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Leibniz-Institut
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Users are not influenced by high impact and core journals while searching

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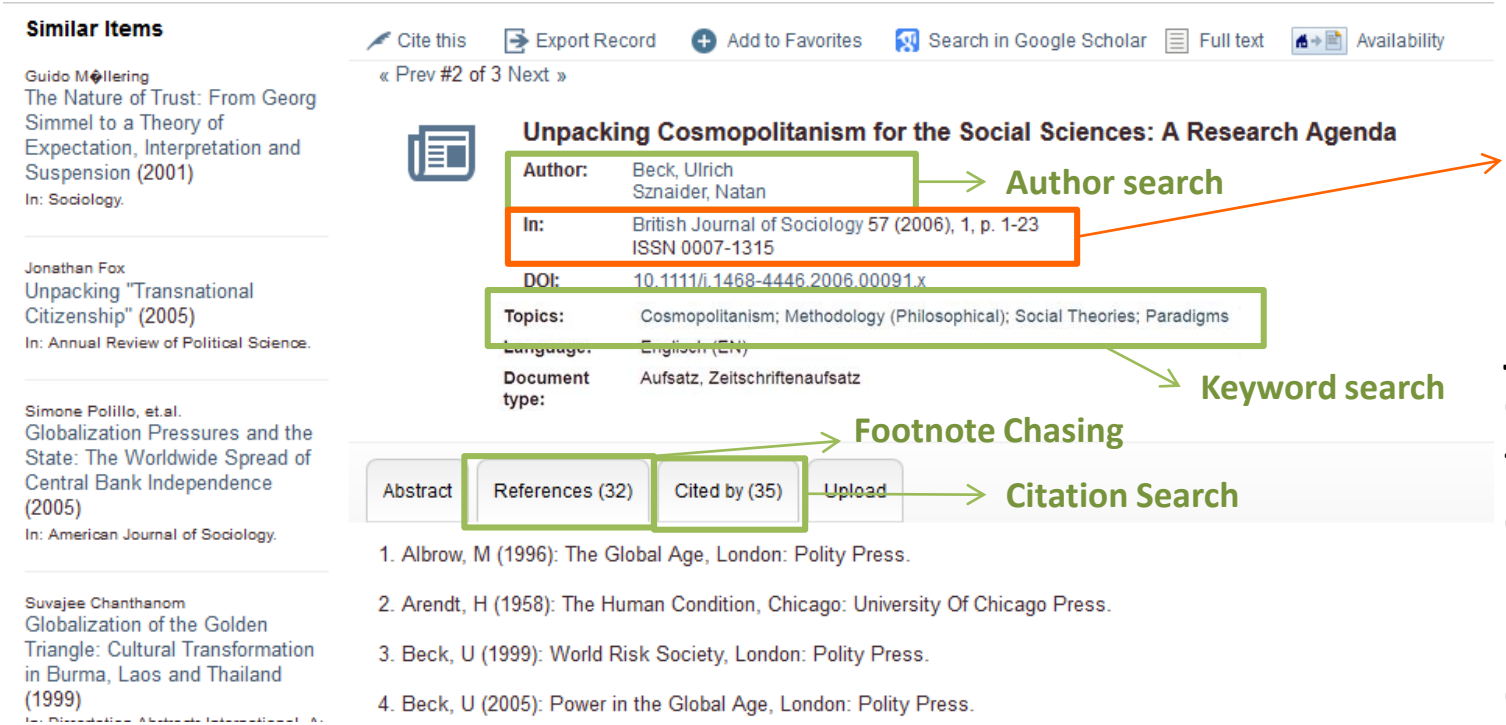
Mitglied der Leibniz-Gemeinschaft

Interactive IR

- Interactive IR: study the interaction between the user and the search system
  - Analyze the user's behavior
  - Support the user during the search session

Stratagems



« Having identified a journal that is central to one's topic of interest, one reads or browses through issues or volumes of the journal »
[Bates, 1990]

Journal run

- Previous work:
  - Footnote Chasing, Citation Search*
  - Frequency, moment of use, correlation…
- Stratagem Journal Run
  - Quality metrics associated (IF, Coreness…)
  - Importance according to different studies

* Kacem A., Mayr P.: Analysis of Footnote Chasing and Citation Searching in an Academic Search Engine. In Proceedings of BIRNDL@SIGIR 2017: 91-100

