Ferro and Pautasso (2016) relate the concept of smart cities with the notion of governance, in which it perceives a greater intention on value creation for society through aspects such as leadership, citizen participation, partnerships, public-private partnerships, accountability, responsiveness, transparency, collaboration, data sharing and information integration services and communication.

According to Albino, Berardi and Dangelico (2015, p. 10) "*smart governance means various stakeholders are engaged in decision making and public services*". In this sense, governance has an important role in smart cities initiatives, especially by connecting initiatives between governments and citizens and keeping the decision processes transparent (Albino, Berardi and Dangelico, 2015; Castelnovo et al. 2015). Considering this approach, Castelnovo et al. (2015) propose a holistic framework to assess smart city governance in which citizens' engagement is fundamental, reflecting the citizen centricity of smart city governance. Stimulating citizen participation in decision-making by collecting suggestions and their point of view about how to improve public services is a traditional engagement approach (Castelnovo et al., 2015). ICT-based applications, such as Social Media, can not only be used to raise the number of participants in public debate, but especially including those people that are excluded or not attracted by traditional participation instruments, helping decision makers to make better decisions that fit with the population's needs (Castelnovo et al., 2015; Kleinhans et al., 2015). In other words, city planning and management can be improved through new technologies by connecting people to places in smart city's contexts (Khan et al. 2015).

ICT's innovations are making it possible to process smart city data and provide the necessary information for decision makers to improve policy making (Khan et al. 2015). According to Khan et al. (2015) data-based decision-making can improve urban governance by collecting smart city data

from sensors, smart phones or citizens to be linked to data repositories and performed through analytical logic.

Identifying the relationships and dependencies between concepts is especially challenging in smart city domains considering its multidisciplinary nature (Khan et al. 2015). According to Khan et al. (2015), one solution for it is the engagement with domain experts. Adopting a fuzzy hierarchical process is a way to facilitate the interactive decision-making process also in the context of smart cities, which consist, among other things, of using technology to improve the interaction of cities with their citizens (Kaltenrieder et al., 2014).

Based on theories of urban growth and development, Giffinger et al. (2007) define smart cities as those with good performance and prospects in areas such as economy, people, governance, mobility, environment and livelihoods. The Smart Economy dimension includes factors related to economic competitiveness. The dimension of Smart People is described by Social and Human Capital. The component of Smart Governance includes aspects of participation. The Smart Mobility dimension comprises Transport and ICT factors. The Smart Environment dimension encompasses natural resources. The dimension of Smart Living comprises aspects related to quality of life (Giffinger et al. 2007).

Smart Mobility is one of the dimensions in which ICT play a decisive role in its functions, especially for being part of the “hard” domain of smart cities (Albino, Berardi and Dangelico, 2015). In the Giffinger et al. (2007) smart city framework, Smart Mobility encompass transport and ICT through local and international accessibility, the availability of ICT-infrastructure as well as modern, sustainable, innovative and safe transport systems.

2. Potential of social media and open data in Smart Cities Governance

The use of social media and the internet in government has been labeled in many different ways (e.g. Government 2.0, We-Government, Open Government, Government as a Platform) (Khan et al., 2014) and their potential for government is widely recognized in the literature. Potential benefits range from increased dissemination of information and communication between government and citizens, greater efficiency, improved public services delivery, greater trust in government, leveraging public knowledge for generation of new ideas and solutions to public concerns, democratization of public policy making (Kavanaugh, 2012; Linders, 2012; Picazo-Vela et al., 2012; Mergel, 2013; Williamson and Parolin, 2013; Borins, 2014; Desouza and Bhagwatwar, 2014; Bonson et al., 2015; Kleinhans et al., 2015).

Some authors (Linders, 2012; Desouza and Bhagwatwar, 2014, Ertiö, 2015) argue that social media and use of open data contribute to modify the relationship and the interaction between government and the general public. From basic levels of information dissemination and citizen consultation, the relationship can move towards greater levels of interaction in decision making to do-it-yourself government (Linders, 2012).

However, despite the many benefits that social media can bring to government and governance, their full potential is yet to be unlocked. Numerous challenges and risks exist, of technological, contextual, and institutional nature. Some of the most important challenges and risks relate to the digital divide of the population, both in terms of social and democratic divide (Norris, 2001), data management to guarantee security and privacy of personally identifiable information, social inclusion, data theft, public criticism, the need to reform governments’ back offices to

accommodate citizens’ social media feeds, availability of infrastructure and technology, personnel, expertise and skills (Bertot et al., 2012; Picazo-Vela et al., 2012; Burkhardt et al., 2014; Khan et al., 2014).

In consideration of the benefits and risks that may arise from government use of social media, the aim of the SmartGov project is to exploit the potential of social media feedback and open data to support smart cities decision making. To use such data, and to include citizens’ feedback into public decision making, we choose to use fuzzy cognitive maps as a tool to extract meaningful and ready-to-use information for public policy makers. However, using data from different sources and of different kinds (quantitative, qualitative, numerical values, textual “values”) and their integration in fuzzy cognitive maps pose challenges of methodological nature. The potential of and barriers to Fuzzy Cognitive Maps will be described in the following chapter, where an example of a simple Fuzzy Cognitive Map is applied on urban mobility issues to simulate alternative decision scenarios of a pilot city.

3. Using Fuzzy Cognitive Maps as decision tools in Smart Governance

As already mentioned in chapter 2 policy making in Smart Cities can be improved through the use of ICT tools and by collecting data from different sources (Khan et al., 2015). Fuzzy Cognitive Maps were proven as useful decision making support tools, which enable modelling and analyzing complex and dynamic systems (Glykas, 2010; Gray et al., 2015; Papageorgiou, 2011). They can be used as a framework which allows scientists to model interdependence in systems - for example between concepts in a mobility domain. Concepts of mobility used in Fuzzy Cognitive Maps can represent involved actors of smart cities, parts of the environment and other factors, which have an impact on the investigated area (Mago et al., 2013).

One aim of the research that is part of the SmartGov project is to build Fuzzy Cognitive Maps which can simulate alternative decision scenarios of urban mobility issues in a pilot city. At the current state of the research we can only apply assumptions which possible urban mobility concepts can be used in a Fuzzy Cognitive Map. The graphical illustration below shows in an easy way how a simple Fuzzy Cognitive Map example could be used as a decision support tool for alternative scenarios on mobility issues in Smart Cities. The nodes of the Fuzzy Cognitive Map would indicate possible variables which can be used to describe the behavior of an urban mobility system. In the example, the variables are “C1-travel time”, “C2-travel mode”, “C3-road safety”, “C4-attractive routes”, “C5-air quality” etc. The figure 1 illustrates an example of a simple Fuzzy Cognitive Map to assess mobility issues.

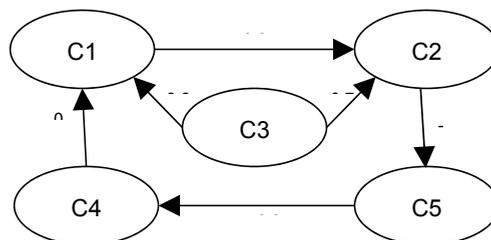


Figure 1: Example of a simple Fuzzy Cognitive Map to assess mobility issues

To each variable in the Fuzzy Cognitive Map values representing real world values (data and/or information) are ranging from [-1 ... 1]. Data at the basis of the values could be gathered from open government data sets, social media, surveys and interviews with experts. Open government data in several fields (census data, mobility, volunteered geographic information, land use) has the potential of supporting data-driven decision making, transparency, involvement of citizens, and private initiatives, ideas and service. Open data are at the basis of crowdsourcing ideas and efforts (Brabham, 2010).

In this example, the variable "C3-road safety" can have the highest value "1" assigned, when all indicators from the analysis of open data sets and other data can prove that the pilot city has very safe roads. For the variable "C5-air quality" an index of air quality could be created from sensor data available as open data set. If the value on this index is in the middle range the value assigned to the variable C5 could be "0" (Carvalho, 2013).

For the variable "C2-travel mode car" data from social media could be used to measure the public opinion about preferred modes of transport. According to Housley et al. (2014) Twitter data provides the most open, voluminous and established social media data source for public opinion and behavior mining. The results from data mining on Twitter could show that taking a car is the preferred means of travelling in the pilot city.

However, social media feedback does require the government to process, structure, analyze, and interpret them in order to extract meaningful information. As Kavanaugh et al. (2012) highlight, local government often use social media without a clear understanding of their impact on the general public, the ways to handle the information gathered, the demographics and information about the actual audience. Data crawling, content analysis and sentiment analysis are some of the actions and methods that local government could use to extract meaningful information.

Arrows indicate the causal directions between the variables by assigning weight ranges between [-1 ... 1]. These values represent the effect on the variable, negative values show causal decrease, positive values causal increase. The assigned value to the arrowhead between "C2-travel mode car" and "C5-air quality" could show that using cars has a negative influence on air quality (Carvalho, 2013). Application of empirical linguistic terms and modifiers processed through fuzzy logic refines the Fuzzy Cognitive Map for performing different simulation scenarios on the Fuzzy Cognitive Map (Mago et al., 2013). Obtaining new values for Fuzzy Cognitive Map scenarios follows the logic of multiplying respective weights of antecedent concepts, adding these results and finally using a nonlinear function. The dynamics of Fuzzy Cognitive Map are modeled iteratively - current values are computed based on the previous iterations. *"The FCM evolves through time, the map might reach equilibrium, converging to a single state or a finite cycle of states (Carvalho, 2013:9).*

This example of a Fuzzy Cognitive Map shows how a concrete mobility scenario analysis could be performed. As the application of Fuzzy Cognitive Maps continues rapidly it is important to emphasize its advantages, but also consider complexities in using them. Although Fuzzy Cognitive Maps are potentially easy to understand, even by a non-technical audience (Papageorgiou 2011) it is important to align the research objective of the Fuzzy Cognitive Maps with the appropriate data collection method. It is further recommended to analyze how the use of Fuzzy Cognitive Maps compares with already existing frameworks in specific research fields: theories, models and methods (Gray et al. 2014, 2015). Lessons learned

Gray et al. (2015) compared participatory modeling methods, which should be selected *“based on the community involved in the modeling process, research questions or management goals, and how each tool differs across dimensions such as ease of use with stakeholders, model inputs and outputs, and the degree of spatial or temporal extent”* (Gray et al. 2015). They further recognize the strengths of Fuzzy Cognitive Maps such as: allowing feedbacks, adding and removing of system components and relationships, as well as in the possibility to structure the problem with involved stakeholders. On the other hand including nonlinear relationships and determining consensus on components and relationships are identified as weaknesses of Fuzzy Cognitive Maps.

