



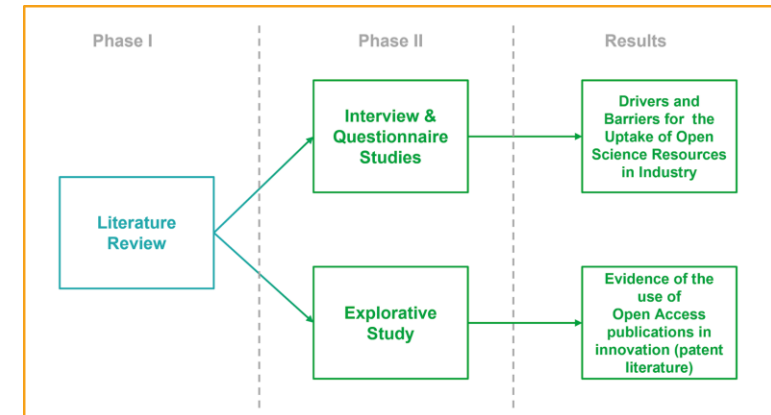
Results on “Innovation and Industry”

Angela Fessler, Katharina Maitz, Najko Jahn
22. March 2022



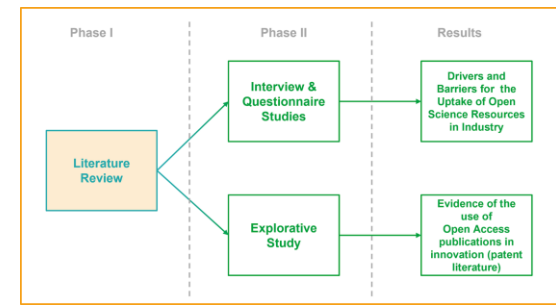
Research objectives

- Objective: investigate the levels of uptake of RRI and Open Science resources in industry and SMEs
 - We investigate ...
 - ... the landscape of research regarding industry and the uptake of Open Science resources
 - ... the readiness of economic actors to exploit FAIR data resources
 - ... open science practices in European patent literature
 - Our goal is to derive ...
 - ... insights about the information seeking behaviour and the uptake of Open Science resources in industry
 - ... drivers and barriers for the uptake of RRI and Open Science resources from an interview and questionnaire study
 - ... to provide evidence about the use of Open Access resources in innovation processes





Task I: Literature Review

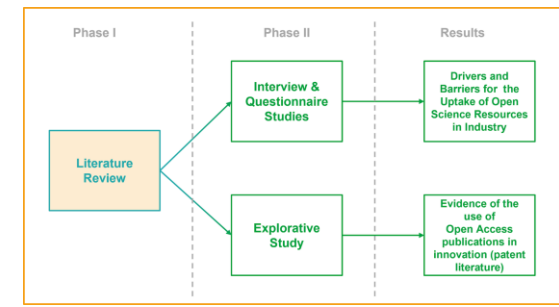


- Aim: Investigate how industrial actors make use of Open Science resources including Open Access publications and Open Data
 - Absorptive Capacity is *“the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends”*
 - SMEs struggle in the uptake of the benefits from OD as they find it challenging to develop the necessary absorptive capacity and corresponding capabilities to recognize the value of OD
 - SMEs can only effectively and efficiently use OD, if absorptive capacity capabilities are available in the company, respectively, amongst the skills of the individual employees.
- Method: Landscape scan on literature





Task I: Literature Review



Information Seeking Behaviour

- Challenges in information seeking
 - Explicating information needs, finding relevant information, lack of time, accessibility and quality of content
- Information seeking behaviour depends on
 - project stage, work-related tasks, cognitive need
- Information sources:
 - Newer publications: internet and digital information clouds
 - Older publications: non-digital artefacts such as libraries, regular journals or conference proceedings
 - Both: personal and social contacts

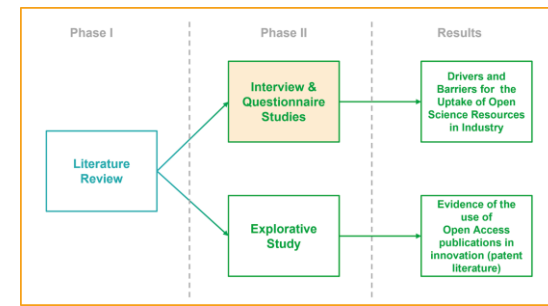
Uptake of Open Science Resources in Industry

