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Exploring the Impact of Digital Global Governance through Affordance Theory: the Case of Climate Reporting

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Abstract:
The world is facing global challenges, which has led to international policy development such as the Paris Agreement (the United Nations climate agreement). An important element of the Paris Agreement is reporting. As digital technologies are used in reporting, this can be considered a case of digital global governance. Surprisingly, the global dimension of digital governance has received little attention from the academic community. Thus, theoretical and empirical understanding of digital global governance and how it responds to global challenges is needed. To address this, climate reporting to the United Nations, with Sweden as a case, has been studied. Reporting was chosen because of the significant role of embedded IT artefacts. Empirical data was analyzed with the lens of affordance theory. Findings suggest that IT artefacts and information in the reporting have affordances that enables monitoring, transparency, implementation of agreement, coordination & collaboration, analysis & visualization, and re-use of information.

Keywords: Digital global governance, IT artefact, affordances, climate reporting

1. Introduction

Some of the more pressing challenges of today, such as climate change, are challenges of global character. Global challenges further drive the need for global governance. Regarding climate change, climate agreements have been adopted within the United Nations Framework Convention on Climate Change (UNFCCC), with the Paris Agreement as the most recent one. A central element in this is that countries should report on emissions, commitments, measures, scenarios and some more. The intention is to enable monitoring of emissions and tracking of progress, transparency of Parties´ commitments and actions, and to inform further decision making and actions towards the common goal set in the Paris Agreement (United Nations, 2015). International climate reporting is a process in global governance, in which information and information technologies (IT) are embedded and have a significant role. By that, international reporting is also considered to be an element of digital global governance. As a conceptualization of IT used in the reporting process, the concept of IT artefact is used. IT artefact is understood as the application of IT to support a certain task in a certain context (Benbasat & Zmud, 2003). A characteristic of governance is to work towards common goals.

A task for IS research can thereby be to analyze what IT artefacts in a digital governance setting contribute to working towards governance goals. A key aspect of an IT artefact is also that it aims to communicate information (Goldkuhl, 2013a), and it is important to consider the role of information in a particular social context. It is the IT artefact together with the information that create value. Digital governance is often argued to enable good governance (Kalsi & Kiran, 2015) and facilitate implementation of sustainable development (Janowski, 2016). However, there is a need of empirical evidence of what IT artefacts in digital governance initiatives actually enable. Additionally, little research in the digital governance field addresses global governance of global challenges. Global governance has conditions different from governance at national level, and there is a need for theoretical understanding of digital global governance. Regarding reporting, there is also little empirical evidence on what impact it has at national level, which is important because the actual implementation of international agreements is primarily carried out at national level. To explore what IT artefacts and information in the reporting contribute related to governance, the concept of affordances is applied. Affordances can be explained as action possibilities applied to achieve a certain goal, and arise in the interaction between IT and user (Volkoff & Strong, 2013). Affordance theory has shown to be promising in studying IT and organizational change (Volkoff & Strong, 2017), as well as sustainability transformation in organizations (Seidel et al., 2013). In light of the above, the aim of this paper is to explore what the affordances of the IT artefacts and information in the reporting to the UNFCCC are, in relation to governance. The focus of this paper is to understand how this materializes at national level. To pursue this matter, a case study has been carried out, with Sweden as a case.

1.1 Theoretical Foundation

Digital governance can be seen as an evolution of the concept of eGovernance (Misuraca & Viscusi, 2014). eGovernance involves the use of ICT in governance, and changes or creates new governance structures and processes or normative ideas and values (Bannister & Connolly, 2012). eGovernance has an emphasis on what could be enabled by using ICTs, and some of the outcomes that are often addressed are greater efficiency, transparency and accountability (Kalsi & Kiran, 2015; Bannister & Connolly, 2012; Jreisat, 2004), participation, democracy and good governance (Misuraca, 2006; Saxena, 2005), effectiveness, and SMART governance (Al Athmay, 2015). Digital governance is often related to the concept of Digital Era Governance (DEG). Digital Era Governance implies a reintegration of government services, needs-based holism and use of digitalization in processes and services (Misuraca & Viscusi, 2014; Vij & Gil-Garcia, 2017). Big data, data analysis, data modeling and data visualization is used to optimize decision making (Kang & Wang, 2018). The eGovernance and digital governance literature has a focus on the national level, and little research has been found that addresses global governance. Common themes of studies with an international perspective, are comparisons of eGovernment development in different countries (Evans & Yen, 2006; Welch et al., 2005), and digital divide (Rose, 2005; Zhao et al., 2014).

