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The value of crowdsourcing in public policymaking: epistemic, democratic and economic value

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ABSTRACT

While national and local governments increasingly deploy crowdsourcing in lawmaking as an open government practice, it remains unclear how crowdsourcing creates value when it is applied in policymaking. Therefore, in this article, we examine value creation in crowdsourcing for public policymaking. We introduce a framework for analysing value creation in public policymaking in the following three dimensions: democratic, epistemic and economic. Democratic value is created by increasing transparency, accountability, inclusiveness and deliberation in crowdsourced policymaking. Epistemic value is developed when crowdsourcing serves as a knowledge search mechanism and a learning context. Economic value is created when crowdsourcing makes knowledge search in policymaking more efficient and enables government to produce policies that better address citizens' needs and societal issues. We show how these tenets of value creation are manifest in crowdsourced policymaking by drawing on instances of crowdsourced lawmaking, and we also discuss the contingencies and challenges preventing value creation.

KEYWORDS Crowdsourcing; crowdlaw; crowd capital; legislative process; open government; democratic innovations; policymaking; participatory democracy; deliberative democracy

1. Introduction

National and local governments increasingly use crowdsourcing in policymaking processes such as legislative reforms and urban planning strategy updates.¹ With crowdsourcing, governments seek to engage citizens in policymaking and search the crowd's knowledge to improve policies. The government of Iceland, for instance, crowdsourced a part of its constitution

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¹For crowdsourcing in policymaking, see Tanja Aitamurto and Helene Landemore, 'Five Design Principles for Crowdsourced Policymaking: Assessing the Case of Crowdsourced Off-Road Traffic Law in Finland' [2015] 2(1) *Journal of Social Media for Organizations* 1–19; Beth Simone Noveck, *Smart Citizens, Smarter State: The Technologies of Expertise and the Future of Governing* (Harvard University Press 2015); John Prpić, Araz Tæihagh and James Melton, 'The Fundamentals of Policy Crowdsourcing' [2015] 7(3) *Policy & Internet*, 340–361.

reform process, and the government of Finland has crowdsourced people's ideas and comments for several legislative reforms.² In Brazil, the legislative bodies have used crowdsourcing in legal reforms.³ In Chile, non-profit organisations and governmental bodies have sought people's ideas for a constitution reform process, receiving over 30,000 submissions. In the United States, several federal agencies have crowdsourced people's feedback and ideas for their strategy reforms.⁴ In the local level of policymaking, cities are crowdsourcing residents' feedback for urban planning strategies.⁵

Crowdsourcing in policymaking is an open government practice in that it aims to engage citizens in democratic processes, and it also infuses transparency to government at multiple levels. The open government practices emphasise the principles of good governance, including inclusiveness, accountability, and transparency.⁶ About 70 countries in the world have joined the Open Government Partnership coalition, which requires the member countries to commit for increasing transparency, collaboration and participation in governance. As Beth Noveck⁷ pointed out, open governmental practices change the way government works. By applying developed communication technologies, an open government asks for help with solving problems, resulting in more effective institutions and more robust democracy.⁸ The format of open governance includes not only 'the openness in information terms (vision) but also about openness in interactive terms (voice)'.⁹

²For the crowdsourced constitution reform in Iceland, see Helene Landemore, 'Inclusive Constitution-Making: The Icelandic Experiment' [2015] 23(2) *Journal of Political Philosophy* 166–191. For the crowdsourced law reforms in Finland, see Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196.

³For crowdsourcing in Brazil, see C. F. S Faria, 'The Open Parliament in the Age of the Internet: Can the People Now Collaborate With Legislatures in Law-Making?' [2013] Câmara dos Deputados, Edições Câmara, accessible at <http://bd.camara.gov.br/bd/handle/bdcamara/12756>.

⁴For crowdsourcing in federal agencies in the United States, see Tanja Aitamurto *Crowdsourcing in Policy-making: New Era in Decision-Making* (2012). Publications of the Committee for the Future, Parliament of Finland 1/2012. Helsinki, Finland.

⁵For crowdsourcing in local government, namely in cities, see Tanja Aitamurto, Kaiping Chen, Ahmed Cherif, Jorge Saldivar and Luis Santana 'Civic CrowdAnalytics: Making Sense of Crowdsourced Civic Input with Big Data Tools' (Proceedings of Academic MindTrek '16, Tampere, Finland, 2016). DOI: <http://dx.doi.org/10.1145/2994310.2994366>

⁶For open government practices, see Archon Fung and David Weil, 'Open Government and Open Society' (Open Government: Collaboration, Transparency, and Participation in Practice, pp. 105–113, O'Reilly Media, Inc. 2010); Suzanne Piotrowski & Gregg Van Ryzin, 'Citizen Attitudes Toward Transparency in Local Government' [2007] 37(3) *The American Review of Public Administration* 306–323; Soon Ae Chun, Stuart Shulman, Rodrigo Sandoval, and Eduard Hovy, 'Government 2.0: Making Connections Between Citizens, Data and Government' [2010] 15(1) *Information Policy*.

⁷Beth Simone Noveck, 'What's in a Name? Open Gov and Good Gov' (*Huffington Post*, April 7 2011) <http://www.huffingtonpost.com/beth-simone-noveck/whats-in-a-name-open-gov-_b_845735.html> Accessed September 11, 2016.

⁸Justin Longo 'Open Government — What's in a Name?' (*GovLab Blog* August 5 2013) <<http://thegovlab.org/open-government-whats-in-a-name/>> Accessed September 11, 2016.

⁹For open government practices, see Albert Meijer, Deirdre Curtin, and Maarten Hillebrandt, 'Open Government: Connecting Vision and Voice' [2012] 78(1) *International Review of Administrative Sciences*, 10–29.

