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Sharing, Cooperation or Collective Action? A Research Agenda for Online Interaction in Digital Global Governance

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Abstract. Digital technologies are increasingly used to support governance at the global level. However, the global level has received very little attention in digital governance research. Global governance differs from national governance contexts in that it does not have a central government with authority of enforcing decisions. Consequently, as engagement of stakeholders is vital for taking appropriate action, possibilities and challenges in using digital technologies to facilitate response to common challenges should be further investigated. To address this shortcoming, we explore how digital technologies and online communities can leverage participation and co-production in the context of global governance. Based on an existing classification of online interaction (sharing, cooperation, collective action) we suggest a research agenda that can move the knowledge front related to online interactions in global governance contexts.

Keywords: Digital governance, digital global governance, online communities, co-creation, citizen engagement, sustainability, UN Global Stocktake

1 Introduction

Digitalization transforms the way public sector organizations work and interact, both within and between organizations, as well as with external stakeholders. Digital technologies offer new venues for political discussions [1] and for organizations to interact with stakeholders [2]. With societal challenges being increasingly global in character, the need for global coordination and response increases. A pertinent question is then how digital technologies could contribute to enhance global governance as a response to global challenges. ‘Digital governance’ is the research field that investigates the use of digital technologies in governance structures and processes, and it has evolved through the concepts of eGovernment, eGovernance and digital governance. The term ‘Digital global governance’ refers to the use of digital technologies in global governance structures and processes. Unfortunately, little research in the digital governance field addresses the global governance level but tends to focus on either the national or

municipal level. International studies are primarily national comparisons of eGovernment development in different countries [3-6], where common themes are digital divide [7] and diffusion of digital governance [8]. A few notable exceptions exist on initiatives of global character focusing on global digital citizenship [9], global ICT programs [10] and global civil society networks [11]. However, studies on digitalization of global governance structures and processes seem to be largely missing

Triggered by the Covid pandemic, online tools have increasingly been used in global governance processes. For instance, the annual meeting in Glasgow 2021 of the supreme decision-making body of the Climate Convention, COP (Conference of the Parties), used an online platform to increase possibilities for participation. Some of the sessions were streamed to the public, and multiple social media channels used [12]. In May-June 2021, the UN Climate Change subsidiary bodies sessions were carried out fully online, including dialogues and discussions to prepare for negotiations [13]. It has further been argued that digitalization may enable a larger change of the climate governance process, which has been requested by various stakeholders. The critique of the current process includes mistrust, power imbalances and polarization, as well as insufficient outcomes that fail to adequately address the climate change challenge [14].

Governance can be understood as the steering of society according to common goals, through collective action [15]. Governance in a global context differs from governance at national level. An important difference is that governance beyond nation states lacks a central authority of a government, which has a legitimate use of force [16]. Instead, common agreements, consensus, and trust are significant. Global governance engages multiple actors with different roles. Stakeholder interaction, both within an organization and with external stakeholders, is important from a democratic perspective, regarding both a capability to make agreements, consider various perspectives, and collaborate. Stakeholder engagement also has an important role in strengthening implementation capability of international agreements.

Research on Online Communities has shown how people use digital technologies to organize collective action in the online environment, characterized by not having a traditional organization with a central authority [17]. In that sense, it has commonalities with consensus-based global governance. We argue that facilitation of collective action strengthens the global community's capability to respond to common societal challenges, and experiences from research in online communities on collective action can inform how digital technologies can be used to enhance responsiveness to global challenges. Based on a classification of different degrees of involvement of stakeholders; information sharing, cooperation, and collective action [18], this research note develops a research agenda for online interactions in global governance settings. Research notes often follows a less strict paper outline than research papers and are typically used to advance new ideas or, as in our case, research agendas. Thus, research notes are often less reliant on formal research methods but equally reliant on quality through polemic clarity and rhetoric rigor [19].