In order to understand digital governance from an information systems (IS) perspective, it is important to understand the role of the IT artefacts. IT artefact has been conceptualized in different ways. Orlikowski & Iacono (2001) describe it as

> *"Bundles of material and cultural properties packaged in some socially recognizable form such as hard-ware and/or software"(Orlikowski & Iacono, 2001, p. 121)*

Benbasat & Zmud also emphasize that it intends to support a task and that it is embedded in a context, suggesting that an IT artefact is

> *"the application of IT to enable or support some task(s) embedded within a structure(s) that itself is embedded within a context(s). Here, the hardware/software design of the IT artifact encapsulates the structures, routines, norms, and values implicit in the rich contexts within which the artifact is embedded" (Benbasat & Zmud, 2003, p. 186).*

Important to consider is that an IT artefact has a purpose and is intended to contribute to a goal in a certain context (Goldkuhl, 2013b). An IT artefact is a means for informing, which also makes it an information artefact. One of the most important traits of an IT artefact is that it contains information (Goldkuhl, 2013a). Because its purpose is to communicate information between people, it is also part of social activities (Goldkuhl, 2013b). In an eGovernment setting, it is crucial to consider the characteristics of public policy, including regulations, strategies and public norms and values (Goldkuhl, 2016). Different aspects of IT artefacts have been emphasized by IS scholars, both information processing and computational capabilities, contextual and interactional aspects, economic values (Orlikowski & Iacono, 2001), and functional affordances and symbolic expressions (Markus & Silver, 2008). To examine how IT artefacts and the information it manages contribute to a certain goal, affordance theory is an appropriate lens to use. In this paper, the affordances are derived from both what the IT artefacts and the information they manage enable. IT artefacts are in this article understood to be the IT systems, platforms and applications used in the reporting process.

In the IS literature, affordances address the relation between information systems and human actors (Thapa & Sein, 2018) and how technologies are used to support actors´ goals (Conole & Dyke, 2004). Affordances can be understood as action possibilities to achieve a certain outcome, and arise in the relation between an actor and an IT artefact (Volkoff & Strong, 2013). IT artefacts have both action possibilities (affordances), but also limitations (constraints) (Hatakka et al., 2016). An IT artefact has affordance potentials that can be actualized in its use, and this is influenced by structural, social, cultural, technical and economic factors. Different contexts may provide different affordances. In order for affordances to actualize, there must be both actors with action capability, as well as facilitating conditions (Thapa & Sein, 2018). It is important to consider how information systems relate to the organizational context, and how this trigger activities (Seidel et al., 2013). Affordance theory applied to an organizational context ought to include IT artefacts, individual actions, and effects of organizational structures on change processes (Strong et al., 2014), as well as consideration of collective goals, potential for coordinated action, and organizational affordances (Volkoff & Strong, 2013). Affordance theory is an appropriate lens to analyze the role of IT artefacts in digital governance because it emphasizes goal-orientation, which put emphasis on the use of IT artefacts to achieve governance goals.

1.2 Method

The paper is based on an interpretative case study. A case study is suitable to study the use of information systems in a particular context (Shanks & Bekmamedova, 2013). Interpretative studies seek to create deeper understanding of a phenomena, and how meaning is created by participants in a social setting (Williamson, 2013). Sweden was considered an appropriate case because there is a regulatory framework for climate and ambitions in both climate policy and digitalization. Semi-structured interviews have been carried out with officials in the Swedish public administration. Respondents were chosen based on their roles related to the reporting and Swedish climate policy at relevant agencies. Semi structured interviews were conducted via zoom or telephone, each lasting for 45-60 minutes. The interviews were recorded except two, because the respondents did not want to be recorded. In that case, notes were taken. In total, 13 people were interviewed, and the respondents are labeled R1, R2 and so forth. Seven officials from The Swedish Environmental Protection Agency (R1, R2, R3, R4, R5, R6, R11), two from the Ministry of Environment (R7, R13), one from Government Offices (R8), two from Climate Policy Council (R9, R10), and one from Panorama were interviewed (R12). Interviews were transcribed and coded in Nvivo 12 in two rounds. In a first reading, codes were identified. The coded material was reviewed and themes were recognized. The material was then coded a second time according to these themes. It was during the coding and analysis of the coded material that affordance theory was recognized to be an appropriate theoretical lens, as affordances emerged inductively from the data.