While crowdsourcing has become a more common method in policymaking, a crucially important question remains unanswered: What is the value of crowdsourcing in public policymaking, and particularly in legislative processes? To address that question, we examine the value of crowdsourcing in policymaking in three dimensions: democratic, epistemic and economic value. We introduce a framework for analysing value in crowdsourced policymaking, and we also discuss the factors hindering value creation and challenging the realisation of successful crowdsourced policymaking processes.

The article is structured as follows: first the theory and practice of crowdsourcing in public policymaking and in legislative processes is reviewed. Next each value dimension is examined by using empirical instances of crowdsourced lawmaking as reference points and the challenges of value creation in crowdsourcing in public policymaking are elaborated. The article concludes with a discussion of the value creation dimensions and the future research agenda.

2. Crowdsourcing in public policymaking

2.1 Raw material for policy drafting

Crowdsourcing means an open call for anybody to participate in an online task.¹⁰ Crowdsourcing was initially coined as a term to describe a new method for businesses to source solutions and work from an online crowd instead of designated contractors and experts. Crowdsourcing is now widely used as a knowledge search and problem solving method in several realms, including crowdsourced research and design, journalism, design, citizen science, and crisis management.¹¹ *The crowdsourcer* is the actor initiating the online activity, and *the crowd* refers to the participant population. In crowdsourced policymaking, the crowdsourcer is typically a governmental body such as a Ministry in the Cabinet or a planning department in a city or a non-profit organisation.

Crowdsourcing can be applied in several parts of a policymaking cycle: in problem identification and definition, data gathering, developing options and proposals, consultation, designing and drafting the policy, decisions,

¹⁰For definition of crowdsourcing, see Daren Brabham, *Crowdsourcing* (The MIT Press Essential Knowledge Series. Massachusetts Institute of Technology 2013); Jeff Howe *Crowdsourcing: Why the Power of the Crowd is Driving the Future of Business* (Crown Business 2008).

¹¹For different types of crowdsourcing, see Tanja Aitamurto, 'Crowdsourcing as a Knowledge Search Method in Digital Journalism: Ruptured Ideals and Blended Responsibility' [2015] 4(2) *Digital Journalism* 280–297; Sophia Liu, 'Crisis Crowdsourcing Framework: Designing Strategic Configurations of Crowdsourcing for the Emergency Management Domain–' [2014] 23(4–6) *Computer-Supported Cooperative Work (CSCW)* 389–443; Oded Nov, Ofer Arazy, and David Anderson, 'Technology-Mediated Citizen Science Participation: A Motivational Model' (Proceedings of the AAAI International Conference on Weblogs and Social Media [ICWSM 2011], Barcelona, Spain, July 2011).

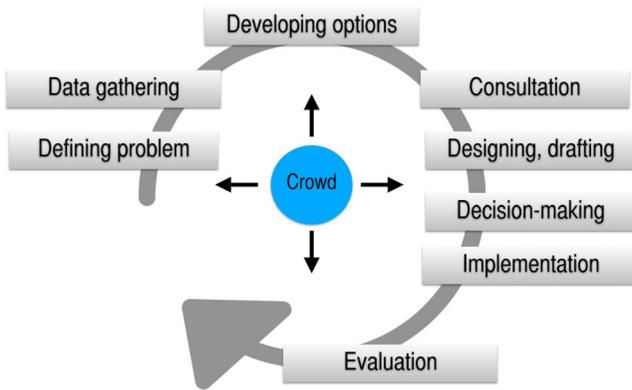


Figure 1. The role of crowdsourcing in a public policymaking cycle.

evaluation and implementation.¹² Figure 1 illustrates the role of crowdsourcing in a policymaking cycle. Crowdsourcing is typically applied in other parts of the policy cycle but not in the decision-making stage. Even though crowdsourcing was used in earlier stages of the policy and lawmaking process, it is still the elected bodies in representative democracies that decide about the policy, whether it is the Parliament in the case of legislative reforms or the City Council in urban planning policies. Thus, crowdsourcing is not a method for direct democracy, in which the crowd would directly decide about the policy, as is the case in participatory budgeting, another open governmental practice. Instead of transferring the decision-making power to the people, the goal of crowdsourcing is typically two-fold: To find relevant knowledge for improving the policy and to engage citizens in policymaking. Hence, crowdsourcing serves as a method for participatory democracy,¹³ engaging citizens in democratic processes between elections.

2.2 Crowdsourced microtasking, ideation, and deliberation

Crowdsourced policymaking processes typically proceed so that the crowdsourcer sets up an online platform for the crowdsourcing initiative. The digital crowdsourcing platform provides information about the policy and the crowdsourcing effort. The crowd is invited to participate by sending in ideas and comments for the policy. The crowd's input is visible for other

¹²For policy cycle, see Meredith Edwards, Cosmo Howard and Robin Miller, *Social Policy, Public Policy: From Problems to Practice* (Allen & Unwin 2001); Michael Howlett, Michael Ramesh and Anthony Perl, *Studying Public Policy: Policy Cycles and Policy Subsystems* (Oxford University Press 1995); Guy Peters, *American Public Policy: Promise and Performance* (Chatham House/Seven Rivers 1999).

¹³For participatory democracy, see Carole Pateman *Participation and Democratic Theory* (Cambridge University Press 1970); Carole Pateman, 'APSA Presidential Address: Participatory Democracy Revisited' [2012] 10(1) *Perspectives on Politics* 7–19.

participants to read and participants can often comment on each other's submissions. Depending on the process design, representatives of the crowdsourcers, such as legal drafters, civil servants or other experts can be present on the crowdsourcing platform, interacting with the participants. The crowdsourcer then gathers all the input and analyses it to be considered in policymaking.