We use climate governance as an illustrative example to demonstrate the relevance of the research agenda. The guiding research question for this research agenda is: how could online interaction be developed in global governance and what research questions ought to be considered?

2 Theoretical foundation

Our conceptual framework draws on research on online communities and situates it in the field of digital governance research. The digital governance domain addresses digitalization of governance structures and processes. Research on online communities provides understanding of socio-political engagement and interaction in online contexts. We suggest that bridging these strands of research offers novel ways to generate knowledge to better understand what happens when governance processes shift from physical to virtual arenas.

2.1 Digital governance

Governance can be defined as *“The process of steering society and the economy through collective action and in accordance with common goals”* [15]. Global governance means that authority is exercised across national borders, and justified by transnational problems or global common goods [20]. Global governance differs from national governance in that it does not have a central government with authority to enforce decisions [16]. Therefore, engagement of stakeholders (both governments and other stakeholders) to take appropriate action for the benefit of the common good is crucial.

Digital governance can be defined as *“digital technology ingrained in structures or processes of governance and their reciprocal relationships with governance objectives and normative values. Digital governance includes the utilization of digital capabilities and involves a transformation of structures, processes or normative values.”* [21]. Transformations of governance can be structural and normative, where structural transformations are changes of structures and processes, and normative transformations are related to the qualities of governance, such as transparency, accountability, efficiency and effectiveness [22]. ‘Digital global governance’ is this understanding of digital governance applied to global governance.

Digital governance is increasingly ingrained in modernization strategies in the public sector, to improve processes and to create public value. EU’s agenda towards evidence based and data driven policy making is for instance argued to improve policy processes and decision making, and support collaborative working processes with participation of stakeholders [23, 24].

Digital governance has emerged over time, also conceptually. While eGovernment primarily focused on digitalization of public administration, eGovernance is a broader concept which also transforms various relations (such as Government - Citizen (G2C), Government – Businesses (G2B), Government – Government (G2G)). Digital governance is based on this, with slightly more emphasis on computational capabilities, including data analysis, modeling and visualization [21]. Global governance includes both G2G, G2B and G2C relations. Digitalization increasingly transforms governance in various ways, and it is argued that broader questions of governance in the digital era [25] and the integration of digital technologies in policy processes [26, 27] are needed.

Digital governance is often argued to contribute to increased transparency, good governance and to enable new forms of participation [21]. Public sector organizations that are traditionally recognized as being hierarchical and bureaucratic, are now

opening up for various forms of broader participation, within organizations and with external stakeholders, with the aim to improve public value creation. Digital technologies can support co-production, sharing of information and provide tools and methods for citizen-government interaction. However, a move towards public participation and co-production requires both technological, organizational, cultural and competence-related changes [28]. To transform into more participatory models, fostering a participatory culture is key. A participatory culture is characterized by participants experiencing a connection with others and that their contributions matter. The concept of participatory culture elucidates the shared social practice and culture of engaging, participating, and contributing to a community. A participatory culture may encourage empowerment, civic engagement and improve legitimacy of public sector organizations. Digital technologies can enable new ways for stakeholders to engage, participate, contribute, and interact.

An advanced form of participation is co-production. Co-production and collaborative innovation are processes where organizations work with external stakeholders to achieve some outcome together. “Collaborative innovation is a process of creative problem solving through which relevant and affected actors work together across formal institutional boundaries to develop and implement innovative solutions” [28]. The role of the public administration is in this context to facilitate co-production. In order for public sector organizations to develop a participatory culture, they need to “establish a range of processes, infrastructure and policies that ensure that stakeholders can participate” [28], and external stakeholders need to develop skills and capabilities to participate meaningfully.

However, participation may not always lead to desired outcomes, but rather sometimes to destruction of value. It may involve conflicts, marginalization of certain actors and domination of others, power imbalances, misinformation, and misuse of public resources, caused by either internal or external barriers and challenges [28]. Concerns have been raised about the relationship between social media, political polarization, and political disinformation, and its democratic effects. A part of this complexity are automated online propaganda bots [29]. More research is suggested on the role of public organizations and also whether anticipated effects of digitalization are actualized [28].

