

Open Metrics: Originators and their Perceptions

Steffen Lemke

Workshop on Open Metrics

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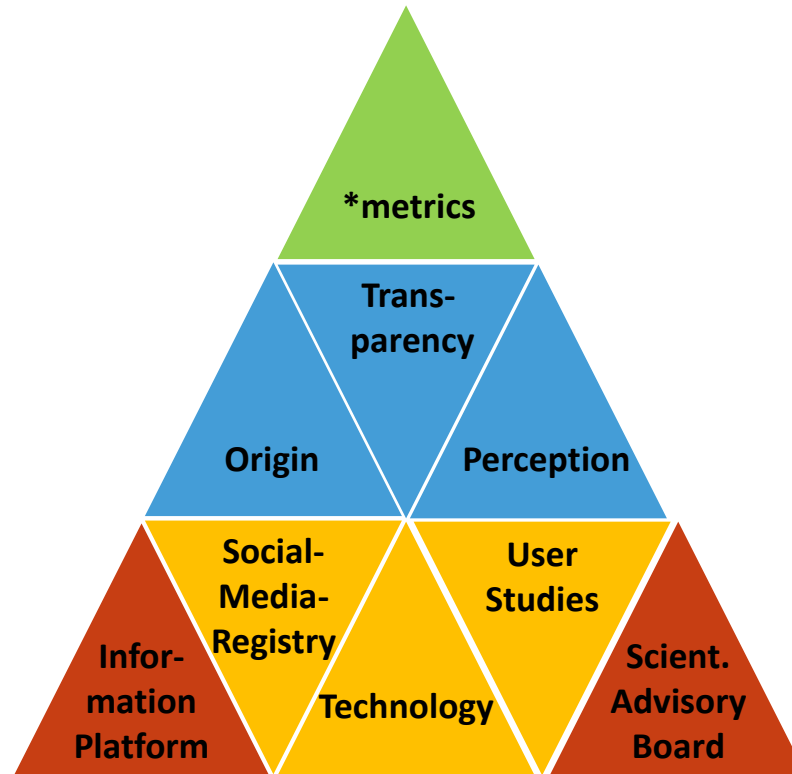




*metrics

The *metrics project

„Measuring the Reliability and Perceptions of Indicators for Interactions with Scientific Products“



*metrics Project – User Studies

- Quantitative and qualitative user studies
 - **Large-scale online surveys** among researchers, e.g., on their work-related usage of social media platforms and their functionalities
 - **Focus-group interviews** with researchers about their usage and perceptions of *metrics
 - **Conjoint analyses** and **eye-tracking** to determine various metrics' and their visualizations' influence on user decisions
 - **Analyses of platforms' implicit usage information**, e.g., through analysis of log files

What are researchers' concerns in regard to metrics for research impact?

Qualitative Interviews

- 4 group discussions with 9 interviewees
 - ➔ 6 hours of interview material
- Participants:
 - 5 economists, 2 biologists, 2 computer scientists
 - 2 postdocs, 7 PhD candidates/research assistants
- Main questions:
 - For which purposes do researchers use online tools and social media?
 - What do researchers think about impact metrics and their usage?

Researchers Perceptions of Web-based Impact Metrics



Interviewed researchers thoughts on web-based impact metrics:

“I don't know most of the metrics and I am not sure where the data comes from, so I don't trust it.”

“Most of the [types of] web citations I just don't know, I have to admit. [...] This is always a problem, when I don't understand their metric, what does it tell me? And if I then need to invest a lot of time to understand the metric or if it's not even publicly available, then I can just not use it.”

“The point is, is it really transparent? So, is everyone in the same knowledge what it means? And the more there are out there, the more – at least as an early career scientist – the more you resign. The more you kind of give up to really look through all this.”

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How to clarify metrics' meaning?

Frequent answer:

PROVIDE CONTEXT



➔ *Tell the whole story!*

What's Part of *the Story*?

