Editor + Reviewer Comments:

Dear [Authors]:

Thank you for your submission to Seismica. As Open Science editor, I was particularly excited to see your work come through, and welcome such a focus on reproducibility in our field. I apologize for the longer than expected review period. I have now received two peer review reports for your manuscript. I hope you will find the reviews to be thoughtful, helpful and thorough. Both reviewers found your work to be interesting and relevant for publication in Seismica. However, they also suggest that revisions are needed before publication, and I agree with their assessment.

You will find reviewer comments and edits along with this message. I will add my own thoughts below and highlight a few themes that are common between the reviewers.

1. Terminology - Reliability, repeatability, reproducibility

There is not yet a consensus both within fields and across scientific disciplines regarding definitions of reproducibility or replicability. In Geophysics and Earth Sciences more broadly, these definitions have not been applied in the same way they are in other fields, but your paper is a good opportunity to solidify these definitions as they apply to Geophysics, in particular. I have not heard reliability nor repeatability used formally in this way. I believe this would be a good opportunity to apply more commonly used terms to Geophysics, and explicitly define them within your introduction. Clarity and consistency are key to applying these terms.

Reviewer A recommends the Turing Way and I'll second that resource (as well as the other articles mentioned) for consultation.

Note also Reviewer A's request for clarification of the use and importance of software and code in both title and introduction (and later in results).

2. Systematic Reviews

Please note Reviewer B's comments regarding the process for a Systematic Review.

3. Search Results/Methods

Both reviewers offer comments related to search methodology. Consider suggestions for alternative keywords and terms apart from reliability.

Reviewer A offers some comments about the scoring methodology. I do not want to suggest more revisions than required, but you might take a look at the "TOP guidelines" as a comprehensive means of reviewing journal policies. You could apply TOP in the interests of reproducibility (https://www.cos.io/initiatives/top-guidelines), specifically the categories of citation standards, data transparency, analytic methods (code), or just consider this as you revise and/or respond to questions regarding scoring.

4. Consideration of data, code and software

The paper is strongest in its analysis of data availability, but with the mentions of code and software, make sure to carry that analysis through. Note Reviewer A's related comments regarding software and code.

I do want to note that I appreciate your findings (lines 252 and 304-305) regarding the availability of data/code in research with economic applications, and the availability of original data vs. derived/re-used data. I think these findings are both noteworthy.

Please reflect on author contributions, particularly as you make revisions, and note that author contributions should include a data role (and this might be addressed with Reviewer A's comment regarding scoring methodology).

When you are ready to resubmit the revised version of your manuscript, please upload:

- A 'cleaned' version of the revised manuscript, without any markup/changes highlighted.
- A pdf version of the revised manuscript clearly highlighting changes/markup/edits.
- A 'response-to-reviewers' letter that shows your response to each of the reviewers' points, together with a summary of the resulting changes made to the manuscript.

Please note that Seismica does not have any strict deadlines for submitting revisions, but it is likely to be in your best interest to submit these fairly promptly. Please let me know of any expected delays.

Once I have read your revised manuscript and rebuttal, I will then decide whether the manuscript either needs to be sent to reviewers again, requires further minor changes, or can be accepted.

I wish you the best with working on the revisions. Please don't hesitate to contact me with any questions or comments about your submission, or if you have any feedback about your experience with Seismica.

Kind regards,

Sam Teplitzky

Reviewer A Comments

- Daniel Nüst

For author and editor

[Preprint available on EarthArXiv (https://eartharxiv.org/repository/view/4711/) with very good cover page.]

Title and abstract

The submission has an appropriate title and good abstract, giving relevant results instead of teasers on the content.

The abstract could mention the number of journals in the dataset.

A possible improvement would be to touch on the most important result for all aspects mentioned in the title (code, software, data) - the abstract does not give a result for code/software, the final sentence also seems to focus on data.

Also, the distinction between "code" and "software" in the title is not clear, maybe "software" suffices?

Line 36: Possibly "..articles include a data .." ?

Line 38: Don't they also work towards improving software availability - if not: noteworthy!

Introduction/Reproducibility

I strongly suggest to briefly introduce the used terms and reconsider using "repeatability", as it is not broadly used in the literature on reproducibility and replicability, and therefore might confuse readers.

Possible helpful resources to use terminology in line with the prevalent use: https://the-turing-way.netlify.app/reproducible-research/overview/overview-definitions.html and https://doi.org/10.48550/arXiv.1802.03311 as well as Plesser 2018, which you have.

Again, a brief definition of how you define "code" vs. "software" is needed.

In terms of related work, I would like to point you to https://doi.org/10.1080/13658816.2018.1508687 (disclosure: a former colleague of mine) which might have valuable findings or helpful context... correction, rather remind you of the work since you do cite it in the collaborating groups earlier work (Stevenson et al.).

Line 75: "There has been no empirical consideration ..." - I suggest to, again, mention geophysics in this sentence, just to be crystal clear. There have been numerous similar studies as you are well aware, and I would suggest to point the audience of this article to a couple of the established works from other domains (besided Tedersoo) to make clear that the type of study you do is sound/established; later in the recommendations you do draw from this kind of literature from other domains/metascience.

Line 103: Gomes on biological science - do you consider these barriers transferable to geophysics?