Crowdsourcing can be used in policymaking as crowdsourced microtasking, crowdsourced ideation, crowdsourced knowledge, and crowdsourced argumentation and deliberation.¹⁴ In crowdsourced microtasking, the crowd is asked to conduct tasks that support policymaking, such as collecting data from the field or by reading documents, and then reporting the findings to the crowdsourcers. In crowdsourced ideation, the crowd is asked to submit ideas for resolving issues in policy. If the policy regulates traffic, for example, the crowd could be prompted to propose solutions, for instance about decreasing illegal riding in remote areas. The crowd's knowledge can be ideas, solutions, or situated knowledge communicated through the participants' experiences, and the knowledge can help the policymakers to formulate a stronger policy. In crowdsourced argumentation and deliberation, the crowd is asked to deliberate by exchanging arguments about a selected topic, as on dedicated deliberation platforms such as Deliberatorium,¹⁵ Consider.it,¹⁶ and Regulation Room.¹⁷

The crowd's input is typically used as raw material; the participants are not writing the policy – that remains the work of legal drafters. There have, however, been some attempts to introduce wiki-type large-scale collaborative writing of policies, such as Assemblyman Mike Gatto's Wiki-Law project in California, or the Madison Platform for drafting bills run by a political think tank in the United States. The participation activity in these collaborative efforts has been low, indicating that there is a higher threshold for participation when the crowd is asked to write a policy – or parts of it – than asking them to submit an idea, opinion, or other smaller unit of knowledge.

Crowdsourcing is based on a self-selected sample of, typically, an anonymous participant crowd. Because of its self-selected nature, it is important not to portray crowdsourced data as 'the public's will' or 'public opinion'.

¹⁴For different types of crowdsourcing, see Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196 and Tanja Aitamurto and Helene Landemore, 'Five Design Principles for Crowdsourced Policymaking: Assessing the Case of Crowdsourced Off-Road Traffic Law in Finland' [2015] 2(1) *Journal of Social Media for Organizations* 1–19.

¹⁵Mark Klein, 'How to Harvest Collective Wisdom on Complex Problems: An Introduction to the MIT Deliberatorium' (Center for Collective Intelligence working paper, 2011).

¹⁶Travis Kriplean, Jonathan Morgan, Deen Freelon, Alan Borning, and Lance Bennett, 'Supporting Reflective Public Thought with Consider.it' (Proceedings of the ACM 2012 Conference on Computer Supported Cooperative Work, pp. 265–274, ACM 2012).

¹⁷Cynthia Farina, Dmitry Epstein, Josiah B. Heidt, and Mary J. Newhart, 'Regulation Room: Getting "More, Better" Civic Participation in Complex Government Policymaking' [2013] 7(4) *Transforming Government: People, Process and Policy* 501–516.

To capture public opinion, one should use random sampling to achieve a representative sample of the population and use standard polling methods. However, the standard polling methods are typically used when there is a limited set of options that can be presented to the respondents, such as candidates in elections. In crowdsourcing, instead, the goal is to find a wide array of options and solutions, not to set a predefined agenda as options.

To this end, what is the value of crowdsourced policymaking? Why would deploying crowdsourcing in policymaking make a difference to the crowdsourcers (civil servants, legal drafters, or non-profit organisations), or to the broader public or society at large? To address this question, we examine epistemic, democratic, and economic value in crowdsourced policymaking. By so doing, we create a framework for analysing value in crowdsourced policymaking, and we also discuss the factors affecting value creation and preventing value to manifest. The framework is aspirational, and the value creation can be fully realised only in an ideal crowdsourced policymaking process, in which all factors needed for value creation are present.

3. Epistemic value in crowdsourced policymaking

3.1 *Experience and expertise-based knowledge*

First, let us examine the epistemic value in crowdsourced policymaking. Crowdsourcing is primarily deployed in policymaking for its epistemic qualities, referring to its knowledge-producing properties. With crowdsourcing, the crowdsourcers — in policymaking, the crowdsourcers often are legal drafters or urban planners — can reach a large, diverse, and distributed crowd, which is asked to share its knowledge to the policy. Crowdsourcing thus has the potential for discovering knowledge that would otherwise remain unknown. Crowdsourcing hence extends the knowledge search from the usual group of experts to a broader group of people.

The type of knowledge that the crowd shares varies depending on the participant crowd. The crowdsourced knowledge is often *experience-based*, and to examine this notion in more detail, let us look at an instance of crowdsourced lawmaking in Finland. Here, the Finnish Ministry of the Environment used crowdsourcing in an off-road traffic law reform in 2013. In the crowdsourced process, the Ministry asked people to participate in the lawmaking process online by sending in their comments and ideas for the law.¹⁸ The participants shared widely their experiences with off-road traffic

¹⁸For more details about the crowdsourced law-making process, see Tanja Aitamurto, Helene Landemore and Jorge Saldivar, 'Unmasking the Crowd: Participants' Motivation Factors, Expectations, and Profile in a Crowdsourced Law Reform' [2016] *Information, Communication & Society*. In press; David Lee, Ashish Goel, Tanja Aitamurto, and Helene Landemore, 'Crowdsourcing for Participatory Democracies: Efficient Elicitation of Social Choice Functions' (HCOMP 2014, the Association for the Advancement of Artificial Intelligence conference on Human Computation and Crowdsourcing, Pittsburgh, Pennsylvania, 2014).

and the law regulating it. Off-road traffic refers to motor-powered traffic beyond established roads, and in Finland off-road traffic is typically snowmobile riding in the winter and all-terrain vehicle driving in the summer. Some participants described instances in which the current law did not regulate noise pollution strictly enough, causing harm to them, hoping the law would address the issue. Others, meanwhile, shared their experiences in riding snowmobiles in different parts of Finland with varying snow conditions and geographical terrains, and they felt that the law did not take those varying conditions into account.