2. Results

Reporting to the United Nations Framework Convention on Climate Change (UNFCCC) started with the Climate Convention, was more specified with the Kyoto Protocol, and has been further enhanced with the Paris Agreement. Reports on greenhouse gas emissions, commitments, actions and means for implementation should be reported, and are reviewed by international experts to ensure quality of the reports. With the Paris Agreement there should be a clear tracking of progress of countries´ implementation of their nationally determined contributions (NDC) and every fifth year, there will be a global stocktake with a global assessment of progress towards the goal (UNFCCC, 2021). Sweden has an ordinance on climate reporting that regulates how the reporting is coordinated and which public agencies that should provide information (Climate Reporting Regulation, 2014). In 2018, the Swedish climate policy framework was established. Included in the framework is a Climate Act, climate goals, and climate policy council. Every year, the Swedish Government has to provide an annual climate report in the Budget Bill to the parliament. Every fourth year, the Government has to make a climate policy action plan. The climate policy council makes an annual assessment of how the overall Government policy is aligned with the climate goals, and give recommendations to the Government (The Swedish Climate Policy Framework, 2018). Based on the interviews, affordances of the IT artefacts and information in the reporting have been identified, which is presented below.

2.1 Monitoring

The climate reporting provides data of emissions in all countries, which enables monitoring of the situation. Every fifth year, a global stocktake will assess common progress towards the goal in the Paris Agreement, and what additional measures are needed (R2). According to one of the respondents, the international reporting has also laid the foundation for the national climate policy development

> *"The basic statistics are very important. We can never calculate the effect of a policy instrument if we do not have statistics. Had we not been aware of how much emissions we have today, and estimates of what the development looks like in the future, then politicians would never have dared to take these ambitious goals" (R4).*

Standardization of what information that should be provided, and IT systems that manages this information enable monitoring. Countries submit CRF (Common Reporting Format) tables with figures of emissions for different sectors to the CRF Reporter platform, which calculates emissions per sector. In Sweden a system called TPS (Technical Production System) has been developed specifically to prepare emission reports to the UNFCCC in the right format (R1). Regular reporting makes it possible to assess progress over time. Standardization makes it possible to make a global assessment.

2.2 Transparency

Transparency is a central part of the Paris Agreement. One respondent (R5) meant that transparency is important to trust that countries estimate their emissions in a good way, so there can be a reliable calculation. As was also expressed by another respondent

> *"Transparency of emission reduction, scenarios and effects of measures is important to assess, verify and build trust among parties, that countries actually do what they say they will do" (R3).*

Specific tables for tracking progress will show the progress in a country and enables to see that commitments are continually increased. Transparency enables for NGOs and other stakeholders to make their analysis and take action (R5). In order to have transparency, you need trustworthy information and IT artefacts to manage, disseminate, access and present information over time. Commitments in form of NDCs (Nationally Determined Contributions) are preserved in the NDC registry, so there can be comparisons with what is actually achieved. The NDCs are also important in the global evaluation of actions that are taken. One of the respondents (R6) emphasized that it will be very important what comes out of the global stocktake and how it is presented.

> *"It will be very important to get very clear information about how we are doing, that it will be comparable to forthcoming global stocktakes, and that decision makers and the broad public understand what it says. It can work as a driving force or a form of ambition mechanism (R6).*

Transparency of information on emissions, commitments of emission reduction, and measures enable an open democratic debate. It is crucial though to consider issues of how information is presented and how this affects interpretation, in order for this affordance to actualize. The value of transparency relates to the capability of the IT artefact to present information in meaningful ways.