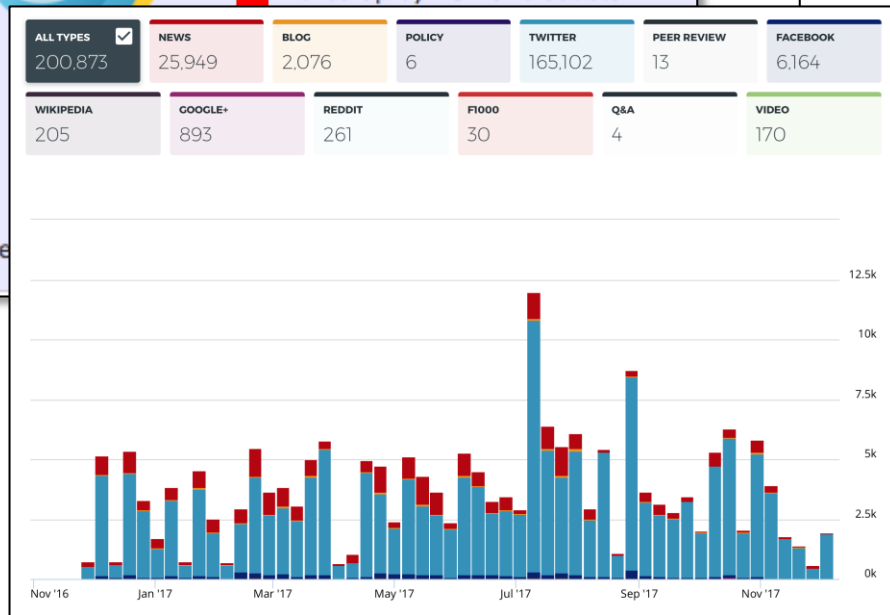
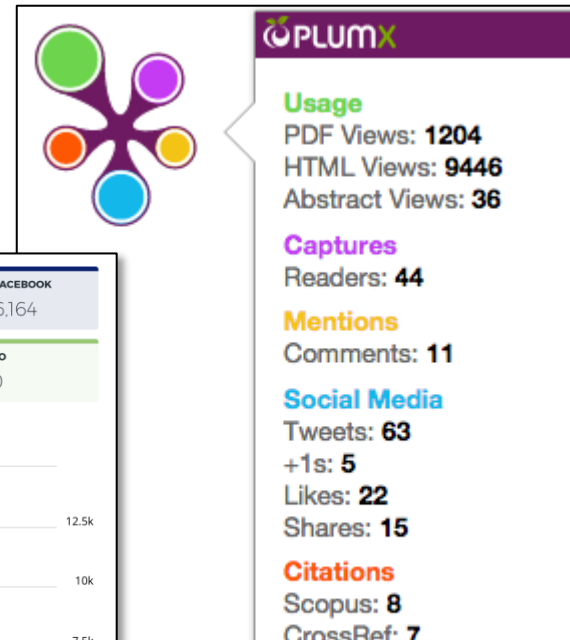
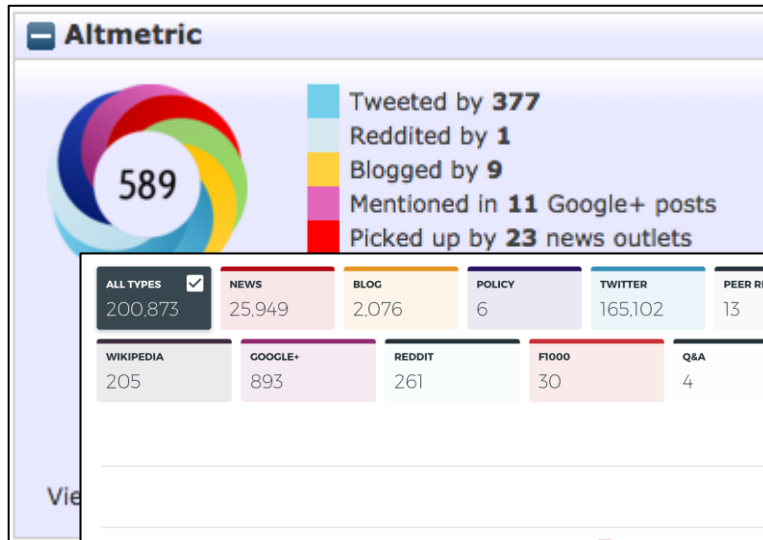
- What** kind of action are we tracking?
- Where** did the action occur?
- When** did the action occur?
- Who** initiated the action?
- Why** was the action initiated?