Similarly, in a crowdsourced Limited Liability Housing Company law reform process, organised by the Ministry of Justice in Finland, the participants shared information based on their experiences. The Limited Liability Housing Company law regulates all housing companies in Finland, that is, most apartment buildings, thus governing the lives of almost three million Finns.¹⁹ The Ministry of Justice in Finland launched a crowdsourcing process in 2014 to identify the main issues about housing companies and to find solutions to those. As a result of the crowdsourced knowledge search, the Ministry of Justice identified a solution to the problems in housing companies: policy implementation guidelines. When the drafts of the policy guidelines were ready, the Ministry also crowdsourced feedback for the drafts. During crowdsourcing, the online participants shared their experiences about difficulties in resolving disagreements in the apartment buildings and staying informed about upcoming renovations, among other important issues in their buildings. Crowdsourcing provides access to this type of experience-based information, and can thus help the policymakers perceive issues from the citizens' perspective and better understand the conditions, as was the case in these crowdsourced law-making initiatives in Finland. Access to a broader spectrum of knowledge can also increase the legitimacy of policy-making, because the policy measures are based on a more complete picture of the issues.

Apart from experience-based knowledge, the crowd also provides *expertise-based knowledge*. Among the participant crowd, there are participants who have professional knowledge about the law and the issues it governs. In the crowdsourced lawmaking cases in Finland, among the participants, there were lawyers specialised in the issues that the laws governed. The experts cited existing laws and other related laws on the crowdsourcing platform, and thus presented the expert's view to the crowdsourced initiative. However, the role and contributions of experts and non-experts are largely blurred in crowdsourced policymaking. While the traditional experts in

¹⁹For more information about the Limited Liability Housing Company update in Finland, visit <http://www.oikeusministerio.fi/fi/index/toimintajatavoitteet/arkielamaanliittyvatsaannokset/uusiasunto-osakeyhtiolaki.html>

law-making, such as lawyers, can draw from their professional knowledge and contribute with that, the so-called layman crowd has expertise based on everyday life and experiences related to the law. Both of these perspectives are valuable in policymaking. The layman crowd can also use similar means as do the traditional experts, such as citing the existing law, or referring to other countries' parallel laws and sharing links to the foreign laws on the crowdsourcing platform, as happened in the Finnish cases.

In most crowdsourced policymaking processes, both the wider public and the experts are invited to participate — the call for participation is addressed to anyone who wants to participate. However, crowdsourced policymaking could also be targeted so that it could be open only for selected experts, or members of the public who are invited to participate. This type of expert sourcing (only experts invited) and public sourcing (the broader public invited) could be useful in cases in which the crowdsourcer wants to receive knowledge from a more narrow set of participants, or wants to differentiate the call for each participant group profile. However, if the goal is to diversify the source of knowledge, sourcing only from experts would eliminate the possibility of receiving knowledge beyond the pre-determined groups of experts.

Crowdsourcing creates epistemic value also through learning. The participants learn from each other when they interact on the crowdsourcing platform and read each other's comments and ideas.²⁰ This type of peer-learning can help the participants understand each other's perspectives and experiences, and perceive value in others' viewpoints. The participants also learn from experts, who are interacting with the participants on the crowdsourcing platform. For instance, in the crowdsourced Limited Liability Housing Company Law reform, the legal drafters, civil servants, and several interest group representatives interacted with the participants on the online platform by answering the participants' questions. These types of interactions foster two-way learning: the participants learn from the experts, and the experts learn from the participants.

3.2 Determining the usefulness of knowledge

Crowdsourcing, to this end, has several points for epistemic value creation in public policymaking. Crowdsourcing can help civil servants in finding knowledge, which enables them in drafting the policy. Crowdsourcing can also foster learning among peers and experts through interactions on the online platform. Value, however, does not accrue automatically, but is contingent on several factors. The most important factor is the quality of knowledge

²⁰For learning and deliberation in crowdsourcing, see Tanja Aitamurto, 'Motivation Factors in Crowdsourced Journalism: Social Impact, Social Change, and Peer Learning' (2015) 9 *International Journal of Communication* 3523–3543 and Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196.

that the participants can share. Quality, here, refers to the usefulness of the crowdsourced knowledge. The knowledge can be useful in several ways. It can be new, unknown information, which informs policymakers and the broader public or it can be already known information, which confirms the policymakers' and the public's understanding about the issues. The knowledge can also serve as a catalyst for further examination of the topic. In the crowdsourced Limited Liability Housing Company Law case in Finland the civil servants found the crowd's submissions useful: the crowd's knowledge helped them detect the causes for issues in housing companies, and with that information, the legal drafters were able to design and implement targeted policy measures for resolving these issues.

However, determining whether the crowdsourced knowledge has value in policymaking is somewhat subjective. Furthermore, the value depends on the crowdsourcers and their method of analysing and synthesising the data. Benefiting from epistemic value of crowdsourcing in policymaking requires further actions from the crowdsourcers. The crowd's comments and ideas need to be analysed and synthesised before they can be used in the policy. This is a particularly onerous task when the amount of submissions is large. The crowdsourced input is often atomic, divergent, and heterogeneous in format and content: the comments and ideas vary from a one-line sentence to several paragraphs, and the content varies from very detailed proposals of how the law should be changed to more philosophical statements.²¹ To find out whether there is useful knowledge in the submissions, all the crowdsourced content needs to be systemically processed. This poses a challenge to the civil servants and other organisers working on crowdsourced policymaking. There can be thousands of comments from the crowd, and it is an overwhelming task for a handful of civil servants to process such a large amount of data. While the amount of submissions in crowdsourced policymaking often remains in some hundreds, there are several cases in which there are thousands and thousands of comments from the crowd. In the crowdsourced off-road traffic law case in Finland, there were over 4000 comments from the participants. In Chile, a non-profit organisation crowdsourced people's ideas about how to reform the country's constitution, resulting in over 30,000 submissions.