For instance, it has been suggested that the statistics could be presented in more comprehensible ways, that it is now not so easy to fully understand (R9). It was also pointed out that some countries just do the absolute minimum, and want to have high flexibility in how information is reported (R5).

2.3 Implementation of International Agreement

The Paris Agreement requires countries to submit certain reports at certain points in time, but as one of the respondents (R7) expressed

> *"the Paris Agreement is a very voluntary agreement. It has a common ambition and reporting system, and a mechanism for improvements, but there are no sharp requirements or sanctions. It provides a common orientation to reduce emissions, take measures, climate finance and some more" (R7).*

Countries make voluntary commitments in their NDC and report on measures and scenarios in the Biennial Transparency Report. The NDC should be tightened every fifth year. One of the respondents (R5) emphasized that follow-up of the NDCs will be important to see whether countries implement their commitments. However, there is no official assessment or sanction possibility of insufficient actions taken. Expert reviews control whether the reports follow the reporting guidelines but does not assess achievements. One of the respondents (R13) meant that the expert review does not influence national policy, but EU on the other hand has legal authority to enforce laws and regulations. The EU reports a common NDC to the UNFCCC. EU has adopted climate goals and legislation for reporting procedures (Regulation (EU) 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action, 2018), as well as how responsibilities of emission reduction are shared between member countries (Regulation (EU) 2018/842 of the European Parliament and of the Council on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013, 2018). Member countries report in a certain digital platform called Reportnet, which is also structured to facilitate compliance with regulation (EEA, 2021). In this way, EUs reporting platform is an IT artefact that not only gather information, but also facilitates compliance of regulation which intends to implement political goals.

In Sweden, the government should provide a climate report to the Swedish parliament every year, which includes key decisions and actions carried out. Even though the Swedish Climate Policy Framework is a Swedish initiative, it relates to the international level. According to a respondent at the Ministry of Environment

> *"It is the goals that influence how much action that is taken. It sets a sharp level of ambition. This in turn derives from the fact that we have made certain commitments in the Paris Agreement. Then, the climate policy action plan and the climate report ensure that the Government fulfills its task. This means that the issue comes up and has a clearer and sharper preparation process, both in the budget process and in policy development for each term of office" (R13)*

Reporting makes it possible to assess implementation of political climate goals at different levels (national, European and international). Legislation also gives the reports greater weight and a function as legal evidence. IT artefacts enable the reporting and management of evidential information.

2.4 Coordination & Collaboration

Development of the reports as well as the review requires coordination and collaboration. As one of the respondents (R4) expressed

> *"I would say that thanks to that we have had these reports, we have built up our national system that builds a lot on that we work together agencies between. In Sweden, it is stated in a regulation what responsibility agencies have, and the reporting in general is very controlled. Now comes a new regulation that we should share even more with each other, in order to facilitate collaboration around impact assessments" (R4).*

Coordination of information may also trigger coordinated working across organizational boundaries. This may facilitate to put the matter in question (climate change) at the center. At Government level, the climate policy council gave recommendations to improve coordination to have a coherent climate policy across policy areas, and a forum for dialogue for all ministers and their State Secretaries have been established (R13). According to the respondent from the Government Offices (R8), the Government Offices has a technical environment that facilitates collaboration and sharing of information. There is a common IT platform, a collaboration platform where for instance the budget is developed and cross-departmental working groups can collaborate, and an intranet where information can be shared with all embassies and other government bodies. Between government departments and agencies there are legal aspects to consider for sharing information (R8). Coordination of information and work processes are interrelated, and the IT systems and platforms are important tools to enable this. Both national and international requirements on coordination affects work at national level. Gathering of information at international level enables global coordination. A submission portal, website with access to reports, and a digital platform for conducting reviews of reports are examples of how IT artefacts are used for global coordination.

2.5 Analysis and Visualization

There are different initiatives where IT artefacts are used to support analysis and visualization of the climate policy work, where also reporting information is used. Panorama is a digital tool that visualizes the climate work in Sweden (R12). The climate policy council has developed a method and digital tool for making impact assessments of policy instruments (R9). Digital models have been developed for scenarios that should be reported to the UNFCCC (R4).