Three Ws are widely considered:

What

Where

When



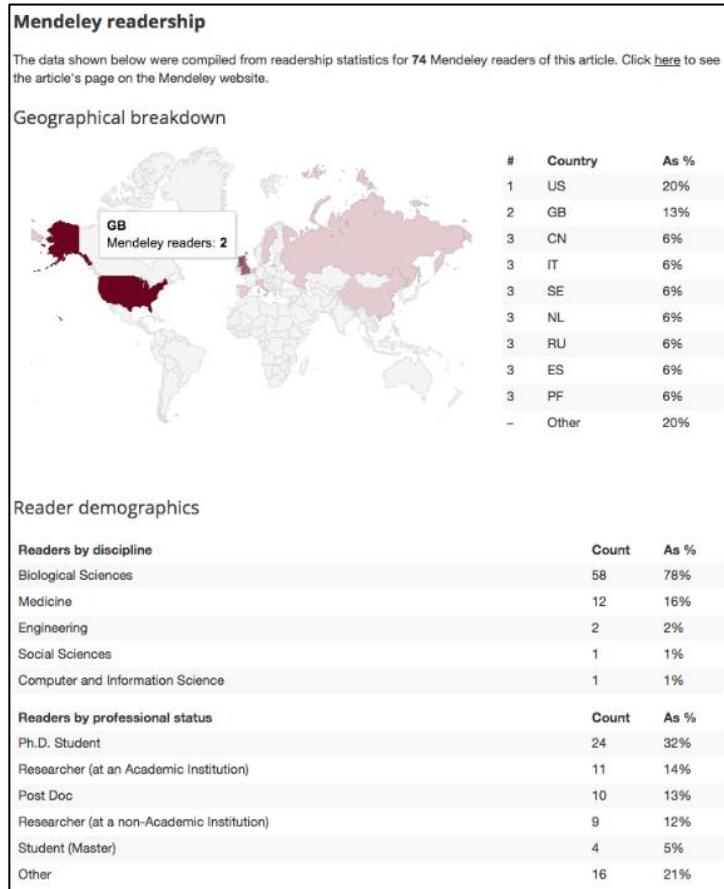
	HTML Page Views	PDF Downloads	XML Downloads	Totals
PLOS	84	57	9	150
PMC	0	0	n.a.	0
Totals	84	57	9	150

67.86 % of article views led to PDF downloads

Much less explored so far:

Who

Why



*metrics Survey on Researchers' Social Media Usage

Related Work

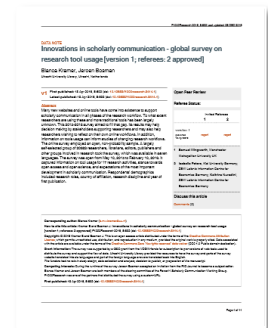
Van Noorden, R. (2014). Online Collaboration: Scientists and the Social Network



- Central research question: **How well known are various Social Media services among scientists (ResearchGate, Academia.eu and Mendeley in particular)?**
- Questions on the awareness, professional usage and perceived usefulness of Social Media services

Kramer, B., & Bosman, J. (2016). Innovations in Scholarly Communication

- Central research question: **How do researchers use Social Media services during the various stages of their work (as authors)?**
- Questions inquiring the services used during the various stages/tasks of the publication cycle