- Limited relevance of scientific outputs for innovation processes in some sectors
- Barriers and drivers for the use of Open Science resources
 - lack of information-seeking skills amongst employees
 - companies can incorporate scientific knowledge
 - through consumption of outputs and
 - by hiring graduates or
 - by directly collaborating with academia
- Not many studies focus on the use of Open Science resources in industry specifically, and far fewer offer empirical data on the subject





Task 2: Interview & Questionnaire Study



- Aim: How do industrial actors make use of Open Science resources including Open Access publications and Open Data?

Interview Study (Austria)



Participants

- 13 participants (13 MSc & 4 PhD)
- 11 companies (health: 5, agriculture: 2, climate: 4)

Interview Guideline

- Data/information usage at work, Information seeking behaviour, Open Science/Access/Data, Absorptive Capacity, Business Model

Questionnaire Study (Europe)



Respondents

- 103 complete answers (93 prolific, 10 snowball sampling)
- 30% bachelor, 27% master, 9% Phd

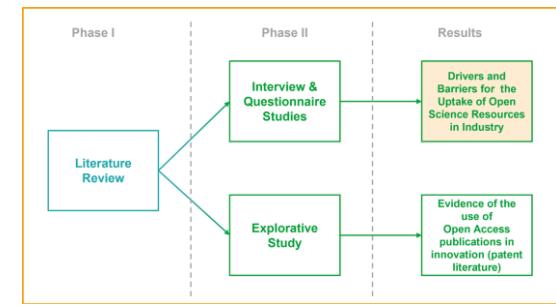
Questionnaire

- Company/Working Context, Information and Search Behaviour Understanding and Uptake of Open Science Indicators for the uptake and integration of new information, Business Model, Knowledge Risks





Task 2: Drivers for the Uptake of Open Science

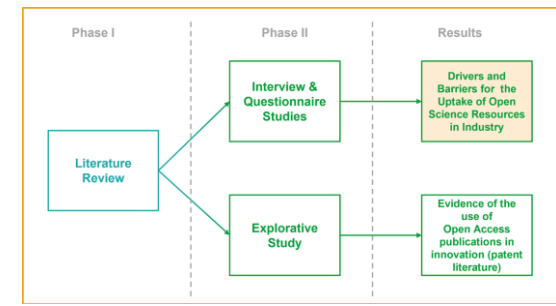


- Employment of people with a university education
 - Companies can benefit by hiring people with bachelor degree or higher
- Incentives and support
 - Companies allow a to spend time for performing Open Science activities
- Training activities
 - Provide instructions how to use Open Science resources; show existing possibilities
- Trans- and interdisciplinary cooperation
 - Learning from others
- Exploit the wisdom of the crowd
 - more quickly develop applications or services





Task 2: Barriers hindering the Uptake of Open Science



Open Data

- Health related data is scarce
- License restrictions for the commercial use of some data sets
- Lack of clear steps: how to begin, how to proceed, where to find relevant data

Open Access

- The number of Open Access publications is limited
- Fees for publishing Open Access are rather high

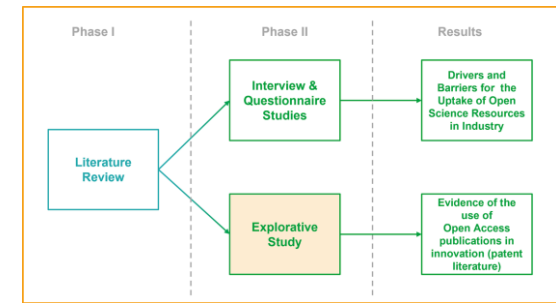
Open Source Code

- Reliability and validation of data





Task 3: Explorative Study



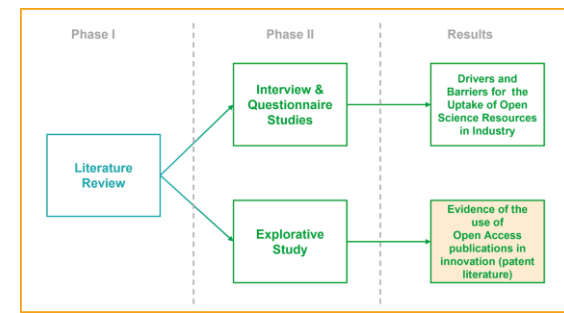
- Aim: To what extent were Open Access publications cited in patents?
- Approach: To provide evidence about the use of Open Access resources in innovation, we expanded existing patent citation analysis methodologies by combining publicly available big data sources:
 - **Patent citation data:** Google Patents
 - **Open Access and preprint evidence base:** Unpaywall, Crossref, Europe