Murungweni et al. (2011) applied Fuzzy Cognitive Maps to explore the vulnerabilities and resilience of socio-ecological systems and concluded their study as following: *“We found that the interactive nature of FCMs reveals hidden knowledge and insights that improve the understanding of the complexity of livelihood systems in a way that is better appreciated by stakeholders.”*(Murungweni et al. 2011: 8) They assessed the Fuzzy Cognitive Maps as an effective and powerful tool to support the involvement of communities during their project participation.

4. Final remarks

This paper has introduced an ongoing research based on the question how Fuzzy Cognitive Maps could be used for decision making processes of mobility in Smart Cities.

Before the implementation of a decision support tool using Fuzzy Cognitive Maps, it is necessary to align the ongoing project and its research questions with existing theoretical frameworks. In the context of Smart Cities, which encompasses not only the adaptation to innovation in technology, but also to the aspects to offer more agile and resilient government structures and governance infrastructures (Gil-Garcia, Helbig and Ojo 2014) this research will analyze the frameworks for using decision support tools for smart governance in mobility issues.

Fuzzy Cognitive Maps can integrate different kinds of data coming from different sources: social media and opinion maps feedback, surveys results and semi-structured interviews. All such data need to be processed, analyzed, interpreted and structured for use in Fuzzy Cognitive Maps to deliver advantages and benefits for public decision makers. Considering these benefits and risks is crucial for this project, which aims to use linked data sources to include citizens' feedback and open data sets into an ICT-based decision making tool. Moreover, the project needs to ensure that the constructed Fuzzy Cognitive Maps can be continuously revised, re-run and implemented, even after the completion of the SmartGov project. This requires devoting attention and resources to the training of local authority staff members to enable them to work independently with Fuzzy Cognitive Maps.

Constructing Fuzzy Cognitive Maps with different data sources also requires the alignment with concepts of Smart Mobility and with the appropriate data collection method. Gray et al. (2014, 2015) recommend the analysis, how the use of Fuzzy Cognitive Maps compares with already existing frameworks in specific research fields: theories, models and methods.

To fully understand the nature and to respect these requirements of theories, models and methods, a systematic evidence review will be conducted in the research project. The review will be based on scientific and practitioner literature on current research issues of the project: How various actors in Smart Cities (co-)operate in decision making processes in Smart Cities; how and which (open) data and social media data can be used as public information source. Already used and tested experiences with decision support tools and functions, as well as especially with Fuzzy Cognitive Maps, will be considered for the project.

Finally a research format will be developed to monitor and analyze stakeholder experiences with decision support tools which are using Fuzzy Cognitive Maps. This will allow drawing conclusions for future work relating to ICT-based tools, as well as to using linked data to construct and analyze decision alternatives for policies in Smart Cities.

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Reflections, Ongoing Research, Workshop Papers

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Differing visions of the smart city in Korea

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Abstract: *With seventy percent of the world's population projected to live in cities by 2050, the smart city is promoted as a solution enabling sustainability and 'green growth'. Within this discourse, the smart city has been designated as one of the nine engines of economic growth by the Korean government in 2016. At the same time as the national government is constructing 'ubiquitous' new cities, such as Songdo and Sejong, it has favored Seoul with innovation districts and high-tech urban infrastructure. The aim is to make the capital city smarter and more globally competitive as demand for smart cities soars worldwide. This technology-oriented vision of the smart city is not whole-heartedly shared by the incumbent mayor of Seoul who seeks to use smart city technologies to empower people through social innovation. This paper analyzes the policies and actions reflecting these differing visions of the smart city as implemented by the city government and the national government. In doing so, it adds a new dimension to the current debate surrounding the smart city concept and its implementation.*

Keywords: Smart city visions, social innovation, high-tech infrastructure, Sejong, Songdo, Seoul

Smart cities are increasingly regarded worldwide not only as the next economic growth engine but also as an important means to ameliorate global problems associated with climate change, growing world population, environmental degradation, and depletion of traditional energy sources. As of 2010, more than 50% of the world's 7 billion people are already residing in cities, with 70% of a much increased 9.7 billion world's population projected to live in cities by 2050 (OECD 2012; UN 2014; UN 2015). Between 2010 and 2015, 65% of the global GDP and 70% of greenhouse gas emissions are projected to be produced in cities (UN 2011). In this context, the smart city is widely regarded as offering a viable solution that reduces the demands on urban infrastructure and enables continued sustainable growth by integrating traditional urban infrastructure with information communication technologies (ICT). In the period from 2008 to 2014, smart city projects have jumped from twenty cases to more than six hundred worldwide.

The Korean national government has built ubiquitous cities (u-cities) since the early 2000s. As of 2013, there were about 70 smart city projects in progress in Korea. It has constructed u-cities, such

as Songdo district in Incheon (hereafter referred to as Songdo), and Sejong City, a new administrative center of Korea. At the same time, it provided support to Seoul Metropolitan Government (SMG) in developing innovation districts and high-tech urban infrastructure. The aim was to make the capital city smarter and more globally competitive as demand for smart cities soars worldwide.

This technology-oriented vision of the smart city is not whole-heartedly shared by the incumbent mayor of Seoul who seeks to use smart city technologies to empower people through social innovation. This paper analyzes the policies and actions reflecting these differing visions of the smart city as implemented by the national government and the city government. In doing so, it adds a new dimension to the current debate surrounding the smart city concept and its implementation.

This study fills a gap in the literature in Korean u-city/smart city literature as current discussions have largely focused on the technological aspects, such as u-city services, infrastructure and systems, (Shin 2009; Leem & Kim 2013; Yigitcanlar & Lee 2013; Leem 2014) and on urban development aspects, such as TOD and TND models, globalization, place promotion, smart city characteristics (Kim 2010; Lee et al. 2014; Shwayri 2013; Kim 2014; Kwon 2015).

This article examines the planning discourses and practices as shown in policy statements and implementation processes of two types of cities: Korea's master-planned u-cities 'built from scratch', Songdo and Sejong City, and the existing city, Seoul. The aim of this paper is to shed light on the different visions for the u-city and the smart city and to examine the underlying processes and premises as shown in varying government publications. The paper focuses on the differing government visions and the resulting differences in their policies, and discusses the policies and actions reflecting these differing visions of the smart city as implemented by the city government and the national government. In doing so, it adds a new dimension to the current debate surrounding the smart city concept and its implementation.

The paper is organized as follows: The first section outlines the evolution of the u-city in Korea, and shows that the terms of the 'u-city' and the 'smart city' have been in uneasy competition since information communication technologies (ICT) began to be actively incorporated into the built environment. The second section looks at the visions, policies and actions of the national and local government in respect to Songdo, Sejong and Seoul and finds them sharing the same top-down discourse of competitiveness through innovation and city export. The findings show how the political and economic contexts all three cities are intertwined in regards to their u-city/smart city projects while there are variations among them regarding social aspects. The third section discusses the technology-oriented visions underlying the current discourse, and underscores the need for citizen empowerment and participation to make the transition from the top-down 'u-city' to a more bottom-up 'smart city'.

1. Evolution of the u-city and the smart city in the Korean context

The u-city has its roots in the home automation developed in the residential sector in the 1980s when IT was systematically incorporated into buildings, giving rise to smart homes, home networks, intelligent buildings, among others (Kim et al. 2015). As the integration of IT spread to other sectors, the Korean government established the 'Information Vitalization Act' in 1996, marking the first step towards an information society. For example, the public transportation sector adopted ITS (intelligent transport system), the security and surveillance sector installed

CCTVs (close circuit televisions), and the energy sector is still in the process of creating a smart grid by incorporating renewable energy into its existing electricity grid (Table 1).

The first digital city in Korea is the Digital Media City (DMC), centered on the Digital Media Street, in Seoul (Kim et al. 2015). It was originally conceived and funded by the Seoul Metropolitan Government in cooperation with the Seoul Institute (then called Seoul Development Institute), its policy think tank. It was part of a solution to vitalize the area around the Nanji Municipal Dump, which was exceeding its maximum capacity and needed to be closed down. As Seoul’s first urban development project which would include the transformation of an overflowing municipal dump site into an eco-park, the creation of a high-tech business district, and the conversion of the surrounding housing into environmentally friendly residential area, DMC was initially conceived as Seoul’s ‘New Millennium Development’ (July 1998) and, later, ‘Sangam New Millenium New City Plan’ (May 2000). The vision was to become Korea’s center for economic, cultural, environmental development as its foremost information city. In rapid succession, Seoul added the ‘DMC Plan’ (February 2001), the ‘DMC District Plan’ (September 2001), and the ‘Digital Media City Implementation Plan’ (2002; in cooperation with MIT). These plans were the first attempts to fuse the urban environment with ICT. Korean telecommunication and internet companies cooperated with the local government to create an innovative environment which would be responsive to the people walking down the Digital Media Street. Initially, the main features involved high-tech street lighting, info booths, media boards, automatic information kiosks. The Seoul Housing and Communities Corporation (SH Corporation) was in charge of the implementation of the DMC project.

In 2003, while SMG was developing the digital city, the national government and the Korea Land Corporation (now known as the Korea Land and Housing Corporation) were working on the ‘Digital City Implementation Strategy’, and pushed for legislation for the construction of u-cities one year later. The term ‘ubiquitous city’ was used for the first time in a report called ‘Songdo Information U-City Model’, published by the Kora Ubiquitous City Association in 2003 (Kim et al. 2015).

Table 1: Existing and smart city solutions for urban problems (Adapted from Lee and Sa 2015)

| Problem | Existing city solution | Smart city solution |
|---------------------------|---------------------------------------|--|
| Traffic congestion | Urban infrastructure Broaden roads | Smart services Provide alternative routes |
| Increased crime | Increase policing | CCTV monitoring |
| Increased electricity use | Build more power plants | Real-time electricity bill information |

From the beginning, the u-city emphasized the idea of efficiency and economy through technology. This can be seen in Korean government’s definition of the u-city as “a built environment where any citizen can get any services, anywhere and anytime through ICT devices to improve the citizens’ quality of life and city competitiveness” (MLTM 2008, 3). Strategically building on world leading ICT infrastructure and manufacturing capacity of mobile devices, Korea created its own brand in the term ‘u-city’ and did not adopt the term ‘smart city’ which places relatively greater emphasis on the environmental and social aspects (Caragliu et al. 2011; Yigitcanlar & Lee 2013).

