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

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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
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.

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Measures

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

- \( \text{Number of positive actions} \)

- \( \text{Total number of actions} \)

\( \{P\} : \) 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_multipleFavorites.

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

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Measures

- \( \text{Precision}(\text{Strat})_b = \frac{|\text{Pos} \in \{P\}|}{|I|}_b \)
  - Number of positive actions
  - Total number of actions

- \( \text{Precision}(\text{Strat})_a = \frac{|\text{Pos} \in \{P\}|}{|I|}_a \)
  - before
  - after

- \( \text{Gain} = \text{Precision}(\text{Strat})_a - \text{Precision}(\text{Strat})_b \)

- \( \text{Usefulness}(\text{Strat}) = \frac{|S_{\text{Strat}}^+|}{|S_{\text{Strat}}|} \)
  - 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

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<th>Value</th>
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<th>Impacts</th>
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<td>Positive Impact</td>
<td>27.42%</td>
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<td>Neutral Impact</td>
<td>54.82%</td>
</tr>
<tr>
<td>Non-positive Impact</td>
<td>17.76%</td>
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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
- No available: 80%

(b) Categorization of journals according to Bradford Zones
- Core journals: 3%
- Zone 2 journals: 13%
- Zone 3 journals: 84%

(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
- No significant impact
- Very weak linear relationship
- $R = 0.223$
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