Panorama is a Swedish initiative, related to the Swedish climate policy framework. The idea with Panorama was to be a support for decision making, but many citizens also use it. The idea is to show what areas need measures, as well as what is going well. Panorama visualizes emissions, goals, measures and policy instruments, and potentials for different measures (R12). The climate statistics is one of the sources in Panorama. One of the respondents at the Ministry of Environment (R7) thought that

> *"Panorama can support decision makers and provide confidence for the climate work. You can show statistics, follow up on what is being done, and see if the ambition and measures are enough. But it*

can have more purposes, to inspire citizen engagement, provide support for more policy instruments because you see a gap. In that way, reporting can be more proactive and generate more values" (R7).

Digital technologies provide possibilities to present information in new ways, which enables new means for interpretation of complex societal challenges, which may also empower actors to take action.

2.6 Re-use of Information

The Swedish climate reporting to the UN is based on national statistics of emissions, which is also the basis in development of policies and scenarios. According to one of the respondents (R4), the international reporting requirements has also laid the foundation for the Swedish system

"The basic work has been done thanks to the international. Thanks to the fact that we have had that system and those methods, we have also been able to look at what happens if we take a little more action. By being able to show it very concretely, politicians dare to make these ambitious decisions. I would say that we could not have been where we are today without this basic data and scenario work. It has also been valuable to have a common picture of our policy instruments, to have this map. This is something we developed because of the international reporting" (R4).

An affordance of the reporting is that the information can be used for more purposes. Accessible information may also create action possibilities for multiple stakeholders. As example, Panorama uses the UN reports as one of their sources (R12), and NGOs can make independent analysis and put pressure on countries to take action (R5). Further re-use of information may have affordances that we don`t yet know.

3. Discussion

The Paris Agreement does not have sharp obligations of what measures countries should take or any sanction possibilities. This is decided at national (or EU) level. What it has is a common ambition and reporting obligations. Embedded within the reporting, is the use of IT artefacts that manage information of value to governance. The IT artefacts are used to carry out reporting activities, which together with the information provide affordances to governance. The information serves as evidence of emissions, commitments and actions. IT artefacts enable access to, management, preservation, presentation and dissemination of the information. In order to analyze affordances related to governance it is therefore crucial to consider both information and IT artefacts.

Affordances are action possibilities that arise in the interaction between IT and users, intended to achieve a certain outcome (Volkoff & Strong, 2013). In this case, this relates to how it contributes to governance. The affordances of the IT artefacts and information in the reporting process that were identified were: monitoring, transparency, implementation of agreement, coordination & collaboration, analysis & visualization, and re-use of information.

IT artefacts should not be treated in isolation, but involved in social activities and embedded in a social context (Orlikowski & Iacono, 2001). The context is also crucial to consider regarding affordances and what the IT artefacts are intended to contribute to (Thapa & Sein, 2018). The social

context may also change due to implementation of IT artefacts. In the case of Sweden, laws regulate how reporting should be conducted, and this has also increased cross-organizational collaboration. Affordances may vary between countries due to contextual conditions, such as regulations, working practices, social norms and political will. Affordances of IT artefacts can as well have different level of impact. An example is that IT artefacts enable transparency, but how the information is presented will impact how it is interpreted, which will influence how it is acted on. There is also a potential for re-use of the information which for instance enables new ways to make visualization and analysis, which may influence actors´ understanding, decision-making capability and responsiveness to societal challenges. However, in order for global governance to be effective and appropriate responses are made globally, shared affordances (Leonardi, 2013) have to be actualized. Even though the reporting may be a mechanism for governance towards the climate goals, it is going too slow. Due to the urgency of the climate crisis, current ambitions are not enough to meet the climate goals. The questions for us to ask is how digital technologies can be utilized to facilitate more effective actions?