The emphasis on technology in the concept of the u-city originates from the fact that the now defunct Ministry of Information and Communication (MIC) was mainly responsible for

establishing the services, technological standards, and the financing related to the u-city in the early stages of u-city formulation in 2006 (Kim et al. 2015). While MIC was providing government support regarding technological aspects, it also cooperated with the Ministry of Construction and Transportation (currently the Ministry of Land, Infrastructure and Transport, MOLIT) in drawing up the 'u-Korea Plan' which laid down legal and institutional groundwork, specified standards, and incorporated an integrated control center as an essential part of the u-city. The 'U-City Construction Law' became effective in 2008, and the 'First U-City Plan' came into force in 2009. However, even though several u-cities were constructed, the u-city market slowed down upon their completion due to decreased investments in new u-city ventures with the restructuring of the LH Corporation in 2010.

With the introduction of the smart phone in 2010, place-based ubiquity became less relevant. Also, global ICT and technology firms began marketing and setting up smart city solutions. Smart grids were thought to be more in sync with smart cities, and the government institutions and think tanks began to adopt the smart city concept in favor of the u-city.

In January 2016, the Korean government announced that it would begin the process of officially referring to all 'u-cities' as 'smart cities' after experiencing constant confusion over differences in their concepts both within and outside of Korea. The relinquishing of the original u-city brand in favor of the smart city springs from two distinct reasons. First, the technological focus associated with 'u-cities' have proven to be constraining. Calling them 'smart cities' instead changes the understanding from simply dealing with separate information, traffic, security and safety infrastructure to including the added integration and management of these diverse services into one unified system. Secondly, Korean companies have encountered difficulty in participating and cooperating in smart city projects as international partners question them about the differences behind the two different terms. Foreseeing the separate naming system to be a potential barrier to future export of the Korean smart city model, all government ministries have dropped the use of 'u-cities' with the understanding that 'smart cities' are more broadly encompassing in terms of services and future potential (MOLIT 2016).

In August 2016, Korea's president announced a strategic plan for nine new growth engines for the future. These include the following innovations: the smart city, autonomous vehicles, augmented reality, light-weight materials, artificial intelligence, precision medicine, new drugs, carbon capture and storage and fine dust. This means that smart city science will be allocated a portion of the total 1.6 trillion won (US\$ 1.5 billion) government funds to be used for R&D, investments, public-private partnerships and regulation reform over the next 10 years.

According to government documents of the Ministry of Science, ICT and Innovative Planning (MSIP), smart city technology and modeling will focus on integrating urban infrastructure, such as water, energy, transportation, safety etc., which have been built and managed relatively separately and independently from each other. The infrastructure will be paired into three groups to maximize efficiency in urban management: building-energy management (micro-grid), water-energy management, and transportation-disaster prevention-facility management. At the same time, an integrated platform will allow real time collection and analysis of information from throughout the city to enhance the accuracy and speed of decision making by the public sector. The big data resulting from urban management will be collected centrally, and most of it will be made public in the form of open data to benefit people and companies in creating new business

opportunities. The expected effect will be an increase of urban management efficiency by 15% and a creation of a high value industry economy (MSIP 2016).

It is to be noted that this government plan came at a time of slow national economic growth with Korea's exports declining over 19 months. In addition, in contrast to increased interest in smart cities overseas, there has been a decrease in interest in Korean u-cities due to the slump of the domestic real estate market and a lack of a clear business model regarding smart cities. Despite the fact that Korea is at the forefront regarding smart cities and smart city solutions, the focus on constructing smart cities from scratch has led to a mainly technological and economic approach while neglecting aspects such as social inclusion and citizens' participation in the process of city-making.

While SMG embraces the national government's definition of the u-city, it differentiated itself by calling itself a 'smart city' or 'connected city' even before the national government's relinquishing of the 'u-city' brand. According to Mayor Park Won-soon, "the key to becoming a smart society is 'communication' on a totally different level. A smart city, for instance, involves communication between person and person, people and agencies, and citizens and municipal spaces, with human beings always taking the central position in everything" (ITU 2013: 7). Implicit in this definition is the perspective that the smart city is at a more advanced level than the u-city:

Smart Seoul 2015 was adopted to overcome the limitations of u-Seoul which applied ICTs only to existing 'traditional' city infrastructure. U-Seoul improved the delivery of services such as transportation and safety, but failed to produce material improvements in the quality of life enjoyed by Seoul's citizens. Smart Seoul 2015 is a more people-oriented or human-centric project; and Seoul now aims to implement as many smart technology as possible, but also to create a more collaborative relationship between the city and its citizens (ITU 2013: 6).

By this differentiation, SMG has moved away from the Korean government's u-city brand to a closer alignment to EU's smart city definition, which states that "a smart city is a city seeking to address public issues via ICT-based solutions on the basis of multi-stakeholders, municipality based partnership" (European Parliament 2014: 9)." However, despite differences between the u-city and the smart city, what is generally agreed is that they both rely significantly on top-down ICT solutions to make cities more efficient.

2. Differing government visions and policies

Korea exemplifies developmental capitalism where the government "sets substantive social and economic goals within an explicit industrial strategy" (Dicken 2007: 178). Korea is often cited as an example of the developmental state in which the government not only pursues 'market-driven development strategies' (World Bank 1993: 10 quoted in Bae and Sellers 2007), but also supports and guides the private sector in achieving economic growth. In April 2002, the Korean government announced its global agenda for turning the nation into a 'Northeast Asian Business Hub' which would serve as an international financial, industry and logistics center for the Northeast Asian region (Lee and Hobday 2003; MOFE 2003; Kim 2003; Park 2005). This called for plans for better logistics infrastructure, more efficient logistics networks, and the designation of special economic zones.

Lee Myung Bak adopted 'Low Carbon, Green Growth' as core vision of Korea during his presidency from 2008 to 2013. The theme involving sustainable development was consistent with

the previous policies he had adopted at the municipal level as the Mayor of Seoul (2002-2006). After all, he had successfully restored the Cheongyecheon Stream, which involved major urban renewal along the watercourse at the heart of Seoul's business district. Under his administration, the goals of the u-city delineated in the two Ubiquitous Comprehensive Plan announced in 2008 and 2013 include "creation of new engines for economic growth, the improvement in the quality of life and the enhancement of Korea's international standing" (Shwayri 2013, 42).

The discourse of the Korean central government's vision and strategy as seen from the stated objectives of both Ubiquitous Comprehensive Plans were as follows: the creation of Korea's future growth industry (focused on export of u-cities), efficiency in urban management, and an improved quality of life (MLTM 2008, MOLIT 2013). This would require that urban infrastructure, such as roads, bridges, schools, hospitals would be integrated with cutting-edge ICT technology to build ubiquitous infrastructure that can provide ubiquitous services whenever and wherever needed (u-transport, u-environment, u-welfare etc.) (Figure 1). Thus achieving a better quality of life is viewed as a means for achieving economic development.

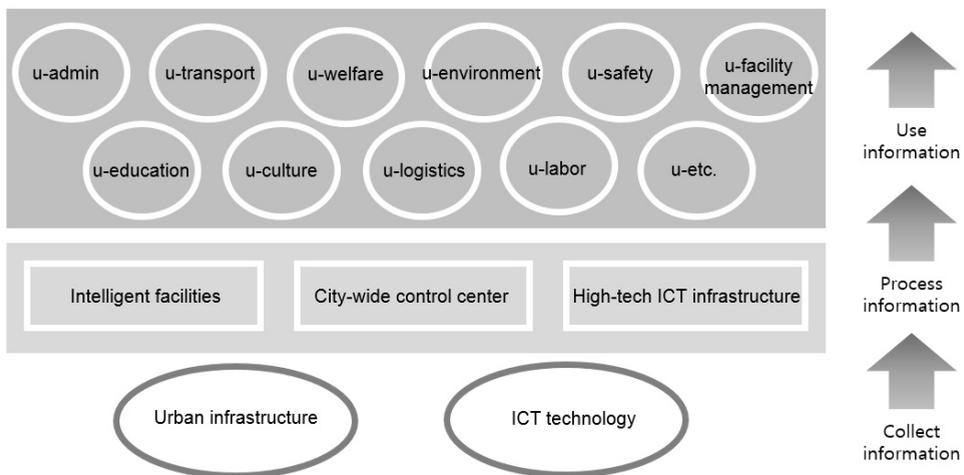


Figure 1: Korea's u-city concept (Source: MLTM (2008); adapted by authors)

City governments have adopted policies to enhance the locational attractiveness of cities to entice mobile labor and capital. Location factors, such as the provision of efficient ICT infrastructure, the amount and quality of green spaces, business infrastructure, competency based school systems, affordable and agreeable housing, among others, have become determinants of competitiveness (Malecki 2004). The city governments strive to maximize competitive dynamics by combining the urban-specific factors and the external factors (van Winden 2006). City competitiveness is achieved when the combination of characteristics unique to a city within the wider global context results in the attraction of new business and human capital to the city (Figure 2).