In general, digitalization and digital governance have associated risks and challenges, such as digital divide, misinformation, challenges of trust, illicit surveillance, cyber security issues and information overload [21]. In a participatory environment, the vulnerability to these risks may increase. A holistic approach that considers both possibilities and risks with digitalization ought to be acquired to deliberately design solutions for appropriate levels of online interaction.

2.2 Online Communities

The concept of community relates to the social relationship of members of a closed area of people, characterized by a defined size, membership and geographical boundaries as well as shared beliefs, values and historical experiences [30]. Weber argues that social action is based on common membership in a community, defined on the orientation of mutual attitudes of individuals’ subjective awareness of specific situations [31].

Online communities (OC), is the persistent collections of people with common interests whose primary method of communication is the Internet, typically by the use of social media [32]. OC offers new channels for organizations to connect with stakeholders and provide venues for political and social discussion [1]. OCs are being increasingly explored by organizations for a variety of purposes, including managing relations with customers and partners [33, 34], cooperating on knowledge generation [17, 35] and sharing information of public interest [36]. Unlike traditional communities, pre-existing social ties and material benefits for contributions are weak or non-existent in online groups [37], allowing for broader organization-wide online sharing [35] to become more flexible and fluid than in traditional communities [17].

With the introduction of digital technologies, the transaction costs of communication drops, making it easier for people to get together and organize [18]. IT changes and supplants the role of hierarchy into networks [38], characterized by being organized based on strength and competence, relational communication patterns, conflicts resolved through norms, flexibility, commitment based on mutual benefits and relationship governed by interdependencies [39].

The management of online communities may be influenced by complexity regarding size, diversity and the type of work being created. Work-related activities often foster interpersonal ties, whereas groups focusing on non-work- activities such as political causes [40, 41] often share a common purpose and are likely to behave differently than online groups organized around work-related topics [37]. Ren et al [2] found that identity-based features needed in online communities sharing common purpose, had stronger effects than bond-based features needed in work-related online communities, arguing that more research is needed to explore these differences.

Shirky [18] provides a simplified, yet illustrative classification of various forms of group undertakings in electronic networks by proposing a three-step ladder of online group interaction.

Sharing represents the easiest group of compilation with fewest demands on the participants. Sharing platforms allow everyone to share and receive in a “take it or leave it fashion” which allows for freedom for individuals and few complications for the group’s life, where the group is mainly the aggregate of participants [18]. Digital tools may be used for knowingly sharing for instance pictures, messages, or work files with others.

Cooperation is the next rung on the ladder, representing a more complex situation than simply sharing, since it involves changing behavior to synchronize with others. Cooperation creates group identity since you know who you are cooperating with. Conversation represents a simple form of cooperation, either face to face or by the various use of ICT. While the increased sense of community using online tools should be seen as a positive effect of cooperation, it is also difficult to keep online communication targeted around a specific topic. As a result, some sets of common agreed mechanisms are often needed. Collaborative production/co-production represents a more involved form of cooperation, where no individual can take credit for the results of the process, which could not come into being without the participation of many. Here (unlike sharing) some collective decisions must be made to negotiate about the results, for instance the resulting Wikipedia article.

Collective Action represents the more advanced kind of group efforts. Here, shared responsibility is of critical importance to link individual user identity with the identity of the group, which holds the power in making group decisions which are binding for all individual members. As argued by Shirky [18]: For a group to take collective action, it must have some shared vision strong enough to bind the group together, despite periodic decisions that will inevitably displease at least some members. For this reason, collective action is harder to arrange than information sharing or collaborative creation.

