

Chapter 4

What Drives Citizens to Engage in ICT–Enabled Citizen Science? Case Study of Online Amateur Weather Networks

Mohammad Gharesifard
UNESCO-IHE, The Netherlands

Uta Wehn
UNESCO-IHE, The Netherlands

ABSTRACT

In order for citizen science initiatives to pan out well, various actors need to be willing to engage in citizen science activities. The particular interest in this chapter lies with the citizens and their motivations to participate in ICT-enabled citizen science since, arguably, without citizen participation, there is no citizen science activity. The authors examine in detail what determines citizens' interest to share their weather-related data collected with Personal Weather Stations via online amateur networks and how these citizen activities could be up-scaled to address prevalent hydro-meteorological data gaps. A decision making theory is used to guide empirical research in three European countries. The results indicate no regional differences between the main drivers and incentives and raise the question whether weather observation is still a male-dominated activity in the digital age which would have implications for upscaling this citizen science initiative.

INTRODUCTION

Citizen science is being heralded as the means for overcoming many challenges: data scarcity (Muller et al., 2015), science education (Harjanne, Ervasti, Karhu, & Tuomenvirta, 2015) and citizen participation in science (Franzoni & Sauermann, 2014), in decision making and planning (Wehn, Rusca, Evers, & Lanfranchi, 2015), policy making (Haklay, 2015) and in monitoring and forecasting (Lanfranchi, Wrigley, Ireson, Ciravegna, & Wehn, 2014). Nevertheless, in order for citizen science initiatives to pan

DOI: 10.4018/978-1-5225-0962-2.ch004

What Drives Citizens to Engage in ICT-Enabled Citizen Science?

out well, various actors need to be willing to engage in citizen science activities which often start out as pilot projects before they are established and institutionalized. Depending on the particular set up, distinct actors are involved, such as spatial planners and other decision makers from various local or national authorities, policy makers, scientists in academic, educational and applied professional environments, and of course citizens, often stemming from distinct interest or contributor groups. These actors are subject to (distinct) incentives and drivers. The particular interest of this research lies with the latter – the citizens – and their motivations to participate in ICT-enabled citizen science since, arguably, without citizen participation, there is no citizen science activity. Moreover, their involvement in citizen science is typically required and desired not once, but on a continuous basis.

In this chapter, the authors examine in detail a particular case: citizens' willingness to collect weather-related data using Personal Weather Stations and to share them via online amateur weather networks. The increasing availability of user-friendly and affordable weather stations (Bell, Cornford, & Bastin, 2013) as well as online weather networks for sharing the collected weather observations appears to have given new impetus to the long-established practice of amateur weather observation.

Citizen observations of the weather are particularly relevant in view of the gradual but steady decrease of ground-based hydro-meteorological observations by national water resources government agencies since the 1980s, as observed by the World Bank (García, Rodríguez, Wijnen, & Pakulski, 2016), owing to budget constraints and related lack of maintenance as well as political turmoil that leads to the destruction of equipment, prevents readings or terminates funding. The resulting gaps in real-time and long term data records cannot be filled by satellite observations alone (García et al., 2016). At the same time, long term data records are urgently needed for policy and planning purposes and real-time data for monitoring and forecasting: for two consecutive years (2015 and 2016), the World Economic Forum has ranked water crises and the failure to address Climate Change-related mitigation and adaption as among the top three threats facing the world's population (WEF, 2015, 2016).

To better understand what determines citizens' interest to participate in online amateur weather networks and how their activities could be up-scaled to address prevalent hydro-meteorological data gaps, the lens of a decision making theory is used to guide empirical research in three European countries (United Kingdom, The Netherlands, and Italy). The findings show that there are no regional differences between the main drivers and incentives for citizens to share their PWS data; they also raise the question whether weather observation is still a male-dominated activity (Endfield & Morris, 2012; Manley, 1952; Subkowski, 2006) in the digital age which has implications for upscaling this citizen science initiative.

The chapter is structured as follows. In the second section, the conceptual framework for this research is introduced, followed by the third section in which the methods for selecting relevant locations and respondents for the empirical research are presented. In the fourth section, the results of the empirical research are used to analyze what influences citizens' willingness to share personally-collected weather data and how this is manifested. In the fifth section, the findings are discussed regarding the most/least frequently mentioned drivers; regional differences and similarities; and gender. The final section concludes the chapter with recommendations for citizen science initiatives.

CONCEPTUAL FRAMEWORK

The basic principle behind citizen science initiatives is not only the observation of specific phenomena (e.g. birds, the weather, flora, fauna, etc.) but the act of sharing such observations with others. Following

25 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/what-drives-citizens-to-engage-in-ict-enabled-citizen-science/170185

Related Content

Integrating Knowledge Sources: An Ontological Approach

Hayden Wimmer, Victoria Yoonand Roy Rada (2013). *International Journal of Knowledge Management* (pp. 60-75).

www.irma-international.org/article/integrating-knowledge-sources/77327

Can Virtual Networks Encourage Knowledge Absorptive Capacity?

Cesar Camison (2009). *Connectivity and Knowledge Management in Virtual Organizations: Networking and Developing Interactive Communications* (pp. 39-60).

www.irma-international.org/chapter/can-virtual-networks-encourage-knowledge/6945

Knowledge Transfer and Use as Predictors of Law Firm Performance: Nigerian Lawyer's Perspectives

Ismail Olatunji Adeyemi, Waliyah Omotayo Uzamotand Fatima Modupe Temim (2022). *International Journal of Knowledge Management* (pp. 1-17).

www.irma-international.org/article/knowledge-transfer-and-use-as-predictors-of-law-firm-performance/291097

Freelancing in the Economy 4.0: How Information Technology Can (Really) Help

Simone Scalabrino, Salvatore Geremia, Remo Pareschi, Marcello Bogettiand Rocco Oliveto (2018). *Social Media for Knowledge Management Applications in Modern Organizations* (pp. 290-314).

www.irma-international.org/chapter/freelancing-in-the-economy-40/185909

Organisations

Peter Busch (2008). *Tacit Knowledge in Organizational Learning* (pp. 101-132).

www.irma-international.org/chapter/organisations/30031