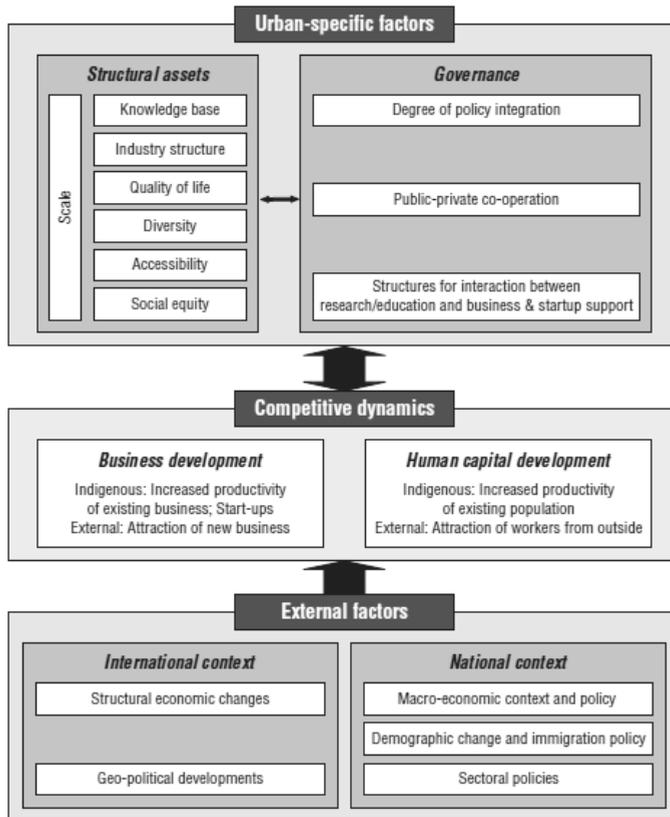


Figure 2: Determinants of urban competitiveness (Source: van Winden (2009))

3. Cases of Songdo, Sejong and Seoul

3.1. Global business hub Songdo

A city with a population of about 260 thousand and encompassing 53.4 km² of reclaimed land area, Songdo will be constructed over a period of 19 years (2003-2022). Conceived as a global business hub, its development caters to international business, information technology, biotechnology and R & D. It is also described as having “a master plan inspired by the world” in that it incorporates “the wide boulevards of Paris, a 100-acre park Central Park reminiscent of New York City, a system of pocket parks similar to those in Savannah, a canal system inspired by Venice and convention architecture redolent of the famous Sydney Opera House” (Songdo IBD webpage; accessed at <http://www.songdo.com>). Claiming to be one of world’s greenest cities, Songdo’s six core sustainability goals include 40% open space; convenient transportation made possible by Incheon subway line and an extensive network of bicycle lanes; irrigation-based potable water; efficient energy use through implementation of (American Society Heating, Refrigerating, and Air-conditioning Engineers; AHRAE) standards and generation of clean power; recycling of 75% of construction waste; and digital, environmentally friendly operations.

Table 2: General information on Songdo

| | |
|--------------------------------------|---|
| Official name | Songdo International Business District |
| Population | 258,728 persons (96,315 households) |
| Area | 53.4 km ² |
| Distance from Seoul | 56 km |
| Masterplan established | 2005 |
| First residential projects completed | 2009 |
| Completion of construction | 2019 |
| Land use | 50% preservation area 22% residential area 3% commercial and business area; 1% regional administration and public organizations; 4% culture, welfare, education, and medical facilities; 1% industry; 2% public facilities |
| Government budget | 21 trillion 5,442 US\$ |

Gale International, a private American developer known for suburban business parks in the northeastern US, has partnered with Korean engineering conglomerate Posco and the Incheon city government to build Songdo since 2004, when the 35 billion dollar construction of Songdo International Business District began. Cisco, a large American IT firm, has been responsible with wiring the city with fiber optics to connect the different systems that keep Songdo running. TelePresence are installed in homes, offices, hospitals and shopping centers so that people can make video calls where they want. Sensors are embedded in streets and buildings to monitor everything from temperature to road conditions enabling the city to run efficiently and react to problems quickly. These sensors are also able to monitor environmental changes, such as fire and safety and control the water levels and quality in the Central Park. RFID tags on cars will ensure the easing of congestion by managing road traffic; traffic lights will be using efficient LEDs. The power consumption of homes and their electric appliances will be monitored automatically to better understand how resident use energy, and adapt the power grid to balance supply and demand more efficiently. Waste is collected through pneumatic waste collection system and delivered through a network of underground pipes directly to the municipal dump. According to Gale, per capita energy use is 40% less than the average existing city due to greater energy efficiency; an estimated 80% of the buildings will be LEED certified.

Songdo was the brainchild of the national government in the 1990s. In 2003, an area was designated as the Incheon Free Economic Zone, which means that the district was subject to special tax and other incentives. The Korean government has established economic zones to attract FDI.

3.2. Multifunctional administrative city Sejong

Launched in July, 2012 as an administrative capital, Sejong City is expected to have a population of about 500,000 over an area of 73.14 km². Planned as a self-sufficient city, its initial focus is on building an ICT infrastructure to facilitate the city vision of "smart administration with the citizens" in order to provide "fast and convenient smart administration" (Local Information Magazine 2013). The vision involves the provision of custom-made administrative service provision; high standard information service; cutting edge ICT infrastructure; and greater protection of information for safer administration.

Table 3: General information on Sejong

| | |
|--------------------------------|---|
| Official name | Sejong Special Autonomous City |
| Population (current/projected) | 230,327/500,000 persons (current as of May, 2016) |
| Area | 73.14 km ² |
| Distance from Seoul | 120 km |
| Masterplan established | 2007 |
| Relocation of government unit | 2012 |
| Completion of construction | 2030 (projected) |
| Government budget | 8500 million US\$ |

Sejong City is the new administrative capital of Korea, housing 36 ministries and government agencies and more than 10,000 civil servants. As of 2016, the city is still more or less empty with intermittent activities on the streets. Government incentives have rewarded relocations to the city, but there is still a substantial population which works in Sejong during weekdays but returns to their families in Seoul or the capital region on weekends.

3.3. Global city Seoul

With a population of 10 million people, Seoul has been Korea's capital city for more than 600 years. Seoul covers an area of 605.2 m² and boasts a smart transportation system in which an electronic card can be used to pay for all its nine subway lines and 765 bus routes. The three pillars of smartness characterizing Seoul are the ICT infrastructure, integrated city-management framework, and smart users. Firstly, the smart infrastructure includes free public wifi service, an integrated call center for all 25 districts constituting the city, and u-service network, which is enabled by embedding sensors and cables over the entire city to allow ubiquitous connections. Secondly, the integrated city-management framework includes providing mobile applications to local service for citizens. Lastly, smart users are defined as citizens who are technology-savvy and who can use the data to create their own applications.

With the support of the national government, SMG has implemented necessary urban restructuring measures to realize the global agenda. These have involved multidimensional actions in such diverse areas as promoting locational advantage, building infrastructure as well as enforcing better governance. As part of city promotion, the city has subsidized flagship property developments and urban regeneration, hosted international events, and fostered distinctive local culture and assets. In addition, it has formed a coalition with the private sector in their common goal for economic growth and competitiveness. Planning policy has reflected this spirit of entrepreneurial partnership in increased privatization of public institutions and creation of specialized business clusters.

The capital region, where 90 out of Korea's 100 largest companies are located, is now subject to a plan-guided spatial management system with an emphasis on increasing competitiveness (Kim 2008; Kim 2009). The government announced regulatory reforms for the Seoul-Incheon megalopolis by creating foreign economic zones (FEZ). These include deregulation concerning factory location, easing restrictions on industrial complexes in Seoul, and conditional development in environment protection zones as well as legislation and policies supporting the setting up and operation of foreign investment companies. Five major projects are supported by Seoul Metropolitan Government: Digital Media City (DMC) in Sangam-dong, Magok R&D City (MRC),

Yoido International Finance Center (IFC), Guro-Gasan Digital Complex, Dongdaemun Design Complex.

Table 4: Five¹ major foreign investment zones (FIZs) in Seoul (Source: Invest Korea website; accessed December 2010.)

| | Sangam Digital Media City | Magok MRC | Yeouido International Finance Center | Guro Digital Complex | Dongdaemun Design Complex |
|----------------|------------------------------|------------------------------------|--|---------------------------------------|---------------------------------------|
| District | Mapogu | Gangseo-gu | Youngdeungpo-gu | Guro-gu | Dongdaemun-gu |
| Area | 569,925m ² | 3,665,336m ² | 33,058m ² | --- | --- |
| Project period | 2002-2014 | 2007-2031 | 2006-2012 | | |
| Target sector | Media and entertainment | R&D; regional headquarters of MNCs | Financial institutions; local headquarters of MNCs | IT | Fashion and design |
| Type | Investment project | Investment project | Investment project | Foreign investment zone (FIZ) | Foreign investment zone (FIZ) |
| Incentives | Purchase of land; tax relief | Purchase of land; tax relief | | Tax relief; government rent subsidies | Tax relief; government rent subsidies |

Seoul's 'supportive' smart city strategies are as follows. First, Seoul has not been involved in any radical physical planning but rather relies on provision of services, mainly involving institutional support. These services include the provision of more than 10 thousand free WIFI spots around the city, covering about 13.5% of all public areas. Second, it has pursued governmental initiatives which have taken the form of cooperation with the private sector. For example, the SMG signed MOUs with ICT companies; the private sector rents SMG's surplus bandwidths in return for investing 4.7 billion won from 2011 to 2015 in order to provide fee WIFI (SMG 2011). Third, the government has provided a 'dispersed package' of supportive services throughout the city.

As of 2011, wireless internet services are available in about 83% of the city. The Seoul Metropolitan Government plans to provide free WIFI services at all public buildings, including city hall, district offices and community centers by 2015. The city will offer annual training programs to 200,000 underprivileged persons, including the disabled and the elderly. The number of CCTV in operation, monitored in real-time, is about 10,000 cameras. The goal is a reduction of crime rate by about 10%. In the "Smart Seoul 2015" plan, u-healthcare enables remote medical check-ups and consultations for patients from their home. This would benefit the disabled and the elderly who often face difficulties in accessing the smart technological innovations in their daily lives. The u-child safety service allows parents to check the location of their children. This service will be extended to 387 elementary schools and to underprivileged households. About 35% of the data is available to the public which would amount to 1.2 trillion Won in economic value. Seoul has adapted the slogan, 'Seoul, a city of happy citizens and a city beloved by the world!' After

¹ Yongsan International Business District, originally included as one of the major FIZs, is currently on hold after massive protests by residents and the pull-out of major investors. Occupying an area of 565,109 m², it was originally intended to be completely transformed into a high-end business and commercial district, filled with luxurious offices, shopping malls and hotels. The original development timeline was from 2007-2016.

becoming mayor in 2012, Mayor Won Soon Park has embarked on community building projects, shared economy, and social enterprises which promote citizen participation and empowerment. SMG also

4. Discussion

4.1. Technology

Songdo, Sejong and Seoul have a common problem. There is a focus on the physical aspects of the u-city/smart city which means installing ICT devices in the urban environment. Also, the original division of responsibilities among different government ministries concerning ICT infrastructure and the built environment at the beginning stages of the u-city in Korea have yet to be successfully fused into one seamless whole. There was a lack of spatial understanding by MSIP and a lack of technical understanding by MOLIT which still needs to be resolved through closer collaboration and communication. Furthermore, there is still some confusion about formulating what exactly a smart city is. As yet, in Korean cities, the focus is on efficiency and energy saving. Where do the people come in? What can the people expect from the smart city? More than Songdo and Sejong, Seoul is incorporating the smart phone and other mobile devices into its plan to become a smart city by providing wireless internet services in almost all public places and public transportation. Public places include parks, public facilities, roads, schools and neighborhoods.