Below is a summary of affordances of the reporting and possible outcomes;

Table 1: Affordances of the IT artefacts and information in the reporting, and possible outcomes of actualized affordances

Affordances	**Possible outcomes of actualized affordances**
Monitoring	Common understanding of real-world situation, confidence in decision making
Transparency	Stakeholder engagement, trust, accountability
Implementation	Action towards climate goals
Coordination & collaboration	Coherent and more efficient and effective climate policy
Analysis & visualization	Fact-based decision making, identify gaps and progress, effective climate policy
Re-use of information	**Innovation, not yet known affordances**

4. Conclusions

The aim with this article was to explore affordances of the IT artefacts and information in the climate reporting to the UNFCCC, understood as an element of digital global governance. The reporting practice highlight how information and IT artefacts together provide action possibilities in governance. Affordances that were identified in the study was monitoring, transparency, implementation of agreement, coordination & collaboration, analysis & visualization, and re-use of the reporting information. It is crucial to consider both the role of information and IT artefacts involved in the reporting in analysis of affordances in a governance setting.

4.1 Implications

The research sheds light on an ongoing process in digital global governance. The point of departure was to examine international climate reporting at national level, but affordances are also related to the international level. The results contribute to an improved understanding of what affordances the IT artefacts and information in the climate reporting to the United Nations contribute to governance. In practice, a greater understanding of affordances can be used to make implementation and development of climate policy more effective. The use of affordances of IT artefacts and information in the reporting, provide a theoretical perspective that is promising for analyzing the role and impact of IT artefacts in digital governance. The recognition of the role of information that the IT artefacts manage related to affordances is a contribution to the use of affordance theory in the IS field. Further research could engage in deeper analyses of what properties of information and information systems, along with capability of actors and institutional conditions, that would facilitate actualization of affordances in the UN climate reporting and inspire and empower actors to take actions required to achieve the climate goals.

References

Al Athmay, A.A.A.R.A. (2015). Demographic factors as determinants of e-governance adoption: A field study in the United Arab Emirates (UAE). Transforming Government: People, Process and policy, 9(2), 159-180.

Bannister, F. & Connolly, R. (2012). Defining e-Governance. E-Service Journal, 8(2), 3-25.

Benbasat, I. & Zmud, R.W. (2003). The Identity Crisis within the IS Discipline: Defining and Communicating the Discipline´s Core Properties. MIS Quarterly, 27(2), 183-194.

Climate Reporting Regulation, SFS (2014:1434). The Swedish Parliament, Retrieved January 10, 2021, https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/klimatrapporteringsforordning-20141434_sfs-2014-1434.

Conole, G. & Dyke, M. (2004). What are the affordances of information and communication technologies? ALT-J, Research in Learning Technology, 12(2), 113-124.

European Environment Agency (EEA), (January 10, 2021). Eionet Central Data Repository, https://cdr.eionet.europa.eu/

Evans, D. & Yen, D.C. (2006). E-Government: Evolving relationship of citizens and government, domestic, and international development. Government Information Quarterly, 23(2), 207-235.

Goldkuhl, G. (2013a). From ensemble view to ensemble artefact - An inquiry on conceptualisations of the IT artefact. Systems, Signs & Actions. An International Journal on Information Technology, Action, Communication and Workpractices, 7(1), 49-72.

Goldkuhl, G. (2013b). The IT artefact: An ensemble of the social and the technical? - A rejoinder. Systems, Signs & Actions, 7(1), 90-99.

Goldkuhl, G. (2016). E-government design research: Towards the policy-ingrained IT artifact. Government Information Quarterly, 33(3), 444-452.

Hatakka, M., Thapa, D. & Sæbø, Ø. (2016). A Framework for Understanding the Link Between ICT and Development: How Affordances Influence Capabilities. Proceedings of SIG GlobDev Ninth Annual Workshop, Dublin, Ireland, December 11, 2016

Janowski, T. (2016). Implementing Sustainable Development Goals with Digital Government - Aspiration-capacity gap. Government Information Quarterly, 33(4), 603-613.

Jreisat, J. (2004). Governance in a Globalizing World. International Journal of Public Administration, 27(13-14), 1003-1029.

Kalsi, N.S. & Kiran, R. (2015). A strategic framework for good governance through e-governance optimization. Program-Electronic Library and Information Systems, 49(2), 170-204.