Journal run studies

- **Hemminger et al. 2007**
  - Survey at the University of North Carolina
  - Journal Run: primary source of information (56.04% of searches) compared to books, proceedings and others
- **Ge, 2010**
  - Electronic journals: the third most important resource (fields of social sciences and humanities)
  - Users look for multiple journals related to their keywords rather than just one.
- **Carevic and Mayr, 2015**
  - Bibliometric-enhanced search facilities such as "journal run" or "citation search“
  - Apply bibliometric measures for re-ranking and/or rearranging DL-entities like documents, journals or authors (e.g. extended journal run)

Questions addressed

- **Which usage patterns can be observed from clicked journal papers?**
  - Usage pattern of “journal run" in real retrieval sessions: frequency, moment of appearance in a session, success of sessions

- **Do journal properties like impact measures and coreness influence the click behavior in real life retrieval?**
  - **Journal reputation** (in terms of impact measures: IF)
  - **Coreness** (in terms of journals size)

Sowiport Dataset

- **Sowiport User Search Sessions Data Set (SUSS 16-17)***
  - Sowiport: a DL for the Social Sciences
    - More than 9 million records, full texts and research projects
    - 22 different databases: English and German content
  - Period: from September 2016 to May 2017
  - 208,557 individual sessions
  - 3,377,000 log entries
- **Journal Run in this study**
  - 22,721 individual sessions
  - 2063 unique journals
    - Size: Sowiport index
    - Impact factor : Journal Citation Reports
    - SCImago Journal Rank (SJR)

* https://git.gesis.org/amur/SUSS-16-17/

Analysis

For a session *S* during which a set of interactions *{I}* is performed by the user, we define:

- *Strat* : a stratagem such as *Journal Run*
- *Pos*: a positive interaction present in our data set among the following set *{P}*[*]:
  - goto_fulltext, goto_google_scholar, goto_local_availability, goto_google_books, view_description, export_cite, export_bib, export_mail, to_favorites, export_search_mail, save_search, save_search_history, save_to_multiple_favorites.

[*] Hienert, D., Mutschke, P.: A usefulness-based approach for measuring the local and global effect of IIR services. In: Proceedings of CHIIR '16, ACM (2016) 153–162

Measures

- $Precision(Strat)_b = \left(\frac{|Pos \in \{P\}|}{|I|}\right)_b$

Number of positive actions

Total number of actions

before

{P} : goto_fulltext, goto_google_scholar, goto_local_availability, goto_google_books, view_description, export_cite, export_bib, export_mail, to_favorites, export_search_mail, save_search, save_search_history, save_to_multiple_favorites.

- $Precision(Strat)_a = \left(\frac{|Pos \in \{P\}|}{|I|}\right)_a$

after

Measures

- $Precision(Strat)_b = \left(\frac{|Pos \in \{P\}|}{|I|}\right)_b$

  Number of positive actions

  Total number of actions

  before

- $Precision(Strat)_a = \left(\frac{|Pos \in \{P\}|}{|I|}\right)_a$

  after

- Gain = $Precision(Strat)_a - Precision(Strat)_b$

- $Usefullness(Strat) = \frac{|S_{Strat}{}^{+}|}{|S_{Strat}|}$

  Session during which journal run was performed having positive actions occurrence

  Total number of sessions using a stratagem (Journal Run) no matter the type of user's interactions (positive or not)

Journal Run Effect

Measures	
$Precision(Strat)_b$	0.043
$Precision(Strat)_a$	0.096
$Gain\ in\ Precision$	**5.32%**
$Usefullness(Strat)$	**55.83%**