Table 5: Overview of Songdo, Sejong and Seoul

| | Songdo | Sejong City | Seoul |
|----------------|--|--|--|
| Description | International Free Economic Zone (IFEZ) - u-eco-city | Multifunctional administrative city - u-eco-city | Capital city of Korea - Smart Seoul - Connected city |
| U-infra | Wifi and embedded ICT infrastructure U-city center | U-city center | Wifi network Integrated services |
| Service | Security and safety, Environment Transportation Facility management Service for citizens | Security and safety, environment, transportation, etc. | Transportation Environment Open data e-Government |
| Social goals | Residents contributing to the eco-system | Smart administration with the citizens | Reduce social information gap Strengthen privacy |
| Major actor(s) | Incheon Metropolitan Government, IFEZ, MSIP | Sejong Special City, MOLIT | Seoul Metropolitan Government (SMG), (MOLIT) |

4.2. Society

In some ways, Seoul is trying to implement an open-source urbanism by providing data to the public. At the same time, there needs to be a recognition that the local knowledge of residents regarding their neighborhood is probably much more detailed and nuanced than any collected by the government. In that aspect, there needs to be two-way feedback system between technological expertise and the collective social knowledge which is responsive and adaptable. There is a need for incremental calibrations and adjustments. This calls for a bottom-up exchange and collaboration made possible by citizen engagement and participation. Many questions still persist.

There are questions raised with information in 'clouds' or in the integrated control centers of smart city concerning control and coordination. How the functioning of a smart city be shifted from the provider to the user is still in question.

4.3. Policy

On the municipal level, the top-down process of the u-city leaves little room to change or modify the ubiquitous plan handed down from the national government. In a way, technology dictates and circumscribes the actions of the people who are living in the city. Instead of creating an urban system based on invisible efficiency, the focus needs to be on empowering people by giving them opportunities to make adjustments and modifications according to different needs and circumstances. There is also the need to have an attractive city to be locally and internationally competitive. There is an undercurrent in both national and municipal urban policies tied with the goal of city export. Are smart cities another product to be exported overseas?

5. Conclusion

National competitiveness and economic growth has been the priority of the Korean government since the 1960s, and thus is deeply ingrained within structure and mindset of the government and the Korean society at large. Even a half century later after Korea's economy structure has shifted, the mobilization around economic development remains mostly intact (Bae & Sellers 2007). At the same time, the traditional hierarchical social structure is reflected in the relationship between the national and city government; the state controls planning decisions through guidelines issued by the government (Suh and Healey 2003; Moon and Choi, 2008). The Ubiquitous Comprehensive Plans provide the local government with a standardized plan to be followed. This uniform application of the same criteria over the entire Korean peninsula has produced local city plans which are essentially the same by wiping out their local distinctiveness in the process. If the local government does not comply with the guidelines, the central government withholds approval. In this way, despite the greater role of the local governments as a result of decentralization and changes in governance since the 1990s, the central government still remains dominant.

Granted, there have been major changes in governance manifested in less hierarchical relations between the national and local government and the public and private sector, and these developments are creating further impetus for changes in the existing hierarchies of the planning system (Suh & Healey 2003). Even so, the legacy of state-led development still persists until the present day, despite decentralization and creation of voluntary civic associations.

If cities are only technology-driven, they are in danger of providing infrastructure that do not reflect the ever-changing demands of the people. To differentiate it from a truly people-centered city, it needs more direct citizen participation and involvement to meet their needs and desires. In short, technology should empower rather than control. In order to achieve this end, citizens should be able to have play an active role in decisions affecting their education, jobs, and healthcare. The government's role should be to ensure that this participatory process is based on principles of inclusiveness and provision of equal opportunity for all. Smart cities are determined by the smartness and wellbeing of their citizens, not just by the smartness of its technological services.

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Open Government and National Sovereignty

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Abstract: *The article deals with the position of national sovereignty principle in the e-governance and open government movements. This principle is important cornerstone of contemporary democratic society, but is mostly overlooked by these initiatives. The global openness request, expressed implicitly or explicitly in recent Open declarations and some national legislatures, stands in opposition to this principle, with no clear theoretical or practical explanation for this circumstance. Conceiving open government propositions as disruptive innovations for existing political system, the article postulates two competing factors (impact and rationality) as tools for estimating eligibility of e-democracy initiatives. Using this analysis, it is argued and demonstrated that global openness principle is not necessary for achieving open government goals, and that, moreover, insisting on this principle can hinder further implementation of open government and e-governance ideas.*

Keywords: Open government, national sovereignty, e-democracy, e-governance, disruptive innovation, global open access, democratic principles, society, political globalization

Looking at the big picture of open government efforts, perhaps the most striking aspect of it is the absence of clear, comprehensive conceptualization of the process that is undertaken. Considering the complexity of the task of opening government, that includes high interdisciplinary expertise in legal and organizational aspects, administration, technology, sociology and politics on all levels, it is reasonable to expect that one of the main research fields would be the construction of theoretical framework for government opening.

This framework would ideally also pave the way for the more comprehensive transformation of the way that contemporary political systems work, by applying acknowledged political principles using modern technical and organizational capabilities.

The propositions for these theoretical foundations have been laid out in declarations and charters published in recent years, like Open Government Declaration, Sunlight Foundation Policies, Open Data Handbook and like. Although there are significant differences among these documents, they all have one thing in common: the proposed changes are requested from existing political systems, primarily from sovereign, independent national states, whose functioning and existence is determined by many aspects that are not in the focus of open government initiatives.

Hence government opening is complex and delicate operation. The aspect discussed here – the position of national sovereignty principle in the openness requests – indicates that perhaps more work on foundations is needed, and that it may be necessary to step even further back in

theoretical domain to find principles and goals that can be agreed upon that can direct future endeavors in this field.

1. Government opening as a disruptive business

From information science point of view, open government initiatives can be perceived as an attempt to build an information system. And information system itself is always a reflection of the social system that it is built for (Hirschman, Klein, Lyytinen 1996). But in this case, the information system (at least the concept of it) precedes the social system by proposing and eventually introducing the changes and mechanisms that didn't exist before.

It is true that every new information system brings something new to the table, but the novelties that open government, as a segment of wider, e-governance initiatives introduce, are far more complex and important for social system that it pertains to, than those that information system changes bring to commercial businesses (Rossel, Matthias 2007).

In this respect, e-governance initiatives can be regarded as disruptive innovations: the innovations that develop new areas and provide new functionality, which, in turn, disrupts existing system and its linkages (Yu, Hang 2010).

Contemporary analysis of disruptive innovations is usually interested in ICT and organizational innovations ("game-changers" like Wikipedia, transport-sharing or residence-sharing platforms) and their impact to existing markets (Christensen, Raynor, McDonald, 2015). The e-governance initiatives can very well fit into this definitions, providing that, instead of impact on existing market, we consider impact on existing political system and its functionality.

Regardless of the term used, the extent of impact of particular (proposed or existing) e-governance initiative on existing political system is important for understanding, evaluating and predicting outcomes of this initiative.

There are obviously many approaches to discuss this topic, but here is proposed that in any freestyle analysis two competing factors will always emerge:

1) how much the proposed novelty is disruptive to existing system, i.e. how much it changes existing patterns of behavior and procedures (*impact*), and 2) how much the proposed novelty is logically inevitable application of the principles of democratic society through the means of modern IC and organizational technology (*rationality*).

For example, proposition to introduce permanent online referendums as a substitute for state representative bodies (like parliaments) is perfectly logical application of democratic principles through available technology, but it is clear that the impact, or disruptiveness of this innovation is very high; representatives, their bodies and elections would all be abolished.

On the other hand, democratic rationality, although logical, is not so high, because many theoretical perspectives holds that representative democracy itself carries some advantages that the mass direct democracy can't provide (for example Schumpeter, 1943). So the rationality exist, but it is not completely agreed upon, and being so low (at least in this moment), it cannot justify high impact price of its implementation.

The opposite example is introduction of right to information all the way to obligation to publish government data. This novelty, widely accepted (although with variable intensity) seems logically inevitable consequence of dissemination techniques development, while it looks very little disruptive, at least initially.

But what is important about this example is that the relationship between impact and rationality is convincingly on the side of rationality, as the changes concerning the functioning of the system is theoretically small (access to information, in principle, was always possible, but under the conditions that made it unusable in many cases), while preventing the use of modern dissemination technology would be difficult to characterize other than as attempt to circumvent the democratic foundations of society.

So it is the balance of the impact and rationality factors that decides what (or when) innovation will be accepted.

2. National Sovereignty

Independent national states are key elements of international politics (Beetham 1994). On international, global level, national states are the subjects that are taken into account in any decision-making process. But Open government movement seems like it is somehow ignoring this fact. Recently produced International Open Data Charter, developed by influential international political institutions, G8 and Open Government Partnership (International Open Data Charter, 2015) declares principle that data should be accessible and usable by all.

For gaining access to data there should be no registration and data should be available “to the widest range of users” (ibid, Principle 3). Hence, it is implied that national administration’s data should be available internationally to the whole world.

But collection and dissemination of this data is paid by citizens of a particular state, and, moreover, this data pertains to them.

Considering rationality factor, the global openness of data is not really based on any existing principle of contemporary democratic societies. The transparency obligations of the government are always defined towards those affected by the activity of the state, primarily towards its citizens (Dahl 2000, Dryzek & Dunleavy 2009).

The reason for implementation of the global openness may be in its convenience: there are many datasets that would be beneficial to expose and share globally, and alternative for citizens - access limited to registered accounts - makes using and sharing data less convenient.

But convenience can't substitute for political principle and hence the rationality for insisting on global openness is actually non-existent. It is the other factor quality, the presumed low impact of the global access principle that makes it suitable to be implied in Open government declarations.

This impact, however is not negligible.

Why would, for example, citizens of some small/underdeveloped state be interested in global revealing of a big administrative dataset, that some large foreign corporation will use to gain competitive edge on their home market? It is hard to find justification for this, and this is just one example.

More extreme, but very illustrative example can be the possibility of the DOS (Denial of service) attack on national administration, just by sending numerous legal requests for information access (Babaja, 2013).

The fact that some countries already implemented global access principle in their legislations does not mean that those provisions will remain as they are, especially if (or when) the situations similar to the two above-mentioned emerge.