The more common collective action problem is the “tragedy of the commons”, wherein individuals have an incentive to damage the collective good. For instance, when all countries agree that CO2 emissions need to be reduced, but every individual country may benefit from not reducing their own emissions. Therefore, rules are needed, making collective action harder to arrange than sharing or collaborative creation (cooperation). While ubiquitous access to communication tools makes it easy to initiate various forms for group activities, the main challenge is to use tools to promote collaborative collective actions to avoid the adverse outcomes of independent actions [42].

Below is a table that explains the different levels of group interaction according to Shirky [18]:

Table 1. Level of online interaction

	Outcome	Level of interactions	Level of coordination/rules
Sharing	Sharing of content among a huge (unrestricted?) number of individuals	Limited need for channels to distribute content	Providing access for everyone to share content
Cooperation	Content produced because of the efforts made by many	Interactions needed to support conversation, negotiations and collective decisions resulting in an agreed outcome	Common agreed rules on how to navigate from individual ideas to a joint result
Collective Action	Collective decisions binding for all individual members	Interactions needed to agree and maintain a shared vision strong enough to bind members being displeased with some decisions	Rules to reduce the problem of the “tragedy of the commons”

2.3 The example of the Global Stocktake in global climate governance

To illustrate the different levels of interaction, the Global Stocktake of progress towards the goals in the Paris Agreement is selected as an example. It was selected because it has a process that illustrates different levels of interaction among participants.

The Paris Agreement is the most recent international agreement on climate change, adopted within the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement has established common goals on climate governance (on emission reduction, climate adaptation and means of implementation in terms of finance and technology) [43]. Every fifth year (the first time 2021-2023), a Global Stocktake is carried out, where collective progress towards the goal in the Paris Agreement is analyzed and assessed, and further needs for action is identified. The Global Stocktake is carried out in three phases; information collection and synthetization, technical assessment, and negotiation and adoption of a declaration [44]. The UNFCCC secretariat provides technical expertise and organizational support to the process. The secretariat also hosts the registries and systems managing the reports that countries regularly submit due to reporting requirements in the Paris Agreement [45]. In this paper, the Global Stocktake is used to exemplify the usefulness and relevance of the agenda in the context of global climate governance. The research agenda is based on the three levels of interaction in online communities, namely sharing, cooperation and collective action, as outlined by Shirky [18].

3 Research Agenda for online interaction in digital global governance

This section outlines a research agenda for online interaction in digital global governance processes. Above we have discussed digital global governance, the increasing importance of digital tools in a governance context, possibilities with online participation and the need to better understand such development by exploring the role of online communities. Here, we isolate recurring themes and develop them into a more general research agenda for online interactions in digital global governance.

3.1 Sharing in digital global governance

Information sharing means that information is shared among an extensive number of individuals [18]. This includes not only dissemination activities but also the collection of information from various stakeholders, to support the data- information workflow.

A key concern within our running example of climate governance is to collect, organize and disseminate information. Based on the global challenge of climate change, information is reported to the UNFCCC by countries. The potential outcome is to provide knowledge on the global status and a common basis for identifying needs for action, decision making and a shared vision. There can also be forums for dialogues with external stakeholders, and means to provide input, for instance related to high level

meetings. Information sharing is needed to develop common awareness and understanding of topics. A challenge is that countries have different capacities and conditions for collecting and reporting information according to reporting requirements. Another challenge is to create meaning in the large volumes of information and to make it understandable to various stakeholders. As the information is used to inform governance, it is crucial that it is of high quality and trustworthy.

As discussed above, information sharing represents the more basic level of interaction within online communities. Hence, activities here are assumingly less controversial than activities related to cooperation and collective action. Still more research is needed to better understand both the interaction and the coordination mechanism for successful sharing of information.

Digital tools allow for almost unlimited collection and dissemination of information, from various stakeholders and sources, and a question is who is considered a legitimate provider of information. A research question relating to the level of interaction is *how technology can facilitate the collection of high-quality information from appropriate stakeholders*.