PMC, arXiv

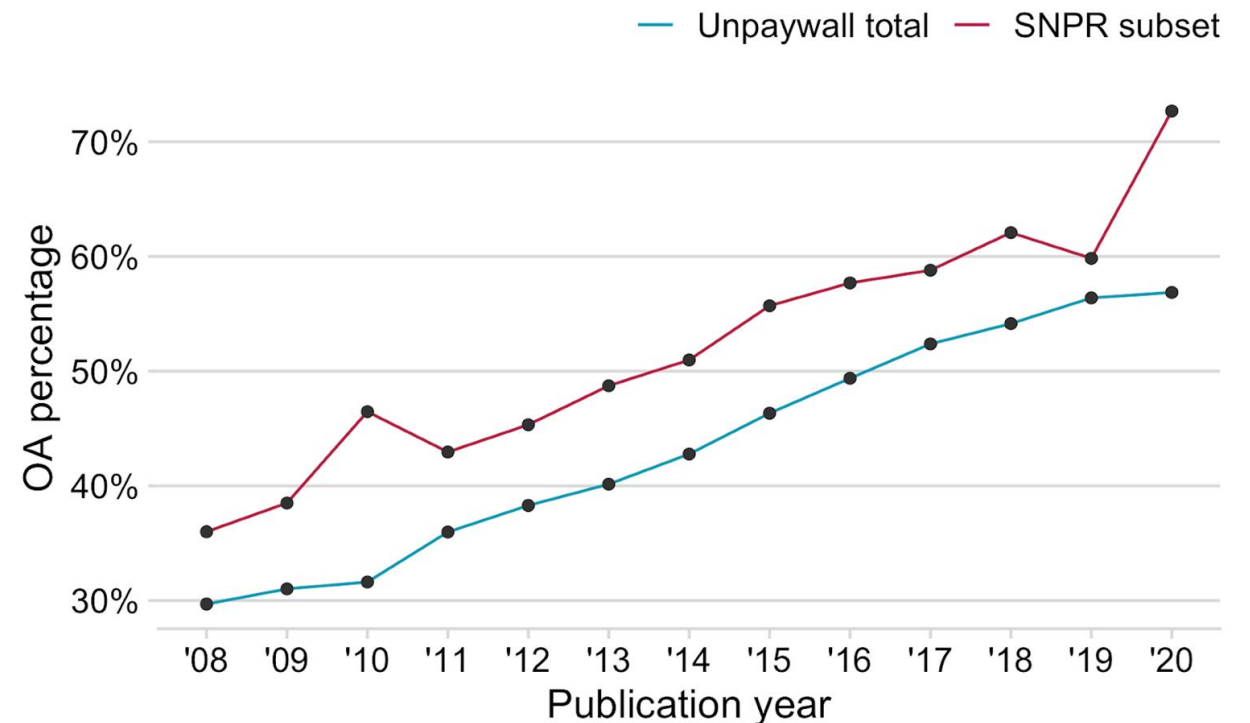




Task 3: Open Access citations in patents

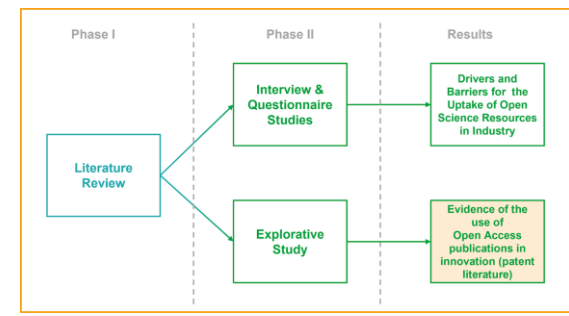


- Openly available research articles are more likely cited in patents than closed access work
- Considerable country and subject specific variations. US and UK patents cited disproportionately more often Open Access work.
- Evidence for preprints in many fields