It is obvious that national sovereignty question cannot be ignored forever by open government movement, and that many open data efforts will inevitably stumble in this area (Tauberer, 2015, Keseru, 2013). Some demarcation between national and international informational interests of independent countries must be taken into account, simply because it effectively exists, neglecting it or not.

3. Conclusion

It is noted above that e-governance and open government initiatives can be observed as a disruptive innovation to existing political system. The theory of disruptive innovation (Christensen, Raynor, McDonald, 2015.) states that disruptive businesses start by acquiring less profitable, lower end of the market by delivering more-suitable functionality at a lower price. Then they move to mainstream and high end of the market, preserving initial advantages and delivering performance that incumbent cannot offer.

Looking at the e-governance initiatives as a whole, it can be argued that this pattern applies to it also. Initial adoptions of open data principles may eventually lead to recognition and implementation of some more disruptive direct democracy mechanisms. The key moment here is to present and demonstrate the logical necessity of applying democratic political principles by means of modern ICT and the benefits it brings to society. This very relation between political principles and available technology constitutes the "competitive edge" of e-governance initiatives over incumbent political systems.

But the basic political principles - as is national sovereignty - on which modern societies are founded - are not meant to be challenged in this process. It is not necessary to tackle national sovereignty principle to gain benefits of open government.

In fact, questioning the fundamental principles of modern societies, like the principle of national sovereignty, stands in opposition to the rationality, our "competitive edge" of e-governance initiatives. One cannot be devoted to apply existing political principles (implicitly regarding them as valuable) and, in the same time, attempting to change them in the process.

The open government and e-governance initiatives are supposed to be agnostic to political ideologies. By introducing this kind of issues, the e-democracy and open government movement becomes prone to be perceived as some kind of concealed political globalization agenda. It is not something that proponents of e-democracy and open government have in mind, nor is it contributing to the goals of these initiatives. But it may very well, and probably unnecessary, hinder the progress of e-governance and open government ideas, by introducing suspicion and uncertainty about its ultimate goals.

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E-Participation in the Governance Process: Redefining its Worth and Modality

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Abstract: *Information and Communication Technologies (ICTs) have the potential to transform the political landscape and improve the governance process. This move by governments to improve access and enhance representation through the use of Web 2.0 technologies may encourage citizens to participate more in the democratic process by enlarging their choices and avenues for interacting with governments. Whether citizens find value in utilizing these technologies is contentious. Further research needs to be done to determine the conditions or factors affecting citizen's real opportunities to achieve value through e-Participation in order to establish policies that can address these issues. Previous e-Participation models have failed to capture this quintessence idea. The main findings of this paper show that while citizens may value good governance and democracy, the government's effort to deepen democracy through participatory means has not translated into value to the common citizen; furthermore, the National Government is out of touch with the needs of the people. The expansion of choices for participating in the democratic process has not lead to an increase in benefits for the state or for its people; although, the barriers faced by citizens to achieve valued through e-Participatory interaction has been significantly reduced.*

Keywords: E-Participation, Information and Communication Technology, Web 2.0, E-Governance, E-Democracy, Capability Approach

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The integration of Web 2.0 technologies into the governance process is changing the political landscape. Citizens now have a platform on which to voice their opinions in a way that was inconceivable only a decade ago. Equally, governments and their actors are utilizing these technologies to stimulate citizen participation. This has been seen as a positive step for development (Macintosh, 2004). Many studies have heralded the use of Information and Communication Technologies (ICTs) for increasing civic engagement (Hague and Loader, 1999; Moon, 2002; Macintosh, 2004; Mossberger, et al., 2008); moreover, research has shown that a countries ability to utilize ICTs effectively is directly related to its economic growth (Labelle, 2005).

Citizen's ability to access the most current information regarding their own perceptions, opinions and attitudes is key to achieving a more participatory and social democracy; without it, no democratic development may be realistically anticipated (Morada, 2006). In order to increase civic engagement and participation, it is important to understand how citizens utilize Web 2.0 technologies to interact with government and to identify the barriers that prevent them from doing so in order to establish policies that can address these issues (Scott, 2002; ITU 2003; Alampay, 2006).

The potential benefits of improving democracy through the use of ICTs have been well documented; however this author would like to stress the word "potential." Governments are inclined to focus on enhancing ICTs and e-Government services rather than on encouraging citizens to participate in the governance process (Gurgess and Houghton, 2006; O'Toole, 2009; Verdegem and Hauttekeete, 2010; Jimenez, et al., 2012; Freeman, 2013). This is because investments in e-Government services have the prospective to increase efficiencies and lower costs; whereas, investing in e-Participation reduces the governments control over information and decision making (Thompson, 2005; Flamm, et al., 2006; Hernon and Cullen, 2006; Verdegem and Hauttekeete, 2010; Lester & Hutchins, 2012). Additionally it may also be overshadowed by the misuse of information by government, politicians and/or elites for their own political purposes (Hutchins and Lester, 2011). As a final note, research has shown that improvements in e-Government do not necessarily lead to improvements in e-Participation (Kardan and Sadeghiani, 2011; Blakeley and Matsuura, 2001; Cho, 2008).

This article examines the relationship between government, their actors, and citizens through the use of Web 2.0 technologies in an effort to understand the conditions affecting citizen's real opportunities to achieve value through e-Participation. Previous models for promoting the inclusion of citizens have fallen short of truly identifying their needs.

1. Inclusion in the Governance Process

The field of research pertaining to e-Governance is not rooted in any one conventional discipline. The paths being paved, cross between a number of research domains, particularly Political Science, Computer Science, Information Systems and Public Administration (Heeks, 2007). As such, it is essential to provide a working definition of the key terms.

E-Governance and e-Government are somewhat synonymous, while the terms are often used interchangeable, for the purposes of this article; e-Governance is a comprehensive term with the ultimate goal of strengthening the state through methods of good governance such as accountability, consensus building, equity and inclusiveness as well as participation. Conversely, E-Government refers to the use of ICTs by government agencies to improve the delivery of information and public services to its citizens; however, in order for this to take place, citizens need to engage in this electronic form of governance. This term is called e-Participation, which is defined as the sum total of both the government programs to encourage participation and the willingness of the citizen to do so (UNPAN, 2005). A final component to e-Governance that must be addressed is e-Democracy. E-Democracy is a component of e-Participation and will be investigated as such. E-Democracy is an umbrella term that broadly describes moving citizens from passive consumers of information to active ICT participants within the democratic/governance process (Garson, 2006; Backus, 2001; Lee, et al., 2011). While e-Government tends to follow a top-down approach, e-Democracy tends to be bottom-up, although

there are differing viewpoints on this (Clift, 2004; Coleman, 2005); nonetheless, E-Democracy at its core is predicated on the ability of citizens to take part in the governance process.

With e-Governance research crossing a multitude of disciplines, establishing a model that can provide policy makers with a normative understanding of the conditions affecting citizen's ability to participate electronically can be a challenge. The most notable attempt is the 'Socially Inclusive Governance Framework' introduced by the United Nations Public Administration Network (UNPAN) in their Global E-Government Readiness Report of 2005 (UNPAN, 2005). This marked a seminal shift in the way citizens were perceived. E-Participation became an important point of debate; specifically related to the digital divide with a focus on equal access and inclusion (Datar et al., 2008). The UN's Global E-Government Readiness Report presented a framework or 'vision' for restructured thinking about how to improve e-Government by appreciating the capabilities of each and every person; the choices they make; and the freedoms they partake in (UNPAN, 2005). The foundation of the model was derived from Amartya Sen's work on the Capability Approach. However, this framework neglects Sen's philosophical argument that the capability of individuals to convert resources into value should be observed. Figure 1 introduces the framework that is still one of the dominate policy models for developing participatory e-Governance initiatives.

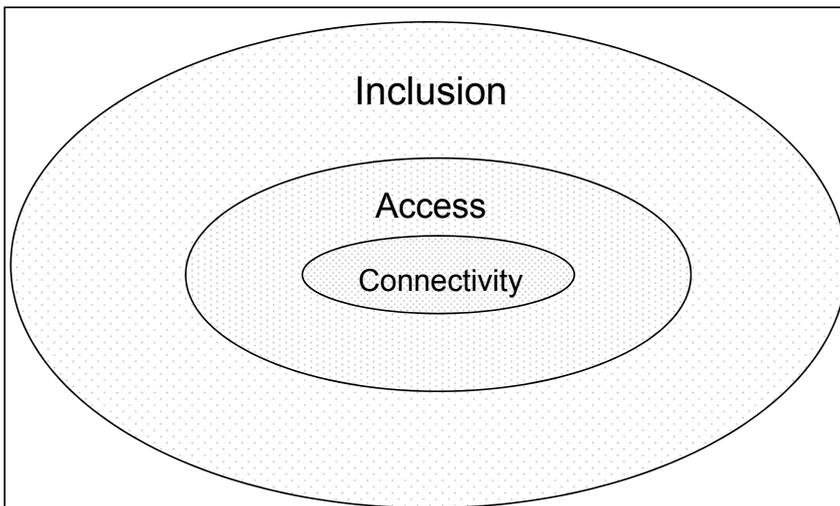


Figure 1: A Framework for Inclusion (United Nations Global E-Government Readiness Report 2005 - From E-Government to E-Inclusion, UNPAN, 2005)

In UNPAN's most recent reports, e-Participation has replaced socially inclusive governance in the framework model, yet the assumptions are still the same, that access will lead to inclusion. While this is a good first step, access alone does not promote inclusive participation. When evaluating the level of entitlements, both the range of communication options and the ability of citizens to make use of these options to achieve their relevant functionings are important (Garnham 1997). This article will provide both philosophically and scientific evidence to support a normative model for encouraging e-Participation and social inclusion.

2. E-Participation in the Philippines

The Philippines was selected as a research site based on its aggressive push to improve information and communication infrastructure (ICI), e-Government, and most notably e-Participation. Although the Philippines has a high penetration rate of mobile phone technology of more than one per citizen and improved ICI through policies like Executive Order No. 265, e-Participation regressed substantially over a nine year period from 2003 to 2012. This reverse correlation between ICI and e-Participation can be seen in figure 2.