This further relate to the need for more research at the level of coordination of information management, to better understand *how technology influences the quality, flow, and presentation of information to various stakeholders* within the area of digital global governance. To have value, the information must be standardized and comparable to enable synthetization and coordination at global level, also over time; meet certain quality requirements; and be organized and presented in ways that inspire action by various stakeholders.

Referring to the example of the Global Stocktake, countries report regularly national information according to standards and reporting requirements, including greenhouse gas emissions, commitments, and measures on climate action, which is accessible on the UNFCCC website. These reports are the foundation for the synthesis reports that form the input to the technical assessments in the Global Stocktake process. Information for the Global Stocktake is gathered on a special side of the UNFCCC website. A digital submission portal is also set up for external stakeholders to provide input to the Global Stocktake [44, 46]. A great challenge is to organize the massive amounts of information from countries all over the world, and to present the information in ways that are understandable and engaging to stakeholders. Yet another challenge is to provide means to organize external stakeholders' views in the Global Stocktake process.

3.2 Cooperation in digital global governance

Information sharing activities are necessary pre-requisites for the next level of group interactions, the cooperation activities. Cooperation is important in order to have conversations around a problem, current status and needs for action, to identify solutions, and establish a common ground for decision making, and to establish a common identity and a sense of community [18]. The potential outcome of cooperation in a global governance setting is an agreed knowledge status on a topic, or on progress towards an agreed global goal. In the case of the Global Stocktake, this would mean an agreement on progress and needs for action towards the goals in the Paris Agreement.

Cooperation activities may require more profound challenges to organization than information sharing activities since the main goal is to gain agreements. More research is needed to understand how such activities could be organized within digital global governance at both the level of interaction and the level of coordination through information management.

At the interaction level, focusing on how to organize conversations, negotiations and sharing of views to guide collective decisions, more research is needed to understand *the role of technology in synthesizing and leveraging actionable information*. A key concern is to organize the online discourse respecting the need for a debate characterized by rationality (logical claims and arguments), relevance (stick to the topic), equality (adequate opportunities to participate), reciprocity (listening to each other's arguments) and politeness (showing respect) [47]. A key consideration is how to use the technology wisely to be able to identify useful content within a (potentially) huge amount of information being produced by various stakeholders.

Procedures and rules are clearly needed guiding the process of reaching agreement. Hence a main research topic relates to *the relationships between rules and regulations, digital solutions and consensus forming*. Questions of concern involve issues like whom to include at what level, how to resolve disagreements, who has authority to make decisions, how and when to open and close the processes needed to come to an agreement, and how to manage informal power imbalances. Research should also investigate *how technological, organizational, cultural and competence-related factors influence cooperation* and active engagement, participation and contribution, where participants feel that they have a connection with others in the community and that their contribution matters [28].

In the example of the Global Stocktake, there is a procedure for the technical assessment in the Global Stocktake, with decisions on what information that will be considered and how information input can be provided [46]. A challenge is the large volume of information that should be synthesized to a global picture, based on what is reported by countries. This is used in the technical assessments and should be communicated in a way that inspires confidence among participants to take appropriate action. Another challenge is further to facilitate the technical assessment dialogues, and to synthesize the outcome of those dialogues into a synthesis report that participants agree on. This relates to the question of how technology can be used to synthesize and leverage actionable information. There could as well be potentially very large volumes of information submitted by other stakeholders as input to the Global Stocktake. A research question is *how technology can be used to synthesize information from external stakeholders and include it in a meaningful way in the process*.

3.3 Collective action in digital global governance

Collective action, where people create something together, share responsibility and make decisions that are binding for all participants [18], represents the most advanced level of group interactions within online communities. The potential outcome in global governance is collective decisions that are binding for all individual members.

Research related to the level of interaction now includes the exploration of *the roles of technology in decision making processes*.