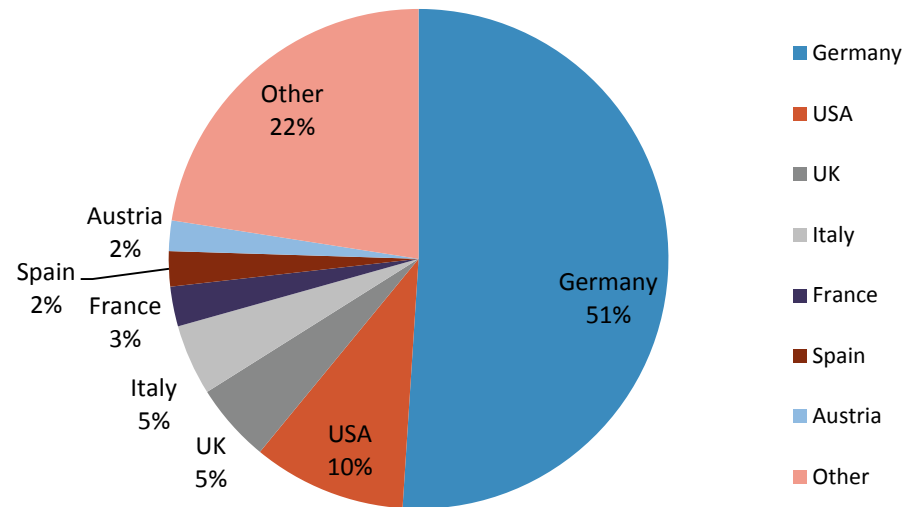


➡ No survey on the usage frequency of individual actions yet

*metrics-Survey: Social Media Usage by Researchers



- Online survey, running for six weeks over March-May 2017
- 3,400 respondents (rate of response ~6%), emphasizes on economists (60%) and social scientists (22%)
- 13-20 questions about professional usage of 90 social media services
- Participants from 84 countries



Countries of current (or last) affiliation of the survey's participants

Who?

**Which researchers' judgements
are reflected by which metrics?**

*metrics-Survey: Usage Frequency of Actions

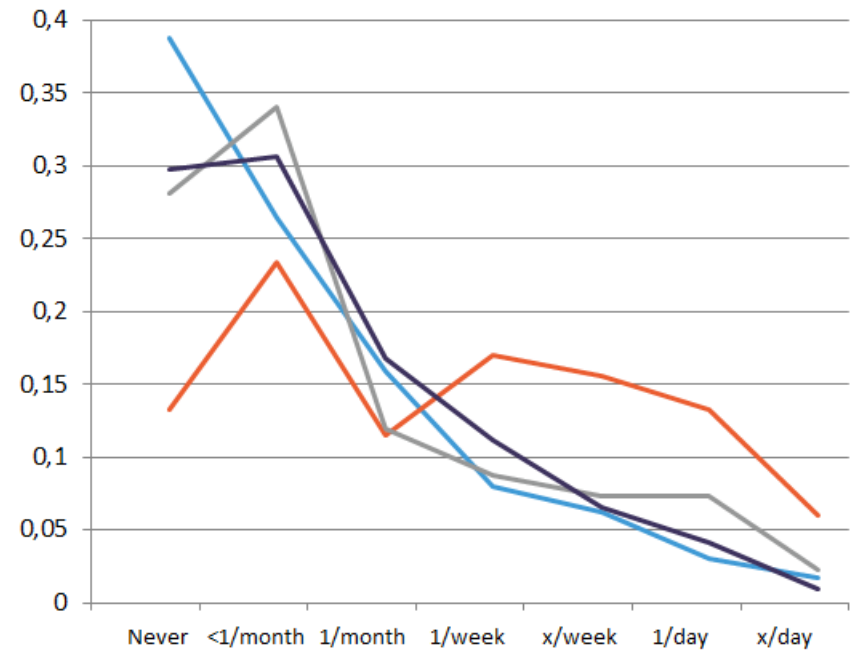
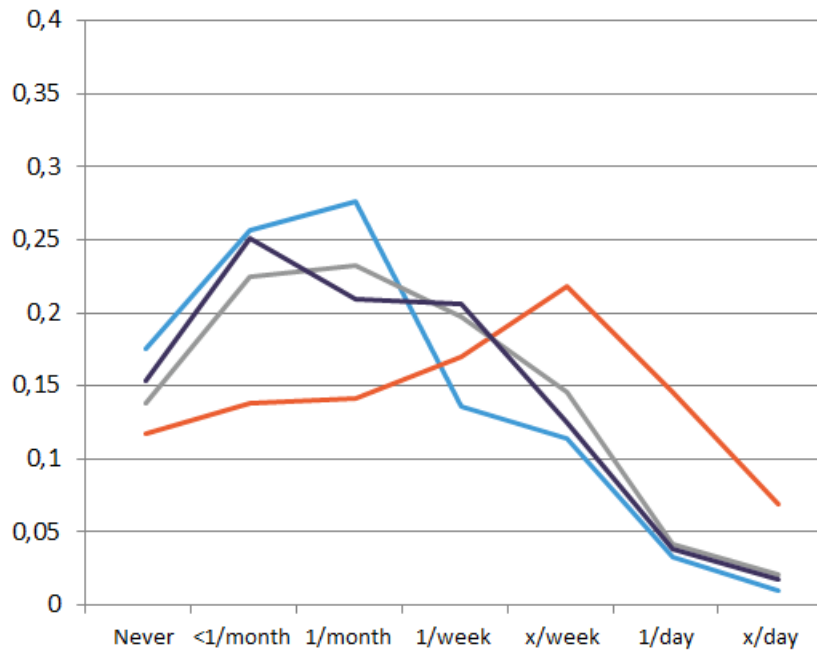


How often do you...?