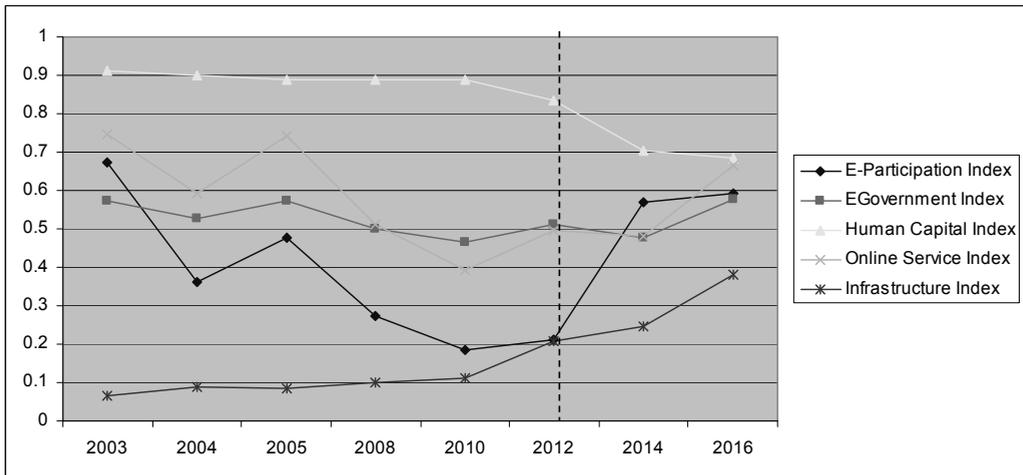


Figure 2: UN E-Government Survey Data for the Philippines (Source: UNPAN Data Center: <https://publicadministration.un.org/egovkb/en-us/Data-Center>, accessed: 10/27/16)

The research for this article commenced in 2013 which is distinguished by the dotted line in figure 2. What makes the Philippines an interesting case is that prior to 2012 the Philippine government was following UNPAN's model presented in figure 1. Moreover policy and strategies were being crafted by the Arroyo administration (through the Philippine Digital Strategy Paper) and the Aquino administration (through the E-Government Master Plan) based on the information obtained from the UNPAN reports. This strategy was echoed by the Information and Communication Technology Office's (ICTO) Deputy Executive Director during an interview. Not until recently has this trend reverse course, mainly due to the centralization of e-Government services and web hosting through Administrative Order No. 39. Additionally, the ICTO, which as of May 23, 2016 has become the Department of Information and Communications Technology (DICT) through Republic Act No. 10844 has focused its efforts on addressing the key e-Participation indicators of the UN E-Government Survey. Unfortunately, the vast majority of the indicators are supply driven and do not factor-in the existential capabilities of citizens to convert these opportunities and services into value. Without value, there is little incentive for citizens to participate in the governance process; hence, subduing e-Democracy and ultimately weakening the state.

3. Research Findings

A mixed method approach was taken for this research. Priority was given to the qualitative data utilizing a sequential exploratory strategy (Creswell, 2003). In total, 466 questionnaire/surveys were conducted with an additional 144 hours of interviews. Best efforts were made to obtain a random sample. Of the 466 Filipinos surveyed, 249 were female and 217 were male. The age of respondents totaled 275 between the ages of 15~21; 115 between 22~34; 64 between 35~54; and 12 respondents were over the age of 55. Of the 14 regions that make-up the Philippines only region 11 was not represented. The classification of citizens by income was reasonably distributed with 27% coming from Class E, 31% coming from Class D; 29% coming from Class C; and 13% coming from the upper class, Class A&B.

Five generalized observations came out of the interviews and surveys. The first is that Internet access is expensive and slow. While this is a significant factor, no one said that Internet service was not available. This an import point to take note of, while still unequal, the gap between the haves and have-nots has shrunk substantially. Secondly, citizens found no value in interacting with government websites, at least for none business related reasons. Their preferred method of interacting with government and government officials was through face-to-face contact or through Facebook. The majority of citizens had never accessed a government website, but for the ones that did, they found the sites to be static and non-engaging. Thirdly, the overall feeling towards government is that it is corrupt. Not necessarily any one politician, but taken as a whole, character and trust play an important role in engaging with citizens through the use of Web 2.0 technologies. The forth point taken from the research was that the interface provided through government channels is only in English; whereby excluding a large portion of the population from participating in the democratic process. The fifth and final observation was that the power relation between government and citizen has shifted towards the citizen, due in large part to social media which has in effect 'leveled the playing field.' Although some citizens still feel uncomfortable about expressing their opinions online for fear of reprisal.

4. Conclusion

Overall, e-Participation has had a positive influence on democracy; however, the value of e-Participation on the everyday lives of citizens has not yet to be realized. Furthermore, government actors, still have control of the information, but that control is slowly shifting towards the masses. The barriers to e-Participation still influence the ability of citizens to achieve value from participating in the democratic process. Creating a more inclusive model to assist policy makers and practitioners understand the needs of the citizens may alter the traditional resource driven approach of e-Governance to one that focuses further on what citizens have reason to value. All is not lost though; investments in e-Government services and infrastructure have expanded the choices of citizens wishing to participate electronically. In order to better harness the benefits of this investment, focus should be placed on the capabilities of the individual.

Where UNPAN's framework for inclusion falls short is in assuming that capabilities are purely defined as the access and opportunity to do things a person values (UNPAN, 2005). While rightly focusing on value, the framework too narrowly focuses on access without defining opportunity. Based on the findings from the research, the ability of citizens to have affordable access to ICTs with low barriers to entry is important, but equality important are being able to speak freely without the fear of retribution; having equal opportunity and freedom to participate in the

governance process; the means to understand and access relevant information that has not been manipulated; and the ability to interact socially and have the freedom to assemble. These are all normative capabilities that need to be fostered in order for citizens to find value in e-Participatory activities. Figure 3 introduces a revised model, which can be universally applied crafting e-Governance policy.

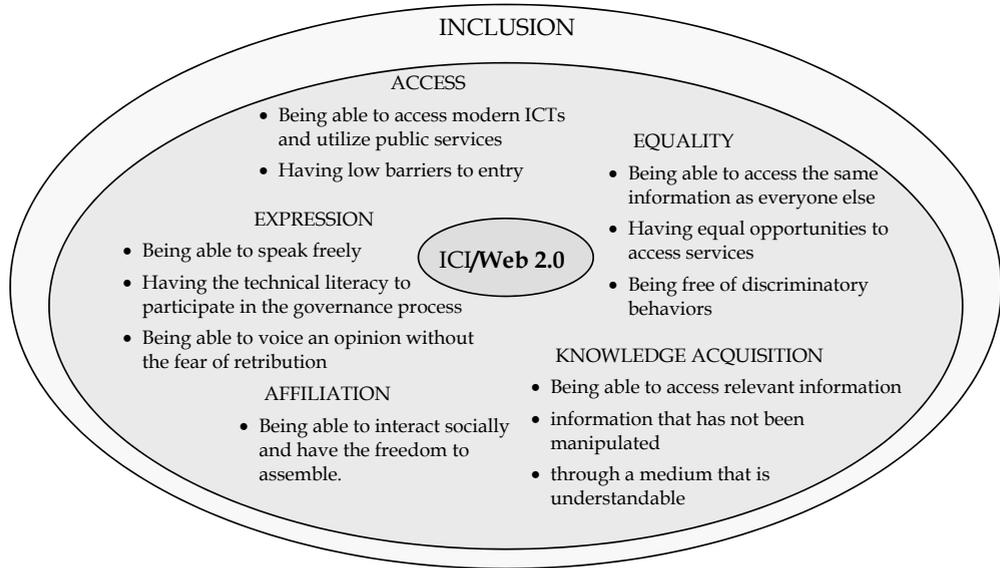


Figure 3: Capability Approach Model for E-Participation (Source: Author)

This more demand-driven normative approach for promoting e-Participation and social inclusion within the governance process will hopefully provide a framework that better reflects the capabilities of citizens to convert resources into valued functionings, whereby strengthening the state through inclusive governance and a deepening of democracy. Furthermore, this framework may better assist policy makers and practitioners looking to implement e-Governance programs and initiatives.

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Internet Voting: Elections in the (European) Cloud

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Abstract: *Internet voting is often mentioned as one of the most needed public services to be offered online. This article gives a brief overview of its historic development and successful uses around Europe.*

Keywords: History, Internet Voting, Remote Electronic Voting

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Unlike the storm that shocked the traditional business world, developments in election process take much longer, mostly because introducing remote electronic voting, or Internet voting, involves many more questions than the basic ones of who is able to offer a product cheapest and fastest.

This is even more surprising, as the idea around internet voting has its roots in the democratization movement and the general availability of mass electronic media like the television, after the Second World War. During this time, the idea of enhancing democracy through the use of electronic means was supported by several bright minds, in order for 'democracy to finally come true' (Fuller 1967).

It took some time, until the idea of enabling remote voting through electronic means could be facilitated. Similar to the developments for paper voting, first implementations of remote electronic voting focused on enabling to record a vote without necessarily guaranteeing secrecy. In a first attempt, Murray Turrof came forward with an implementation of a group based decision making process in a closed networked environment in the 1970s. He started his work while the Internet was still in its infancies and mainly served as an exchange for data between researchers. He used a decision making process based on the Delphi method, which usually is structured in two phases: first the experts gather ideas, and then vote on their personal preference for these proposals. While limited to experts and closed networks, it still constituted one of the first implementation of an electronic voting process that included voting from remote locations.

In the 1980's the videotext (or in France called Minitel, or in Italy Videotel), as a first public data telecommunications network, gave new impetus to the idea of a networked democracy. The efforts in there were limited, due to the technical possibilities of the system, it must have been clear that anonymity can only be guaranteed organizationally, and hence for political voting more sophisticated technical solutions would be needed.

Only in the 1990s the Internet brought the break-through. The first online polls were rather easy to realize technically, because secrecy was not required or it was good enough to rely on organizational guarantees for secrecy of the cast votes or was not required at all. First efforts which would allow minimizing the requirements to the organizational context were developed in the context of asynchronous cryptography. Most proposals of these days came out of the research topic of secure multi-party communications, for which elections turned out to be an interesting application field.

After the first theoretical discussions, some researchers were to follow with implementations such as the Sensus system or the EU Cybervote system. In addition, also several new economy start-up companies focused on realizing Internet voting such as Election.com, Safevote.net, or Votehere.net.

With this increasing interest also a race began in the mid-1990s, which country would be first to allow for Internet voting in their general elections. It seemed only a matter of time rather than technical feasibility. A race developed as soon as discussed question came 'when will Internet voting be available in national elections?' But with the projects came the realization that it is not purely a technical issue but also political, social and legal issues matter when deploying Internet voting.