Therefore, to activate the epistemic value of crowdsourcing, there is a need to access a substantial amount of human resources so that the crowdsourced data can be processed and analysed in a meaningful way. Otherwise, the crowd's participation hits a bottleneck, which is formed due to the lack of data analysis and synthesis methods, preventing citizens' input from being

²¹For the nature of crowdsourced input in lawmaking, see Tanja Aitamurto, 'Collective Intelligence in Law Reforms: When the Logic of the Crowds and the Logic of Policymaking Collide' (49th Hawaii International Conference on System Sciences. Kauai, January 5–8, 2016). IEEE Transactions, pp. 2780–2789.

channelled further into the policy pipeline. The analysis of crowdsourced data often consists of categorisation of the crowd's submissions to main and subcategories. This work is done by using manual coding methods. A part of the analysis process could be done automatically with Natural Language Processing (NLP) technologies and machine learning, given that these technologies can produce accurate results, and there has been some promising attempts in using NLP in analysing crowdsourced civic data.²² Without further post-processing of the crowdsourced data, the potential value that crowdsourcing holds as a knowledge search method for public policymaking remains untapped. Furthermore, the bottleneck in data analysis and synthesis creates a risk of the crowdsourced data not being considered at all.

But even if the crowdsourced data were processed in a systematic, structured manner, it is not guaranteed that they would prove to be useful in policymaking. There might not be useful knowledge among the submissions. This is one of the uncertainties of crowdsourcing as a knowledge search mechanism: the epistemic quality of the outcome is unsure. The empirical evidence about the epistemic value in crowdsourced policymaking is scarce. Aitamurto and Landemore²³ show that deliberation and learning occur in crowdsourced policymaking, but there is not empirical evidence showing that there would be other epistemic qualities in crowdsourced policymaking. Related studies about citizens' knowledge indicate quite the opposite: in these studies, citizens are often shown to appear uninformed, and cognitively even incapable of processing information about societal issues.²⁴ Yet, these studies often measure expertise-based knowledge, whereas in crowdsourced policymaking, experience-based knowledge can also be valuable. However, to realise the epistemic value of crowdsourced policymaking, people who participate need to have a certain level of knowledge, whether it is expertise-based or experience-based, about the subject matter.

²²For Natural Language Processing and Machine Learning technologies in analysing crowdsourced civic input, see Tanja Aitamurto, Kaiping Chen, Ahmed Cherif, Jorge Saldivar and Luis Santana, 'Civic Crowd Analytics: Making Sense of Crowdsourced Civic Input with Big Data Tools' (Proceedings of Academic MindTrek '16, Tampere, Finland, 2016). DOI: <http://dx.doi.org/10.1145/2994310.2994366>

²³For deliberation and learning in crowdsourced policymaking, see Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196.

²⁴Walter Lippmann, *The Phantom Public* (Transaction Publishers 1927); Walter Lippmann *Public Opinion* (Transaction Publishers 1946); Michael Delli Carpini and Scott Keeter, *What Americans know about Politics and Why It Matters* (Yale University Press 1996); Giovanni Sartori, *The Theory of Democracy Revisited* (Chatham House Publishers 1962). Nihar Shah and Dengyong Zhou, 'No Oops, You Won't Do It Again: Mechanisms for Self-correction in Crowdsourcing' (Proceedings of the 33rd International Conference on Machine Learning, New York, NY, USA, 2016); Daniel Kahneman and Shane Frederick 'Representativeness Revisited: Attribute Substitution in Intuitive Judgment' in T Gilovich, D Griffin and D Kahneman (eds), *Heuristics and Biases: The Psychology of Intuitive Judgment* (Cambridge University Press 2002).

4. Democratic value in crowdsourced policymaking

4.1 Transparency, accountability and inclusiveness

When crowdsourcing is applied in policymaking, democratic value is created in several tenets. Democratic value accrues as transparency, accountability, inclusiveness, deliberation, and empowerment in the crowdsourced policy-making process. In this section these aspects are elaborated in more detail.

Transparency is a core element in a functional democracy. Transparency has been shown to be connected to better and more efficient governance.²⁵ In crowdsourced policymaking, transparency refers to both horizontal and vertical transparency. *Horizontal transparency* means the transparency between the participants on the online platform: everybody can see everybody else's submissions, comment on the submissions and interact with each other. *Vertical transparency* refers to the transparency between the crowd and the crowdsourcers, who in crowdsourced policymaking are often the representatives of a governmental body or a non-profit organisation. Vertical transparency enables citizens to be informed about the ongoing policy reform and the issues they care about. Vertical transparency also provides further information about the policy and access to the responsible civil servants and elected representatives working on the policy reform. Typically, there is no publicly available information for citizens about ongoing policy updates, for instance about law reforms that would actively attempt to engage and inform the citizens. The public would typically hear the news about policy reforms only when a bill is discussed in Parliament or an urban planning strategy is debated by the City Council. Transparency in crowdsourced policy-making thus enables the public to take a role as active citizens and provides access to information about the policy and its reform.

Accountability is another key element in democracy, and it means that the authorities are responsible to justify their decisions and be answerable to the public.²⁶ Transparency in crowdsourced policymaking can increase accountability as the public has more information about the policy and the reform process. The public has more means to contact the authorities and demand justifications for policy decisions, thus demanding answerability. Thus the public can hold the authorities accountable for their decisions, leading to a

²⁵Roumeen Islam, 'Does More Transparency Go Along with Better Governance?' [2006] 18(2) *Economics & Politics* 121–167; Joel Kurtzman, Glenn Yago, and Triphon Phumiwasana, 'The Global Costs of Opacity' [2004] 46(1) *MIT Sloan Management Review* 38.