	Several times a day	About once a day	Several times a week	About once a week	About once a month	Less often	Never	No answer
post about academic research on Facebook	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
send a tweet about academic research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
write a post about academic research on LinkedIn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
write a post about academic research on Google+	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
review academic research on F1000Research	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
write a post about academic research on Reddit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
write a post about academic research on StackOverflow	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
review academic research on Amazon	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Usage of Actions:

Facebook – Profs vs. ES Researchers



— post about academic research — like a post about academic research — share a post about academic research — comment on a post about academic research

Usage of Actions: Differences in Frequency

- Welch test - comparison between early-stage researchers and professors:
from 58 tested actions, 27 are used with significantly different frequencies



Early-stage researchers (n = 1,010):



Downloading



Bookmarking



Professors (n = 1,419):



Writing



Facebook



Twitter

Why?

**Why do researchers interact with publications
online?**

Related Work

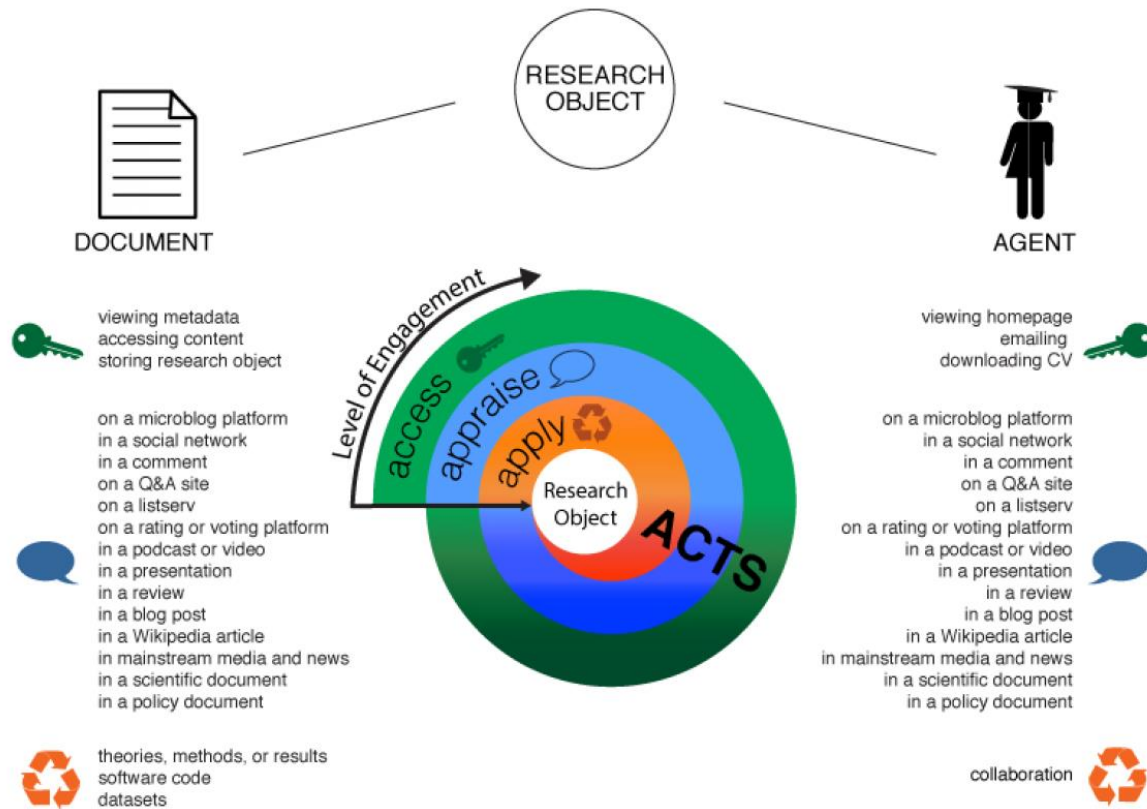
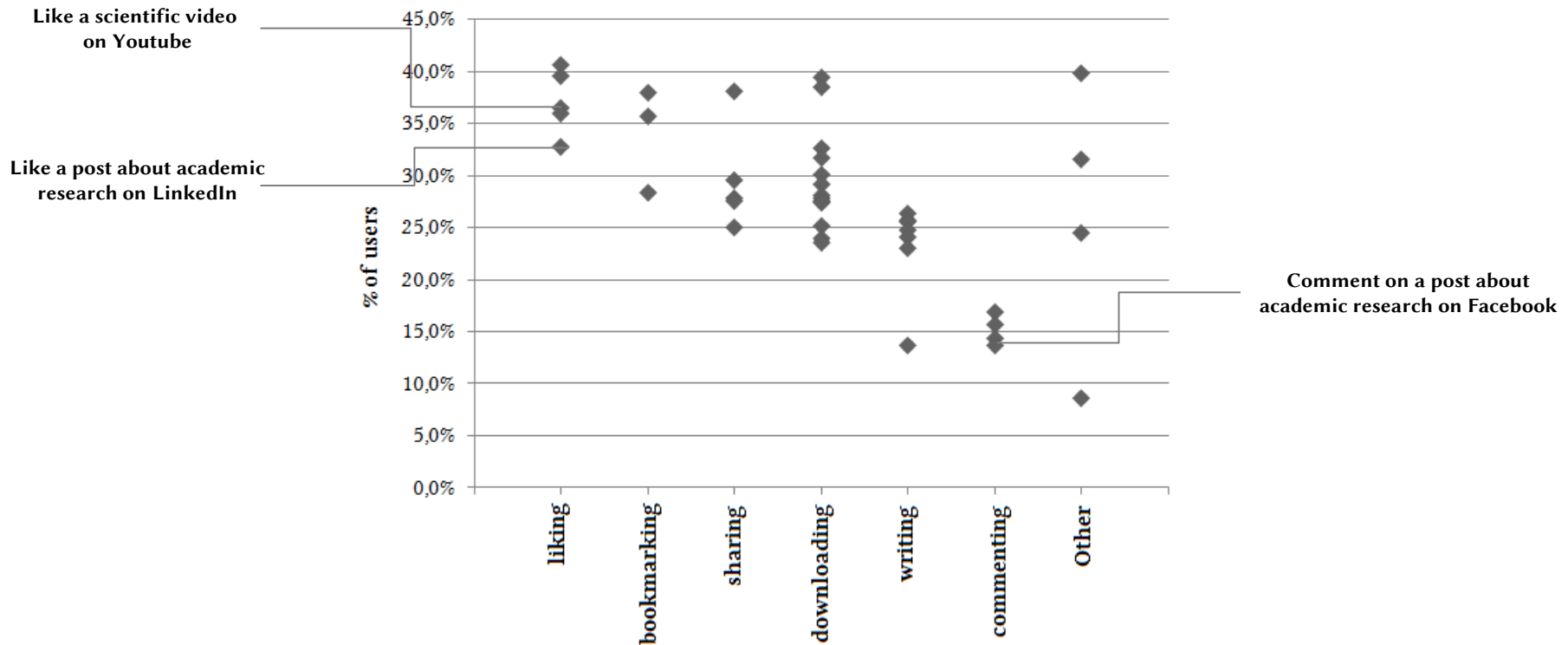


Figure 1. Framework of categories and types of acts referring to research objects (scholarly documents and agents).

From: Haustein, S., Bowman, T. D., & Costas, R. (2016). Interpreting 'Altmetrics': Viewing Acts on Social Media through the Lens of Citation and Social Theories.

Which actions do reliably express positive judgments?



Shares of users that exclusively perform the respective action to express approval.

Next Steps

- Follow-up survey among researchers
 - Which purposes are fulfilled by which platforms?
 - Validation of interview findings on basic population of researchers
 - Conjoint analyses on different metrics' and visualizations' influence on user judgments
- ➔ Formulation of recommendations on context enrichment for web-based impact metrics

Take Away

- Researchers do not trust web-based impact metrics as long as they do not clearly understand their meaning
- ➔ A possible way to solve this: enriching metrics with context
- ✚ And: web-based impact metrics offer plenty of opportunities for such contextual enrichment
- Appropriate utilization of the large variety of available sources for web-based impact metrics requires careful analysis of their individual properties and differences

Thank you!

- Web: metrics-project.net
- Email: s.lemke@zbw.eu
- Twitter: @metrics_project, @stl90
- Facebook: metricsproject