Journal Run Effect

Measures	
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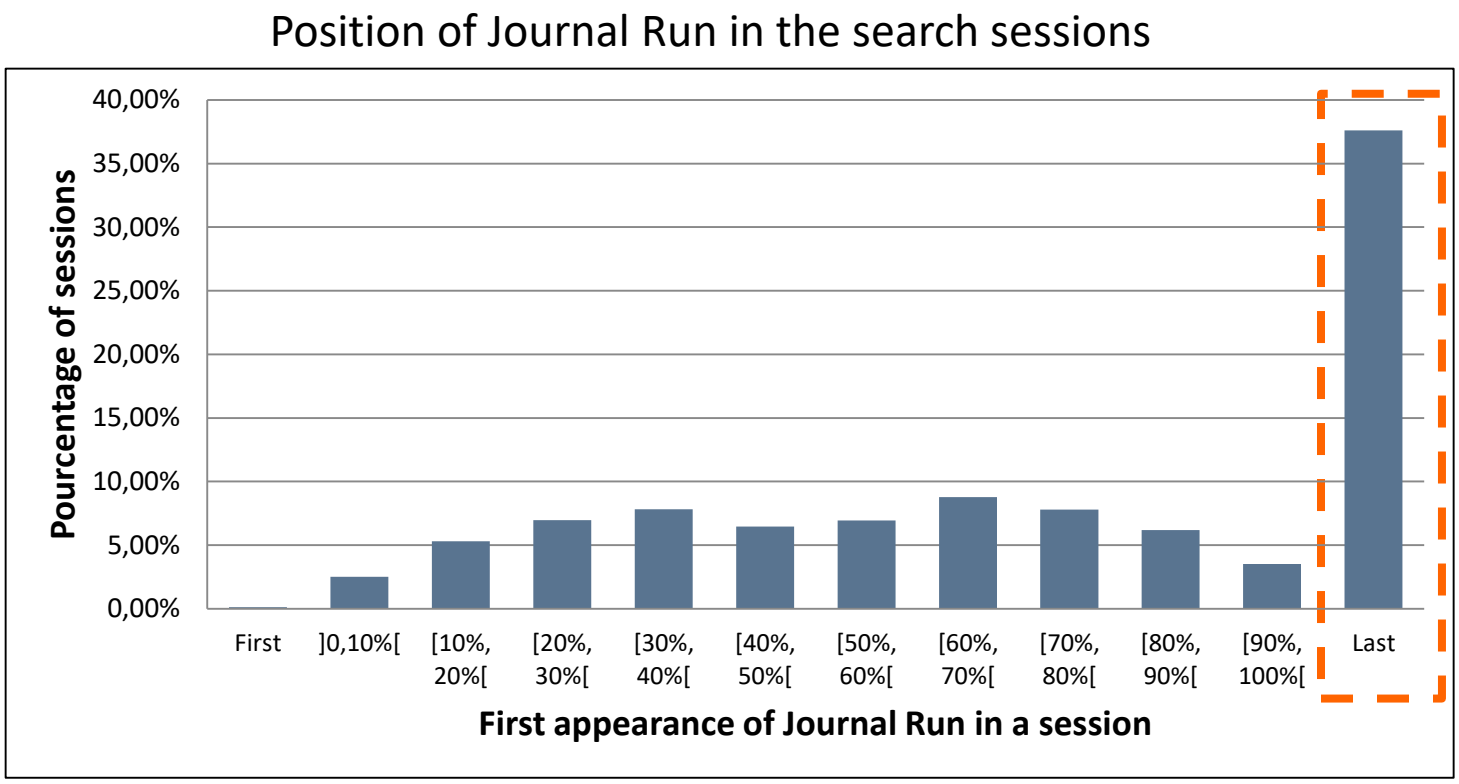
$Gain\ in\ Precision$	**5.32%**
$Usefullness(Strat)$	**55.83%**

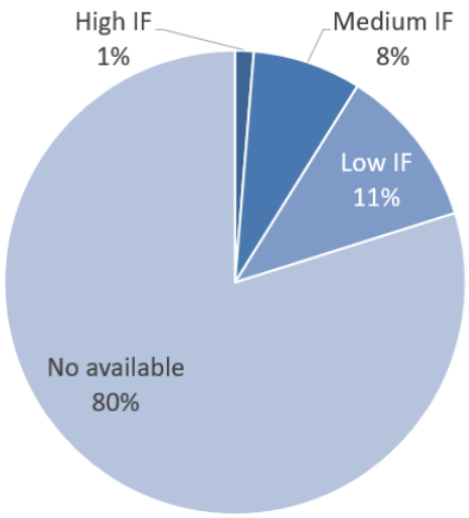
Impacts	Pourcentage of sessions
Positive Impact	27.42%
Neutral Impact	**54.82%**
Non-positive Impact	17.76%