Todd, M. La Porte, Chris C. Demchak, and Martin De Jong, 'Democracy and Bureaucracy in the Age of the Web Empirical Findings and Theoretical Speculations' [2002] 34(4) *Administration & Society* 411–446.

²⁶For accountability technologies, see Dietmar Offenhuber and Katja Schechtner, *Accountability Technologies: Tools for Asking Hard Questions* (Ambra/Birkhäuser 2013); Andreas Schedler, 'Conceptualizing Accountability' in A Schedler, L Diamond and MF Plattner (eds.), *The Self Restraining State: Power and Accountability in New Democracies* (pp. 13–28, Lynne Rienner Publishers 1999).

more politically conscious and informed populace and accountable government.

Transparency is also a key element to another point of value creation in crowdsourced policymaking: inclusiveness. Inclusiveness is a core value in democracy.²⁷ In crowdsourced policymaking a large number of citizens are invited to participate in policymaking — a process that earlier was largely beyond the public's reach. Typically it is a handful of selected experts that participate in policy reforms, but crowdsourcing extends the participant pool to large online crowds, thus making the policymaking process more inclusive. A more inclusive policymaking process can translate to a more equal and fair policy, as there are more people whose experiences and concerns are heard and whose ideas are taken into account.

Furthermore, due to the transparency in crowdsourced policymaking and the resulting broad access to the process, members of the public can bypass traditional representative bodies, such as interest groups, and make their voices heard directly on the online platform. An example of such an instance of an unfiltered civic voice surfacing is the public awareness that occurred in the crowdsourced off-road traffic law process in Finland. Many participants felt that the main organisation representing landowners' rights, the Central Union of Agricultural Producers and Forest Owners, was not representing their views, and the crowdsourced process enabled them to express their perspectives directly to the public without the union's filtering. Later the union announced that it was also internally divided about certain issues, thus acknowledging the views that were expressed online.²⁸ This is how crowdsourcing becomes a part of a deliberative system,²⁹ a larger web of related deliberations about policy issues.

4.2 *Deliberation and empowerment*

Deliberation is the fourth tenet for value creation in crowdsourced policymaking. Democratic deliberation is 'the public use of arguments and reasoning among free and equal individuals.'³⁰ Deliberation includes a reasoned exchange of arguments, and democratic deliberation requires equal standing among free participants ('free and equal') and the public, and a transparent exchange. In democratic deliberation, the free and equal participants

²⁷For inclusiveness in democracy, see Iris Young, *Inclusion and democracy* (Oxford University Press 2002).

²⁸See Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196.

²⁹For deliberative systems, see John Parkinson and Jane Mansbridge, *Deliberative Systems: Deliberative Democracy at the Large Scale* (Cambridge University Press 2012).

³⁰For democratic deliberation, see Joshua Cohen, 'Deliberation and Democratic Legitimacy' in A Hamlin and P Pettit (eds), *The Good Polity* (pp. 17–34, Basil Blackwell 1989); Jane Mansbridge, James Bohman, Simone Chambers, David Estlund, Andreas Føllesdal, Archon Fung, Cristina Lafont, and Bernard Manin, 'The Place of Self-Interest and the Role of Power in Deliberative Democracy' [2010] 18(1) *Journal of Political Philosophy* 64–100.

engage in exchanging arguments and critical listening. Democratic deliberation enhances democratic values in society as deliberation leads to a more informed, active citizenry. Participants have a deeper awareness about societal issues and learning, and the participatory nature of the process enhances legitimacy of the decision.³¹ After deliberation, the participating public is supposed to be thinking about societal issues in a more informed manner than previously. Democratic deliberation takes place in crowdsourced policymaking, thus providing the value of deliberation in a large-scale online deliberation. When participants deliberate on an online platform, they learn from each other and hear new perspectives about the issue. Crowdsourced deliberation is a specific type of deliberation, combining the properties of crowdsourcing as a distributed, large-scale self-selected method with the qualities of democratic deliberation.³²

Lastly, crowdsourcing in policymaking creates value by empowering people. The transparency and inclusiveness in the crowdsourced process enables large masses to participate in policymaking, and the experience of participation can lead to a strong sense of empowerment, as empirical evidence from crowdsourced policymaking shows.³³ The empowerment is a result of participants taking action on a topic that is important to them and is present in their everyday lives. In representative democracy citizens traditionally participate by voting for a candidate in elections, but with crowdsourced policymaking, they have an opportunity to influence an issue they care about, and be active citizens even between elections. Empowered, informed, and active citizens are the core property of a functional democracy. Participatory democracy is important for the legitimacy of a regime, the justice of the society and the effectiveness of governance. Crowdsourced policymaking allows members of the public to take action both individually and collectively; individually by sharing their ideas to the policy, and, as participation increases, it turns into a collective action that each individual is a part of.

4.3 Factors determining value creation

Crowdsourcing has several points creating democratic value. However, there are several factors determining the realisation of democratic value. For inclusiveness, there has to be a large enough population participating in crowdsourcing. This is to ensure the diversity of the voices and representation of, particularly, minority populations. However, because crowdsourcing is

³¹Jose Luis Martí, 'The Epistemic Conception of Deliberative Democracy Defended: Reasons, Rightness and Equal Political' in S. Besson and Martí (eds), *Deliberative Democracy and Its Discontents* (pp. 27–57, Ashgate Publishing 2006).

³²Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196.