It was Germany and the United States, where university elections in Osnabrück or the primaries in Arizona were held (See Krimmer 2012). However, it was not these countries that succeeded to have the first election, but the small and little country Estonia in Europe's north. They held the 2005 municipal elections with an Internet voting channel and keep this option ever since. In the March 2015 parliamentary elections, an incredible 31% of the voters cast their ballot via the Internet.

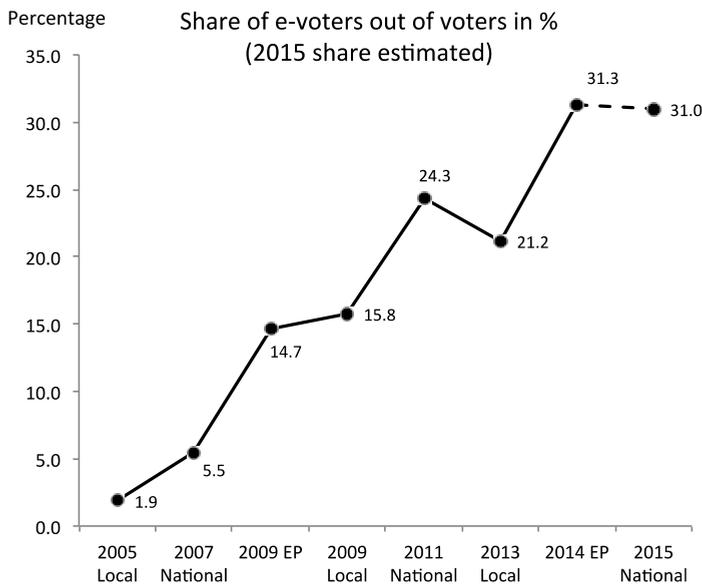


Figure 1: Development of Share of Internet Votes 2005-2015 (Vassil & Solvak 2015)

In Switzerland, experiments with Internet voting are running since the early 2000s, but as the Swiss are following a thirty-year plan to introduce Internet voting, they limited it to a maximum of 10% of the electorate being eligible to vote. Until today, some 15 years later, Internet voting is still in its early stages in Switzerland, where democracy is held so high.

France has allowed Internet voting for French living abroad for the election of six of their representatives in the Senate. Internet voting is the only way for them to participate in the election.

Norway ran two pilot projects on Internet voting in several municipalities during the 2011 municipal and the 2013 parliamentary elections. Due to a switch in government, however, the incoming government decided to discontinue this project.

Other countries offering Internet voting in Europe include Armenia for their diplomats abroad

Currently Finland, Iceland, Aland islands, Bulgaria and Romania are considering introducing Internet voting. Lithuania has tried to pass a law evaluating Internet voting's introduction several times, but has not succeeded so far.

Overall it can be said that Internet voting in Europe shares a huge interest but apart of Estonia and Switzerlands continued use, the experience is mixed. The technical challenges, in particular for the part of the identification of the voters, is quite hard to overcome and depends therefore on pre-existing infrastructure such as the Estonian e-ID card, or the ability to send one-time passwords to all eligible voters such as in Switzerland.

Nevertheless the path towards providing Internet voting as a cloud service at point in time seems predetermined. How long it will take until it is generally available, depends on the political developments in the European countries and if we succeed with providing stable, credible and understandable solutions.

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The Motivation(s) Behind Open Access Publishing

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***Abstract:** Open Access (OA) publishing plays a key-role nowadays, yet there are many hurdles to individual researchers, smaller institutes or also developing countries, in particular regarding fees or knowledge. In academia, OA is foremost related to publications and their availability to the public. There is evidence that the factor of a publication being OA has impact on its citation numbers. In a time where visibility of scientists strongly depends on quantitative metrics, this aspect is crucial. However, authors are not always allowed to provide the final publication online, but often upload pre-versions, which could be erroneous in comparison to the final paper. Additionally, individual knowledge about such procedures and the related copyright rules varies. This workshop on motivational factors to publish OA builds on a workshop held at CeDEM16 (Conference for E-Democracy and Open Government 2016) with the title “Policy vs. Reality in Open Access Publishing in Academia, Industry, and Beyond”. The results of this workshop are presented with a particular view on the motivations to publish OA as well as the difficulties as seen by researchers and affiliated practitioners. This workshop seeks to further discuss the motivations, difficulties and strategies to overcome them as seen by researchers and thus to intensify the discussion. Another aim is to compare these qualitative results with the previous workshop at CEDEM, which will be used for the conceptualization of a quantitative study on motivational factors in OA publishing.*

Keywords: Open Access, publishing, motivations, motivational factors, open science

At the Conference for E-Democracy and Open Government 2016¹, a workshop was held focusing on current discussions and controversial topics in Open Access (OA) in various application domains such as academia, industry, or the public sector. The main objectives of this workshop were to compare established open access policies with practitioners’ and researchers work practices, and to collect data and experiences from the workshop participants, in particular their approach towards open access, the role and influence of institutions in their field of activity, and their driving motivation behind following the open access paradigm. The results of the participants’ discussion provided information about various aspects of OA, but also provide a basis for a further workshop to be held at CeDEM Asia 2016; the results from both workshops will contribute to the evaluation of the OA eJournal of E-Democracy and Open Government (jedem.org) as well as contribute to understanding motivations in Open Access publishing and in general, how this knowledge may contribute to the field of scholarly communication.

¹ www.donau-uni.ac.at/cedem16

1. Brief Summary of the Results from the Workshop “Policy vs. Reality in Open Access Publishing in Academia, Industry, and Beyond”

The workshop held at CeDEM16 (Lampoltshammer, Edelmann, und Schossboeck 2016) provided 16 questions which could be discussed (see p. 191 in Lampoltshammer et al (2016) for the full list of questions). The question most participants wanted to address is “What is the motivation behind OA publishing?”, and participants could choose to discuss this question from 3 points of view: as policy-makers, as academics or practitioners.

Results from the discussion by the group “practitioners” show that the main issues in OA publishing are the fees associated with publishing, quality, popularity and ranking of the journal, but also the research field of the author. There was some overlap with the results from the group of participants discussing the “academic” point of view; they discussed important issues that are considered when publishing, such as reputation, ranking and impact factor are important issues when publishing. In addition there are often institutional policies regarding where researchers should publish. Both the group “practitioners” and “academia” agreed that at a general level, it is important to “get the most out of one’s publication”. The group “policy-makers” contained most of the critical arguments regarding both traditional and OA publishing, and suggested that although OA is mainly an issue that is important for higher education institutions, there are OA policies for EU-funded projects, although these are not very flexible. Whilst practitioners believe that OA can be valuable, there is a lack of evidence about the additional value of OA publishing and the contribution of OA to progressing knowledge in scientific communities. Furthermore, there doesn’t seem to be a correlation between the quality and numbers of OA publications and the improvement within the research fields and domains from the participants’ point of view. In this group it was discussed that impact factor of a journal is not always the main factor for citation, but also not the quality of a paper: some papers are always cited, even though they are not of particularly good quality.

2. Workshop “The Motivation(s) Behind Open Access Publishing”

There are several studies on the impact of OA on research (e.g. Antelman 2004; Harnad et al. 2004) and citations (Craig et al. 2007; Swan 2010). This workshop aims to shed light on the topic of OA publishing in terms of the motivations to publish in OA publications. The results are to contribute to the further development of OA, reveal possible solutions and best-practices in academia, and industry. Given that the majority of participants want to discuss the motivations behind OA publishing, it was decided to have a further workshop that addresses this issue only, again with the aim of having it discussed from the point of view of different users from different areas, i.e. policy-makers, academics and practitioners. The results will also be relevant for different OA publishers in order to reach their target group of researchers looking to publish in OA journals.

Similar to the previous workshop this one consists of two parts. It will start with a brief introduction to the overall topic of OA publishing and the results obtained from the first workshop. Afterwards, the participants will discuss the question “What is the motivation behind OA publishing?” in more detail. The participants will be split into groups, each group representing a particular view on the topic. The workshop finishes with a moderated plenum discussion, where each group presents and compares their results regarding the elaborated question.

3. How do Results from the Workshops Contribute to OA Publishing and Scholarly Communication?

OA publishing is a part of scholarly communication and therefore contributes to sustainable research and innovation, as it can benefit both researchers at leading universities or and anyone looking for resources outside of academia (Willinsky 2006). The workshop therefore aims at gaining some insights into the multiple perspectives on this topic, motivations different users have to publishing (or not) with OA publications and in turn, to develop solutions and from best-practices in publishing for academia, industry, and beyond.

Results will have a two-fold impact. Firstly, they will lead to the development of some of the questions of a survey that will be sent out to registered and potential users of the OA Journal of E-Democracy and Open Government (jedem.org). Following an evaluation of the journal by Quality Open Access Market (QOAM²) according to external criteria, this survey addresses users, and asks them to evaluate the journal according to further criteria such as motivations. Questions to be addressed include:

- Can we distinguish differences in motivation?
- Can users be classified according to their motivations?
- What motivations lead to which activities?
- What is the role of new publishing technologies how do researchers explore them? What is the role of new media literacy in this context?

As editors of the journal, we aim to know more about the different users and their motivations. As this is ongoing research, we hope that this workshop will provide recommendations about how to develop the user survey.

Secondly, the results will be assessed to understand how users' motivations can impact OA publication and, therefore, scholarly communication. By understanding users' motivations, it may be possible to understand how to improve OA publications and publishing. It may help to understand whether researchers and authors aware of the benefits of OA, Open Research such as an increase in citations, (media) attention, or extended dissemination possibilities. It will address current open research issues in OA, Open Data (OD), Open Science (OS) or the interplay between these three concepts. Results may also inform about how motivation impact the users' information behaviours in regards to OA publication, but in other contexts too. Such insights can help us e.g. as editors of JeDEM or as scholars support OA and new practices in scholarly communication. Our results will thus be valuable to other OA publishers for addressing their target group, but also as basic research with a comparative perspective in the field of OA.

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² <https://www.qoam.eu/>

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The Conference for E-Democracy and Open Government Asia 2016 presents papers that cover the latest developments in digital governance and politics. The integration of digital information and communication technologies in citizens' everyday lives sustainably changes the interaction with governments. Politics already embraces digital and mobile technologies and government follows the example. These conference proceedings reflect on the impact of a permanently connected society on forms of governance and political communication.

The CeDEM Asia 2016 brings together experts from academia and practitioners as well as representatives of business and policy makers. The conference provides a forum for transcontinental exchange and inspires the audience to consciously change and broaden their perspectives on their research.

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