Journal Run Usage



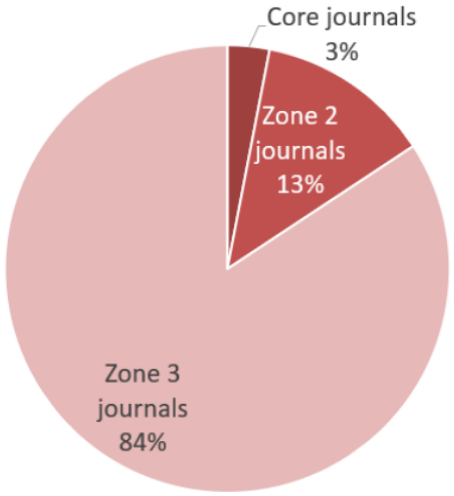
an improvement of the user experience could be achieved by a journal-based re-ranking of results instead of a document-based one.

Journals Categorization



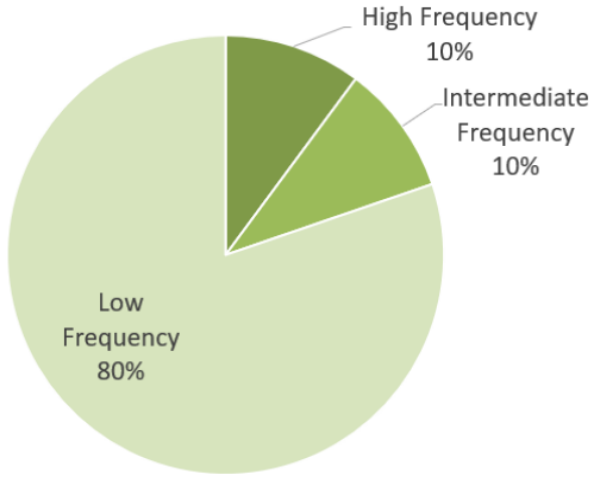
(a) Categorization of journals according to the Impact Factor

High : IF ≥ 3
Medium : 1 ≤ IF < 3
Low : IF < 1



(b) Categorization of journals according to Bardford Zones

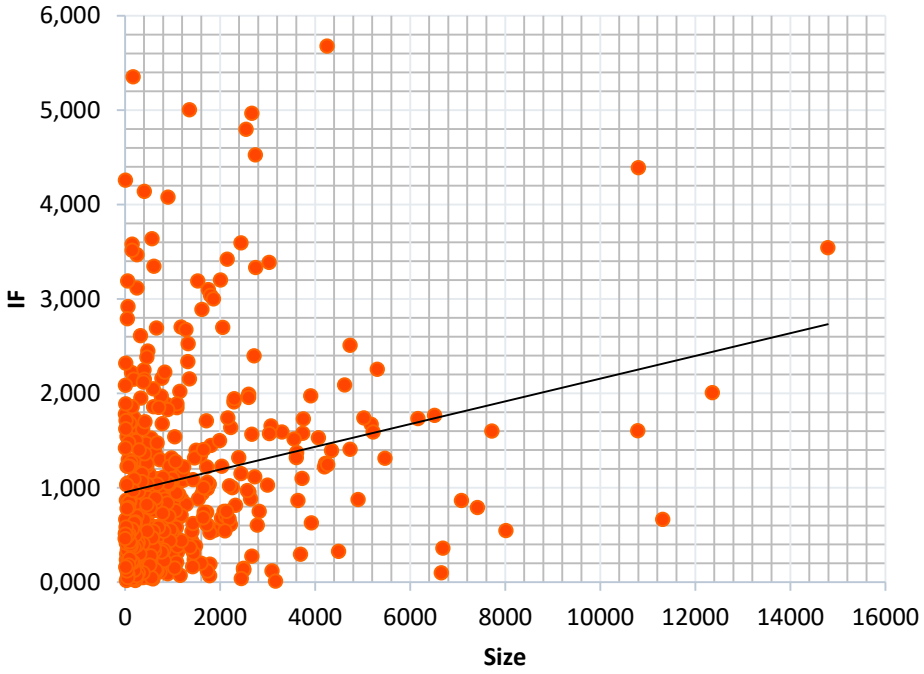
Cumulative distribution
- Core
- Zone 2
- Zone 3