³³Tanja Aitamurto and Helene Landemore, 'Crowdsourced Deliberation: The Case of the Crowdsourced Off-Road Traffic Law in Finland' [2016] 8(2) *Policy & Internet* 174–196.

always based on self-selection, representativeness cannot be ensured. The goal of crowdsourcing, however, is not to create a mini-public, a representative sample of the population, as discussed earlier. Meaningful deliberation also requires a sufficiently large participant crowd so that several arguments and viewpoints are presented and discussed. Vertical transparency requires sincere and timely communication and information from government and the provision of public access to the information. While the participants may feel empowered just by the act of participating in crowdsourcing, a more complete experience of empowerment requires an active feedback loop from the government to the participants, keeping the participant crowd updated about the policymaking process. Empowerment also calls for taking seriously into consideration the crowd's participation and processing systematically the crowdsourced input, which is not always the case when open government methods are implemented.³⁴

5. Economic value in crowdsourced policymaking

5.1 Knowledge for identifying citizens' needs

One of the goals in crowdsourced policymaking is to seek knowledge for improving the policy. Traditionally, policymakers search for knowledge, for instance, by reading research reports, interacting with interest groups and hiring consultants to carry out research. With crowdsourcing, the policymakers have access to a large number of knowledge sources, to a distributed pool of knowledge, when a larger group of people in society participate in the policymaking process. The crowdsourced information can reveal the public's needs in a more nuanced and informative way than other, second-hand, sources of information. Thus the policymakers can better detect people's needs and implement policy measures that address those needs, and that is how crowdsourcing can make a policymaking process more efficient and the resulting policy more effective. For instance, in the crowdsourced Limited Liability Housing Company reform in Finland the civil servants in the Ministry of Justice were able to acquire information that helped them understand the most important problems in apartment buildings and thus craft policy changes based on that information. Accessing hundreds of people's knowledge about the topic would have been otherwise complicated and unfeasible, if not even impossible, but the digital technologies empowering crowdsourcing made that possible.

³⁴Tanja Aitamurto, 'Collective Intelligence in Law Reforms: When the Logic of the Crowds and the Logic of Policymaking Collide' (49th Hawaii International Conference on System Sciences, Kauai, January 5–8, 2016). IEEE Transactions, pp. 2780–2789. Archon Fung, 'Putting the Public Back into Governance: The Challenges of Citizen Participation and Its Future' [2015] 75(4) *Public Administration Review*, 513–522.

Crowdsourced policymaking can thus be aligned with the theory of crowd capital. Crowd capital is an organisational resource, a form of capital that can facilitate productive and economic activity.³⁵ In crowdsourced policymaking, the organisation is the crowdsourcer, often a governmental body, and the crowd's participation forms the crowd capital. The content of crowd capital constitutes the information, data or knowledge to solve policy issues. As Prpic and Shukla³⁶ noted, 'crowdsourcing is well known as a distributed problem-solving and production model, where problems are broadcast' to an unknown group of solvers.

The economic value of crowdsourced policymaking accrues in two layers, as we elaborate in the following. First, it offers decision makers' information about citizens' needs in a more efficient and complete way. In crowdsourcing, the government engages citizens and listens to their needs in a broader manner than before. This can lead to stronger social support and resources from the society, manifesting as volunteer work, donations and third-party voluntary monitoring of the projects in the policy implementation stage. Thus, the economic value is extended to the whole public service delivery process.

Secondly, when the crowd capital is harnessed for policymaking by using participants' collective action and wisdom to work out the policy solutions together, crowdsourcing can help lower the cost of public goods provision for government agencies. Crowdsourcing provides a mechanism for collecting ideas from a diverse participant group, increasing the possibility for discovering innovative solutions and making the delivery of public services more efficient and cost-effective. Crowdsourcing was initially designed as a method for distributing problem solving and work for business purposes, and it has proven to be an efficient way to solicit solutions from the crowd.³⁷ Thus, the same mechanism for benefiting from distributed problem solving can also benefit the public sector. Crowdsourcing can also enable the government to choose the optimal method for delivering public services. As the principle of the 'New Public Management movement' in the late 1980s argues, to make the government more efficient it is important to translate managerial ideas from the private sector to the public sector, for instance, the idea

³⁵For the theory of crowd capital, see John Prpic and Prashant Shukla, 'The Theory of Crowd Capital' (46th Hawaii International Conference on Information Systems Sciences [HICSS], pp. 3505–3514, 2013). IEEE; John Prpić, Prashant Shukla, Jan Kietzmann, and Ian McCarthy, 'How to Work a Crowd: Developing Crowd Capital Through Crowdsourcing' [2015] 58(1) *Business Horizons* 77–85; John Prpic and Prashant Shukla, 'The Theory of Crowd Capital' (46th Hawaii International Conference on Information Systems Sciences, 2013).

³⁶John Prpic and Prashant Shukla, 'The Theory of Crowd Capital' (46th Hawaii International Conference on Information Systems Sciences [HICSS], pp. 3505–3514, IEEE 2013).

³⁷Lars Bo Jeppesen and Karim Lakhani, 'Marginality and Problem-Solving Effectiveness in Broadcast Search' [2010] 21(5) *Organization Science* 1016–1033.

of contracting out.³⁸ Crowdsourcing is a form of contracting out, and it uses expertise from the broader public to break down complex policy issues and enable policy to be implemented in the most cost-efficient manner, potentially saving time, money, and resources for the government. Contracting out practices have spread widely among government agencies. As Freeman and Minow³⁹ show, the federal and the state government in the United States have practised ‘government by contract’ in multiple public policymaking sectors such as environmental monitoring, military intelligence, and prison management.

5.2 Contingencies in economic value creation

The economic value and the formation of crowd capital in crowdsourced policymaking are contingent upon the efficiency of the knowledge search and discovery process. To realise the potential for increased efficiency in policymaking, the crowdsourcing process should be designed and implemented to maximise the reach, the amount of input from the crowd, and, at the same time, to analyse and synthesise the crowd’s submissions in an efficient manner. That can be done manually, as did the civil servants in the Limited Liability Housing Company case, or, when the amount of material submitted is too large for manual processing, automated methods such as Natural Language Processing and machine learning can be used.