The previous levels of information sharing and cooperation activities are necessary to succeed with collective action. The levels of interaction can be viewed chronologically. First, there is a need for shared knowledge on a topic, then dialogues to establish a shared understanding on the needs for action is required, which lays the ground for collaborative decision-making based on a shared vision and goals. Research is needed to better understand how technology could support the voting procedures, and to support accountability and evaluation of implementation efforts. These questions relate directly to the level of coordination, where a key research question is *what the relationship is between technology and trust in the negotiation process, and how to mitigate decisions resulting in “tragedy of the commons”*. Further on, a relevant question is *what the role technology could have in processes of accountability and follow up on adopted decisions*.

Research should further investigate *the relationships between technology and co-production* that enhance implementation capability. Co-production means that organizations work with external stakeholders to together achieve some outcome [28]. In a global governance setting, this could include both collaboration between governments, but also between governments and other stakeholders. Research is suggested to investigate how co-production and collaborative innovation as a process of creative problem solving through collaboration could be facilitated. In order to do that, processes, policies, technologies and skills and competencies required by involved participants should be developed [28]. One prominent issue is the matter of power balances between stakeholders and the concept of salient stakeholders, i.e. who has influence in the process [48]. Currently, the UNFCCC process has been criticized for power imbalances, also with concerns that technology might serve to consolidate existing power structures rather than challenge these. However, it is also argued that digitalization may be a means to change such power imbalances [14]. It is further important to identify risks for co-destruction, which can be caused by conflicts, marginalization of some actors, misuse of public resources and misinformation. Both internal and external barriers and challenges should be identified and appropriate response developed [28]. How digital technologies influence the quality of discussions, whether actors engage constructively, whether dialogues are characterized by tolerance and resolving conflicts and disagreements, or whether they rather foster misinterpretation and increased polarization, should be further investigated [29]. It is also a matter of trust, where research for instance shows that face-to-face interactions are important in building trust and generate intention understanding in an international politics context [49], and that face-to-face negotiations have a higher level of initial trust between actors compared to online negotiations [50]. The use of technology at the different levels of online interaction (sharing, cooperation or collective action) has to be chosen deliberately according to what is appropriate in that particular context, considering various risks. General challenges of digital divide, trust in the online context, cyber security and information overload have to be considered as well [21]. Additionally, the role of United Nations bodies in this context should be further researched, and elements that affect whether the desired effects of digitization are actualized clarified.

In the example of the Global Stocktake, a declaration will be adopted, and a question is how technology can be used to support the process of negotiating and adopting such a declaration (for instance with information provision to negotiators in the process). Another question relates to how technology could support work on implementation and follow up on decisions and commitments. A declaration that builds trust would have a clear statement of progress, commitments for climate action and means for implementation that responds to what is required to achieve the goal in the Paris Agreement.

3.4 Summary of the research agenda

In this paper we argue that while governance processes related to grand challenges such as the global climate crisis are moving online, this move currently seems experimental and largely lacking a fundamental understanding of the dynamics of online communities and online interactions. To address this problem, we discussed the example of the UN's Global Stocktake process in light of insights from research on online communities. Based on this discussion, we identified 10 questions across the three stages of online interactions (Table 2). We suggest that the questions constitute a research agenda to establish a necessary knowledge base for designing and implementing systems for online interactions in global governance contexts. Because this is a novel research area, the questions take an explorative approach of 'how' questions, which can then be extended with other types of questions concerning 'when', 'where', 'what', and 'why' questions. The different levels of interaction will have different levels of complexity and associated design implications.