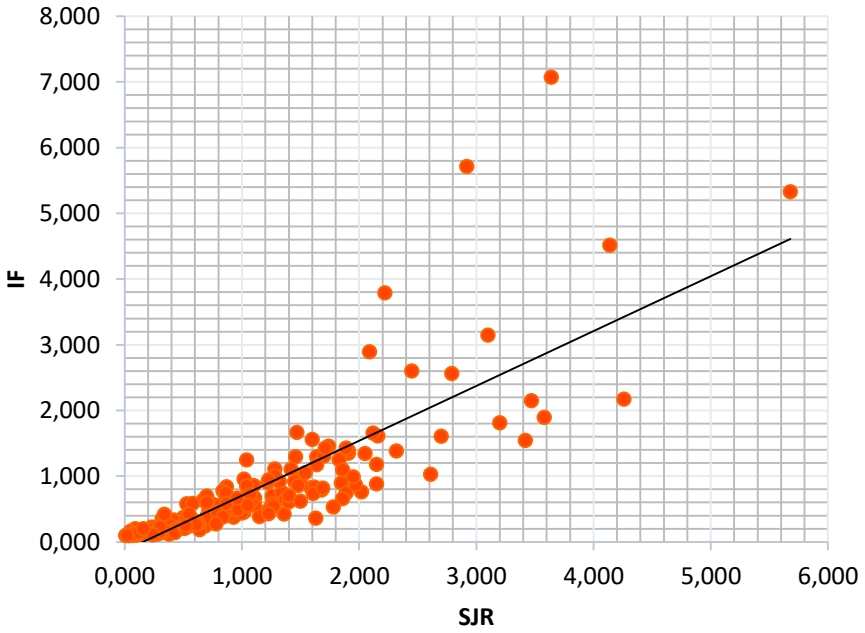


(c) Categorization of journals according to the frequency of usage

High : f ≥ 50
Intermediate: 20 ≤ f < 50
Low : f < 20

Indicators' comparison

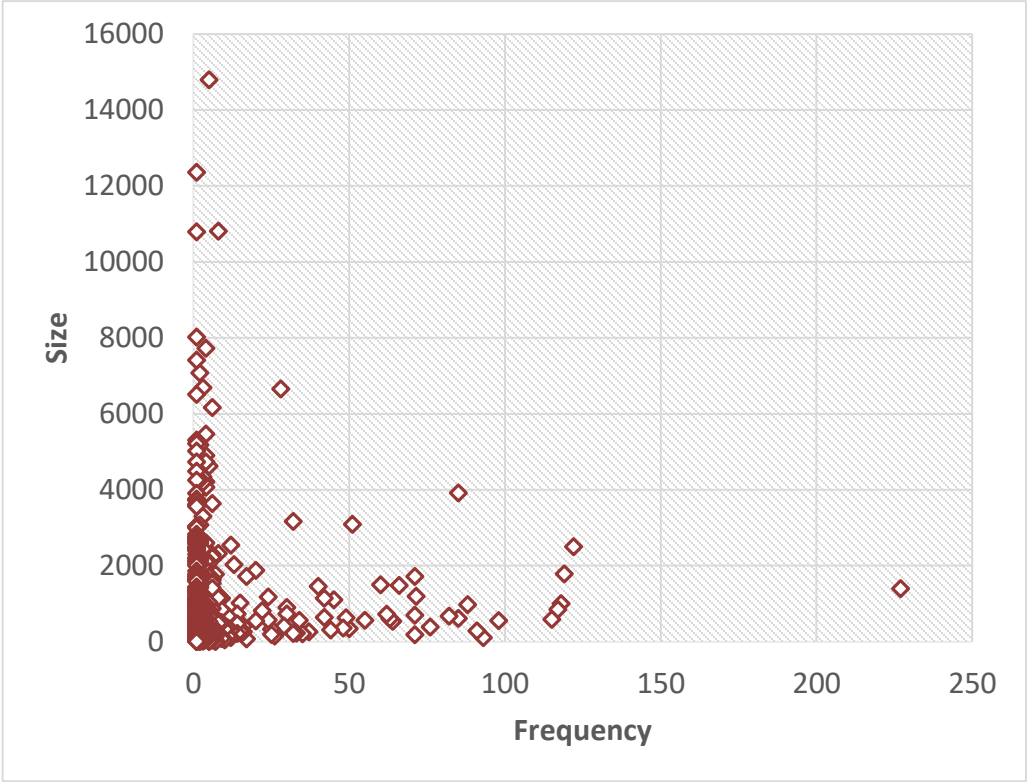




Two indicators from a same source have a strong correlation

Frequency vs Size

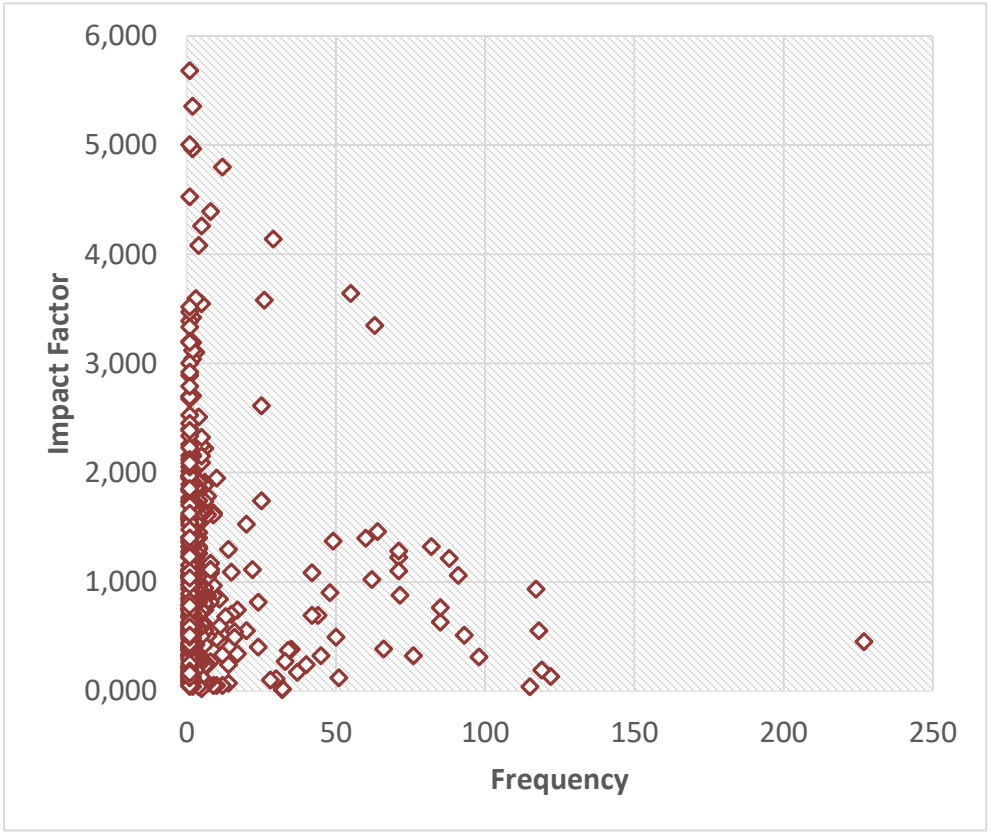
- No significant impact
- Very weak linear relationship
- **R = 0.223**



Frequency vs Impact Factor

- Users are not **influenced** by the impact factor of the journals
  - no linear relationship with **R = –0.07**

- 3.82% of the frequently used journals have a high IF
- 22.24% have a medium IF
- 33.00% have a low IF and
- 40.93% are without IF



"American Journal of Psychiatry" : IF = 5.68, Frequency = 1

Summary of our findings

- Distribution of journals in terms of size (Bradford zones), frequency and metrics (IF).
- Impact of the journal run using the presence of positive actions (adding to favorites, exporting a citation) before and after using this stratagem.
- The impact factor and the coreness are **not criteria** that affect the journal run.
- Similar indicators from the same source (such as IF and SJR) correlate better than indicators from different sources (such as IF and size)

Conclusion and Future Work

- Studying the user behavior : enhance the user-system interactions and lead to more useful academic search engines
- *Journal Run* stratagem in sowiport digital library*
- Analysis of the user behavior towards Journal Run (frequency, stage of use, impact on sessions)
- Examined the impact of journal reputation and size on the usage of journals
- Future Work
  - Similar patterns can be observed in other domains, e.g. Natural Sciences
  - The users' level of expertise: impact on search behavior (e.g. students, scientists, professors...)
  - User studies: compare user feedback with the findings of this study.

* https://git.gesis.org/amur/SUSS-16-17/

Thank you

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