Economic value creation also requires a number of participants that is large enough to provide useful knowledge and solutions to policy and commitment to the policy outcomes. As Kittur et al.⁴⁰ point out, ‘collecting input from only a small set of participants is problematic in many design situations’. It increases the possibility of bias which will lead to false conclusions. Thus, they recommend the model of virtual labour markets for microtasking, such as Amazon’s Mechanical Turk, as a paradigm to engage a large number of people at a low cost. Besides the participant bias, which might give policymakers false conclusions about what the citizens need, a limited sample of participants also constraints the knowledge creation function of crowdsourcing. Crowd capital requires that the number of participants should be sufficient for the crowdsourced knowledge to be diverse enough

³⁸Christopher Pollitt, *Managerialism and the Public Services: The Anglo-American Experience* (Blackwell 1990); Walter Kickert ‘Complexity, Governance and Dynamics: Conceptual Explorations of Public Network Management’ in Jan Kooiman (eds), *Modern Governance: New Government-Society Interactions* (pp. 191–204, Sage 1993); Stephen Osborne, ‘Public Governance and the Public Services Delivery: A Research Agenda for the Future’ in Stephen Osborne (eds), *The New Public Governance? Emerging Perspectives on the Theory and Practice of Public Governance* (pp. 413–428, Routledge 2010).

³⁹For contracting and outsourcing in governance, see Jody Freeman and Martha Minow, *Government by Contract: Outsourcing and American Democracy* (Harvard University Press 2009).

⁴⁰For designing microtasked crowdsourcing, see Aniket Kittur, Ed Chi, and Bongwon Suh, ‘Crowdsourcing User Studies with Mechanical Turk’ (Proceedings of the SIGCHI conference on human factors in computing systems, pp. 453–456, ACM 2008).

to help the policymakers understand different aspects of the issues. If the number of participants is not large enough, the knowledge created might not be representative of the general public, therefore, increasing the likelihood of the policy to be biased towards certain groups in society. Moreover, the law of the 'Economies of Scale'⁴¹ argues that when the scale of products is large, it brings a cost advantage since there is an inverse relationship between the quantity produced and the per unit cost. For instance, in crowdsourcing, the government has already spent the money to build the website for crowdsourcing and to conduct the crowdsourcing process. The more ideas they can receive from the website, the lower the per person cost of idea will be. As advocated by the New Public Management movement, the government should learn from business models how to maximise profit with the lowest possible cost. In the case of crowdsourcing, the profit is the number of ideas created by the crowd and the cost is how much money and resources the government has spent to establish the crowdsourcing platform and to conduct the crowdsourcing process. To reach the maximum profit, the larger the crowd, the more effective the knowledge creation will be. Therefore, the number of participants should be large enough to realise the economic value of crowdsourcing for the policy outcomes.

6. Conclusions

We show in this article that when crowdsourcing is deployed in public policymaking, there is a potential for creating epistemic, democratic and economic value. Crowdsourcing produces epistemic value by providing access both to experience and expertise-based knowledge of large, distributed crowds. Epistemic value is also created in peer- and expert-learning. Crowdsourcing creates democratic value by increasing inclusiveness, transparency, accountability, deliberation, and civic empowerment in policymaking. Economic value is created through a more efficient knowledge search, access to innovative solutions, and committed public, and thus, as a creation of crowd capital. These value creation points form a framework for analysing value in crowdsourced policymaking.

However, several factors determine the value creation process, and these factors can hinder value creation in crowdsourced policymaking. To realise the value of crowdsourcing in policymaking, several criteria have to be met. All aspects of value creation require a large enough participant group for producing ideas and sharing solutions online. Moreover, inclusiveness as a democratic value requires diversity in participation to ensure representation of a variety of arguments and viewpoints. Furthermore, the analysis process of

⁴¹Paul Krugman, 'Scale Economies, Product Differentiation, and the Pattern of Trade' [1980] 70(5) *The American Economic Review* 950–959.

the crowdsourced input has to be efficient and feasible, particularly in cases in which the amount of crowdsourced data is large, up to thousands or tens of thousands of submissions. Without systematic and automated analysis methods the crowd's input often remains unprocessed and is not even considered, thus mitigating the potential value of the crowdsourcing initiative.

Examining and understanding how and why crowdsourcing can provide value helps us predict the success of crowdsourced policymaking processes. It also helps us in designing and implementing better crowdsourcing processes. It also informs us as to when it may be fitting to use crowdsourcing in policymaking. If crowdsourcing is considered as a tool for a legislative reform, and there is not a pervasive internet access in the country, and there will not be a campaign to inform people about the possibility to participate, most likely only a small subset of people would participate, if any, mitigating all value creation aspects. Therefore, crowdsourcing may not be a suitable knowledge search method for such situations. But instead, if the legislative reform is carried out in a region with high internet penetration, and there is a campaign to inform people about the process, crowdsourcing has a higher chance of success. However, many factors, such as the participation activity, are hard, or impossible, to predict, due to the uncontrollable nature of crowdsourcing.⁴²

The framework for value creation is derived from the present knowledge about crowdsourced policymaking. Crowdsourcing as a practice, however, is evolving with the parallel changes in participatory culture and communication technologies. Therefore, future research should examine the value creation dimensions by studying knowledge creation, democratic aspects, and economic value in several cases of crowdsourced policymaking, and update the framework as needed. Future research should also quantify value creation dimensions and the factors preventing it to examine the tipping points.

Disclosure statement

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⁴²For the uncontrollable and unpredictable nature of crowdsourcing in policymaking, see Tanja Aitamurto, 'Collective Intelligence in Law Reforms: When the Logic of the Crowds and the Logic of Policymaking Collide' (49th Hawaii International Conference on System Sciences, pp. 2780–2789, Kauai, January 5–8, IEEE Transactions 2016).