Table 2 Research agenda for online interaction in digital global governance

	Potential outcome	Suggested Research Questions	Global Stocktake example
Sharing	<i>Improved basis for political decision making</i>	<ul style="list-style-type: none"> -How can technology facilitate collection of high-quality information from appropriate stakeholders? - How does technology influence the quality and flow of information? -How can technology be used to organize and disseminate information in comprehensible and inspiring ways to stakeholders? 	<i>Collect, organize and disseminate climate reports</i>
Cooperation	<i>Agreed upon knowledge status</i>	<ul style="list-style-type: none"> - What is the role of technology in synthesizing and leveraging actionable information? -What are the relationships between regulations, digital solutions and consensus forming? -What organizational, cultural, and competence-related frameworks are needed to facilitate cooperation that gains results? 	<i>Synthesize national reports. Technical assessments leading to synthesis report</i>

Collective Action	<i>Collective decisions binding for all individual members</i>	<ul style="list-style-type: none"> - What are the roles of technology in decision making processes? -What is the relationship between technology and trust in the negotiation process, and how to mitigate decisions resulting in “tragedy of the commons”? -What are the relationships between technology and co-production? -What is the role of technology in processes of accountability and follow up on decisions? 	<i>Declaration</i>
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4 Suggestions for future research

The core of our work is the identification of the research agenda for online interaction in digital global governance. While an in-depth discussion of all the potential theoretical approaches that may add value to address these questions is without the scope of our paper, we would like to propose some lenses that we find particularly interesting to address the research questions discussed above.

First, knowledge from the area of social movement organizations (SMO) could be of relevance for further studies within our context. SMO are collectives promoting social transformation through the mobilization of citizens for sustained political action [40]. Contrasting the more general concept of OC, SMO is focusing more directly on how online groups organize to achieve common objectives [51]. In particular, the research strands of SMO explore the role of collective actions, and the complex organizations needed to fulfill such goals. Future research addressing the need to understand how to organize to achieve collective actions (as proposed above) could be inspired by, for instance, the work of Mauss who almost fifty years back discussed the presence and connection between three main stakeholder groups within social movements; the outermost ring of a mass of sympathizers, the middle ring of a smaller number of active members committed to the movement's success, and the innermost ring of formal leaders and coordinators [52].

Mauss perspective is directly related to our next proposed theoretical lens. The stakeholder theory (ST) originated in management science in the 1980ies to improve organizations' capability to understand, predict and manage stakeholders (see e.g. Freeman [53]). ST was later adapted to the eGovernment context (see e.g. Flak and Rose [54]) and has achieved considerable attention in this domain. We suggest that ST can be valuable in identifying and analyzing stakeholder complexity related to digital global governance. In particular, the theory of stakeholder identification and salience [48] may offer clarity on the salience of specific stakeholders or groups of stakeholders. Given the importance of transparency and legitimacy in digital global governance, we also argue that a recently proposed normative core of ST for the eGovernment context [55] can be used and further refined in this specific context.

Finally, we argue for the need to further investigate challenges related to the quality of the information in the context of online participation. Research on the use of OC for political participation [40, 41] show how some actors joined with the agenda of

sabotaging the process, e.g., by posting false information within these forums. Hence, more research is needed to further investigate influence of technology on the distribution of misinformation (misleading or inaccurate information shared unconsciously), disinformation (false or misleading information shared intentionally) and fake news (false information packaged intentionally as real news) [56] in digital global governance.

4.1 Implications

The proposed research agenda will hopefully sensitize researchers of a critical knowledge gap that needs to be addressed with suggestions on how to embark on studies to reduce this gap. As such studies start to emerge, our initial research agenda should be critically assessed and developed further. Multi- and interdisciplinary research seem highly appropriate in this area as deep knowledge on governance of global phenomena needs to be matched with a deep understanding of digital technologies and the dynamics of online communities. Consequently, researchers can draw on a broad theory base in the quest to develop new knowledge in this area. We have suggested a few potentially valuable theoretical lenses in this paper.

The main audience for this paper is researchers with a potential interest in how digital technologies influence the governance of global phenomena. Nevertheless, we argue that the ideas and arguments in the paper also have practical relevance. Practitioners responsible for establishing and maintaining governance structures and processes to support the governance of global issues can benefit from being sensitized about the three stages of online interactions and the general dynamics of online communities. Moreover, the questions in our research agenda can also be applied from a more practical perspective to induce reflections on how different technologies may have different strengths and weaknesses depending on the stage they are being used in.

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