Chapter 4
Alternative Research Funding Mechanisms:
Make Funding Fit for Science 2.0

David Osimo
Open University of Catalonia, Spain

Laia Pujol Priego
ESADE, Spain

Riina Vuorikari
EC JRC IPTS, Spain

ABSTRACT

Funding affects how science is carried out. Over the last 50 years, the core of science funding has become competitive, project based and increasingly oriented towards societal challenges. Recently, alternative, more open and flexible funding mechanisms have emerged, such as crowdfunding, philanthropy and bottom-up mechanisms. This chapter analyses the development and implications of alternative funding mechanisms for science, through an umbrella literature review complemented by case studies. It concludes that alternative funding are an important component of research funding, which provides new opportunities especially for niche and unrecognized research, and require stronger communication skills by researchers. However, they can't and should not substitute traditional mechanisms. Researchers, institutions and funding agencies should redesign their activity accounting for a plurality of funding instruments, and facilitate collaboration between them.

INTRODUCTION

Science 2.0 is more than the adoption of Web 2.0 tools (blogs, Twitter or wiki) in science. It refers to a new approach that embodies the key values of Web 2.0 – openness by default, peer-to-peer recognition, presence of proactive users, perpetual beta and long tail – applied to the field of science and research. The emerging literature on the implications of Science 2.0 points to a greater level of collaboration be-

DOI: 10.4018/978-1-5225-0830-4.ch004

tween scholars from different disciplines, including nonprofessional researchers; more creativity because of the scale of contribution, the myriad of different actors and wealth of data produced and analysed; a more emergent nature of collaboration focusing not only on paper publication but on a wider set of scientific outputs; higher accountability and transparency of science thanks to the wider sharing of data underlying the analysis (Ioannidis 2005; Murray-Rust 2008). The emergence of Science 2.0 is in many ways convergent with the so-called Mode 2 system of science (Nowotny, Scott, & Gibbons, 2003) which involves multidisciplinary teams working together for short periods of time on specific problems in the real world, as opposite to traditional research pursuing scientific knowledge free from application concerns.

The literature also identifies a number of main barrier to greater uptake of Science 2.0, for example the lack of a favourable institutional setting and the lack of appropriate incentives to scholars (Burgelman, Osimo & Bogdanowicz, 2010). Too often research careers and scholars' reputation remain based on "publish or perish" principles focusing solely on the research and discovery activities that fall under the "scholarship of research" (Nicholas, Herman & Jamali, 2015), and do not encourage other aspects of scholars' work such as multi-disciplinary work, data sharing and large scale collaboration for example in citizen-science projects.

The way science and research is funded, in particular, can play a determinant role in hindering or supporting Science 2.0. The funding of science has undergone significant changes in the last 50 years, mainly moving from a block-based funding to a competitive, project-based funding which deeply affected the behaviour of scientists (Laudel, 2006). As a result, for example, highly competitive mechanisms such as the EU Framework programme often turn out to fund professional project writers (the so-called "usual suspects" of EU funding) rather than frontier researchers who are less skilled in writing project application that tick all boxes of the evaluation process (Arnold, 2010). Such system, while being generally considered more effective, has also attracted several criticisms (Guthrie, Guerin, Wu, Ismail, & Wooding, 2013) as an inefficient way of distributing research funding because of the high bureaucratic burden it places on individuals; the high cost of the process; and the doubtful capacity by government to select the genuinely promising research priorities and projects (Sutherland, Fleishman, Mascia, Pretty, & Rudd, 2011).

Recently, there as been an emergence of a set of novel "alternative" funding mechanisms (AFM) for scientific research. They tend to be more open and flexible, examples of these are crowdfunding, philanthropy and open bottom-up mechanisms. These new mechanisms appear to be more in line with the agile, multidisciplinary and emergent nature of science 2.0. This chapter aims at shedding more light around such AFM practices as a potential institutional driver, or an enabler, of science 2.0. The research is based on a study carried out for the Joint Research Centre of the European Commission (Vuorikari & Punie, 2015) that aimed at analysing these new mechanisms for scientific research in order to address some key questions:

1. What are the key features of alternative funding mechanisms and to what extent are they available in Europe?
2. What are the implications for researchers and research institutions?
3. What are the opportunities and challenges for EU policy?

Lateral Load Performance Analysis of Dhajji Dewari Using Different Infills
Hafiz Muhammad Rashid, Shaukat Ali Khan, Rao Arsalan Khushnoodand Junaid Ahmad (2018). *International Journal of Strategic Engineering (pp. 1-12).*
www.irma-international.org/article/lateral-load-performance-analysis-of-dhajji-dewari-using-different-infills/204387