Kang, W. & Wang, Y. (2018). China Digital Governance Development Review Over the Past Two Decades. International Journal of Public Administration in the Digital Age (IJPADA), 5(3), 92-106.

Leonardi, P.M. (2013). When Does Technology Use Enable Network Change in Organizations? A Comparative Study of Feature Use and Shared Affordances. MIS Quarterly, 37(3), 749-775

Markus, M.L. & Silver, M.S. (2008). A foundation for the study of IT effects: A new look at DeSanctis and Poole´s concepts of structural features and spirit. Journal of the Association for Information Systems, 9(10/11), 609-632.

Misuraca, G.C. (2006). E-Governance in Africa, from theory to action: a practical orientated research and case studies on ICTs for Local Governance. 7th Annual International Conference on Digital Government Research, Digital Government Research Center, San Diego, 209-218.

Misuraca, G.C. & Viscusi, G. (2014). Digital governance in the Public Sector: Challenging the Policy-maker´s Innovation Dilemma. 8th International Conference on Theory and Practice of Electronic Governance (ICEGOV 2014), Guimaraes, Portugal, 146-154.

Orlikowski, W.J. & Iacono, C.S. (2001). Research commentary: Desperately seeking the "IT" in IT research - A call to theorizing the IT artifact. Information systems research, 12(2), 121-134.

Regulation (EU) 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action. European Union. Retrieved January 10, 2021, https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2018%3A328%3ATOC&uri=uriserv%3AOJ.L_.2018.328.01.0001.01.ENG

Regulation (EU) 2018/842 of the European Parliament and of the Council on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013. European Union, Retrieved January 10, 2021, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R0842

Rose, R. (2005). A Global Diffusion Model of e-Governance. Journal of Public Policy, 25, 5-27.

Saxena, K.B.C. (2005). Towards excellence in e-Governance. The International Journal of Public Sector Management, 18(6/7), 498-513.

Seidel, S.J., Recker, J. & vom Brocke, J. (2013). Sensemaking and Sustainable Practicing: Functional Affordances of Information Systems in Green Transformations. MIS Quarterly, 37(4), 1275-1299.

Shanks, G. & Bekmamedova, N. (2013). Case study research in information systems, in Research Methods. Information, Systems and Contexts, K. Williamson & G. Johanson, (Eds). Tilde University Press, Australia, 3-23.

Strong, D.M., et al. (2014). A Theory of Organization-EHR Affordance Actualization. Journal of the Association for Information Systems, 15(2), 53-85.

Thapa, D. & Sein, M.K. (2018). Trajectory of Affordances: Insights from a case of telemedicine in Nepal. Info Systems Journal, 28, 796-817.

The Swedish Climate Policy Framework (2018). Government Offices of Sweden, Stockholm, Sweden

UNFCCC (United Nations Framework Convention on Climate Change), (2021). www.unfccc.int Retrieved March 10, 2021

Vij, N. & Gil-Garcia, J.R. (2017). Digital Governance and Individuals´ Empowerment: A Conceptual Framework and Some Preliminary Results. 10th International Conference on Theory and Practice of Electronic Governance (ICEGOV 2017), New Delhi, India. 136-139.

Volkoff, O. & Strong, D.M. (2013). Critical realism and Affordances: Theorizing IT-Associated Organizational Change Processes. MIS Quarterly, 37(3), 819-834.

Volkoff, O. & Strong, D.M. (2017). Affordance Theory and How to Use it in IS Research, in The Routledge Companion to Management Information Systems, R.D. Galliers and M.K. Stein (Eds). Routledge: New York. P. 232-245

Welch, E.W., Hinnant, C.C. & Moon, M.J. (2005). Linking Citizen Satisfaction with E-Government and Trust in Government. Journal of Public Administration Research and Theory, 15(3), 371-391.

Williamson, K. (2013). Research concepts, in Research Methods. Information, Systems and Contexts, K. Williamson & G. Johanson, (Eds). Tilde University Press, Australia, 3-23.

Zhao, F., Collier, A., & Deng, H. (2014). A multidimensional and integrative approach to study global digital divide and e-government development. Information Technology & People, 27(1), 38-62.

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