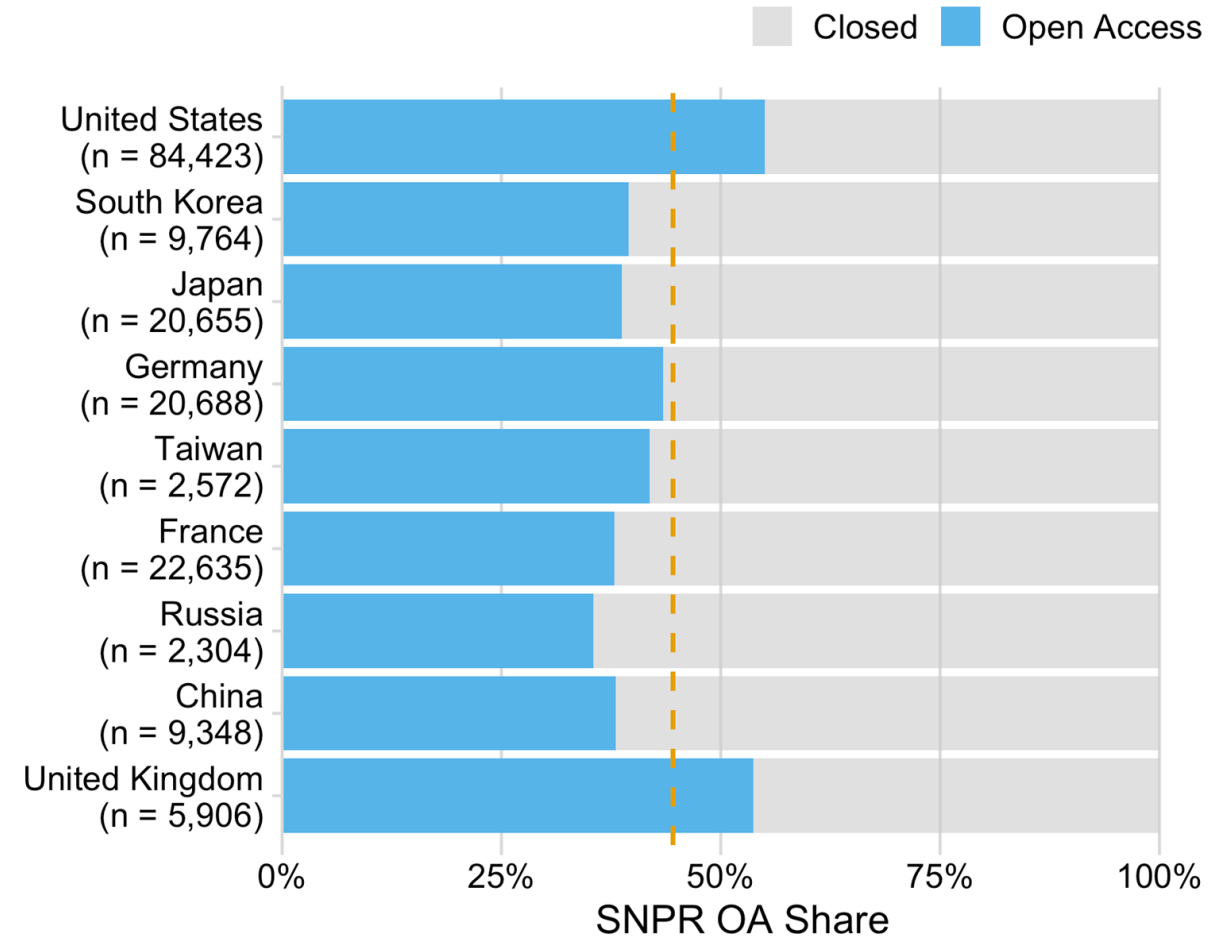




Task 3: Open Access citations in patents



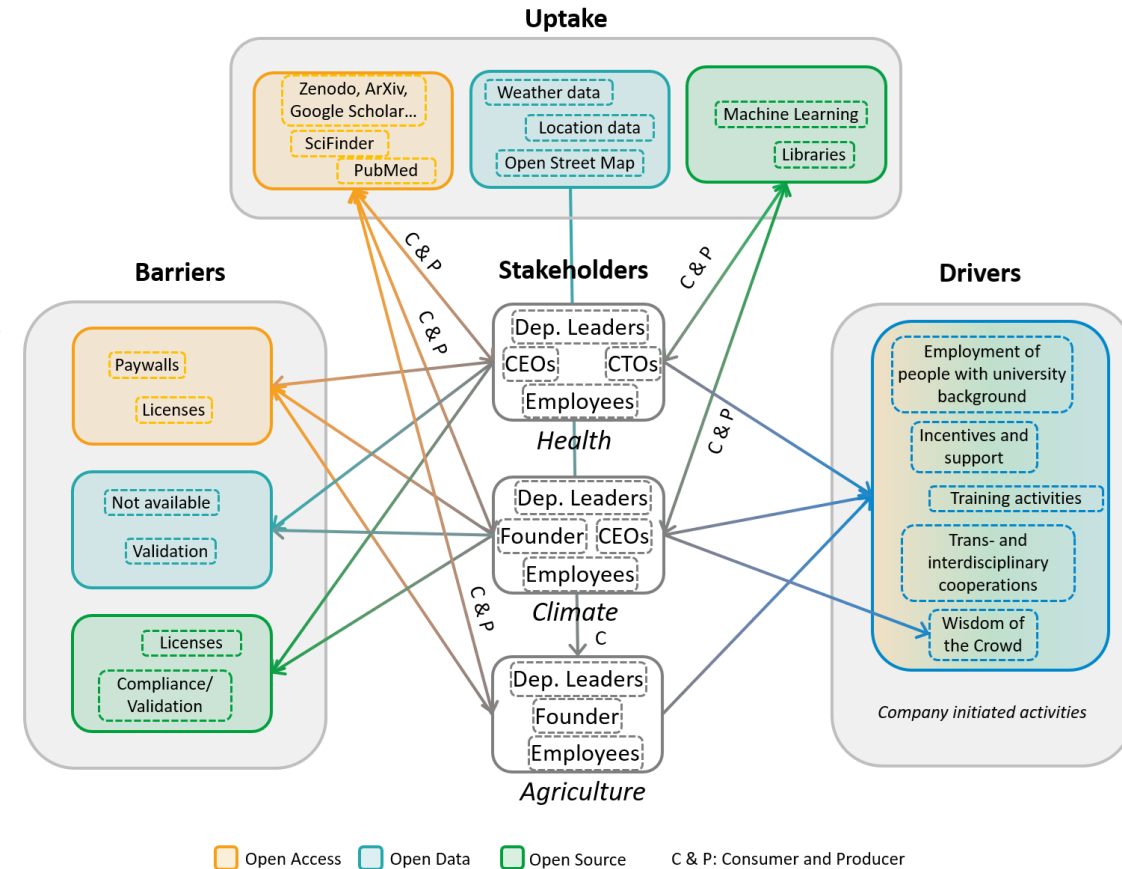
- Openly available research articles are more likely cited in patents than closed access work
- **Considerable country and subject specific variations. US and UK patents cited disproportionately more often Open Access work.**
- Evidence for preprints in many fields





Conclusion

- Two studies (health, agriculture, climate) show
 - ... the uptake of Open Science resources in SMEs and industries is (to some extent) ongoing
 - and depends on the company, its leaders, their employees and their (educational) background
 - Drivers and barriers exist for the uptake
- Open Access citations in patents
 - are more likely cited in patents than closed access work





Angela Fessl, KNOW



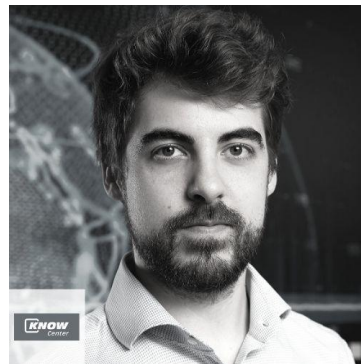
Katharina Maitz, TUG



Najko Jahn, UGOE



Tony Ross-Hellauer, KNOW



Thomas Klebel, KNOW



Nicki Lisa Cole, KNOW



David Pride, OU



Hannah Metzler, KNOW



Thank you for your attention!



The research leading to these results has received funding from the European Union's Horizon 2020 Research and Innovation Programme, under Grant Agreement no 824612.