Methods, Chapter "Review Methodology"

Line 126: Probably should be "does NOT use the SJR as a measure" ?

Regarding the Subject Review Protocol: this might be a limitation of the used software, but I see a limitation in the used search terms. Have you considered searching articles with the word stems reprod* and replic* to also catch reproduce, reproduction, replicate, and replication?

Related to that in line 121 you write ".. to sub sample the journal population" but then you take the top 100 ranked journals - I suggest to rephrase and not use "sample", which can be misinterpreted as "randomly sample".

Line 144ff. re. the scoring: Can you please elaborate how the scoring was done? Did you work for a concensus among all authors, or did one contributor do the scoring for all policies? The contributions statement suggests BA and AI likely collaborated on the scoring but others did not confirm it. You do mention the possible subjectivity, which is not an issue, but I'd strongly suggest to be transparent and be clear about the degree of subjectivity applying here.

Re. journal policy criteria (Table 1): Can you clarify why you did not include a "Guidance to include software/code in a repository", which does exist for data? Same for "Guidance to include software in supplementary materials".

Re. Table 3, Score 4 and related to discussion lines 297ff.: You could point out that supplementary files are not considered to be a part of the "record" of an article, and therefore, for example, if a journal moves from one publisher to the other, supplementary files can easily be lost. I fully agree that the wording here is tricky, you speak about "supplementary data tables" for your own CSV files, which a deposited in a repository in a citable way, not in the "supplementary materials" of the journal website.

Re. Figure 2, the sectors of the diagramme for "no mention" have the same size for 10% in a) and 5% in b). I don't think that is possible. Also, you introduce the scoring system above, so it would be helpful to also show the scores here, not only the names of the scores. In terms of readability and comparability, I would favour a stacke bar chart here.

It is unclear why you choose those two variables for the plot, and not include plots for all of the variables - can you clarify that in the text?

Line 250: Suggest to stick to "score" and not use "categories 4-6".

Re. Table 4: Please explain in the caption which scores the counts are based on ("Yes" = score 1, "No" = any other score - right?).

Chapter "Discussions"

Re. "Perceived Barriers": I find this part of the discussion lacking a direct connection with the collected data. Did you annotate/code the reason "data size" for scores of 5 or 6, or did you note when large data did still receive a score of 1? I do not think the statements in section 5.1 are wrong, but they are a general discussion based on existing literate and reasonable assumptions, unlike othe subsections in the discussion that have a clearer connection with the results.

Line 293: Please consider a counter argument: for publishers, ambiguity in the guidelines are beneficial from a commercial point of view because they allow them to publish more articles (higher standards would lead some authors elsewhere).

Line 315: A misplaced "do"? Please check.

Line 331: ".. such statements" - do you mean data and software availability statements?

Re. section 5.3: There is only sparse data on code availability - could you please discuss this as a result, or explain why code is not discussed here?

Line 335ff: The editorial board and office is reponsible for ... regarding data, but not for code? Why is the reviewer responsible to check both data and code?

Line 345ff: I feel like the lack of an extra scoring category for code/software is a missed opportunity, and here it becomes quite clear: what are prevalent programmign languages or softwares used? Are these open and free, cited with version (score 1) or are they common but not open (MS Excel?) ? Possibly an avenue for future research.

Re. the limitations: The searches undertaken as such are not reproducible with the given information: when did you conduct them using which search URLs, for example? I agree with the limitation, but I think you could also be more transparent. For example, provide an annex with URLs (possible to the Web Archive) to the journal policy pages that were scored or include these URLs in the data.

Line 375: Missign a full stop after "is accessible" and before "Examples"?

Line 379ff: That is why dataset access should be scripted, if possible, or if not then have extensive manual instructions. If possible, can you clarify if a "score 1" or "2" would enable a scripted access, e.g., a direct download URL and then a specific file name in the retrieved archive?

Supplementary Data

Data is available at https://doi.org/10.25405/data.ncl.21564381 and the CSV files seem to contain the information advertised in the manuscript.

Line 410: Could you please elaborate in the article why you chose to anonymise this data?

Possible issues with DataTable4: values in column A should be replicated (publishers) should be replicated, also, the double column names can complicate the loading of the data in some tools, I suggest to drop the categories in line 1 (line 2 column names are already unique) or pre-/append categories to the names.

Possible issues with DataTable5: values in column B should be replicated, typo in column name "CODE AVALIBILITY", and column I has no column name.

With a limited data size as from your survey, I suggest to open the CSV files in a simple text editor and see if it still makes sense and is readable. For example, DataTable5_...csv also ends with a bunch of empty lines that can, if missed by others loading the data, lead to wrong results.

For all Tables and Figures in the manuscript, please mention the data file that they are based on so that readers can easily jump from your presentation to the actual data.

Software is not made available. Even if you created plots with a commercial prodct, would you consider adding the .xlsx file to the data deposit? It would be great to have access to that, too, and confirm that the data matches the figures (even if the data volume is small).

Conclusions

Please revisit the conclusions statements where you only mention data (e.g., line 392) and consider where you can rightfully also add "code/software".

Review summary and recommendation

I think the findings are interesting and well connected to the discipline at hand, e.g., when discussing the data with respect to a background in economic applications.

The method is sound, though few details can be explained a bit more elaboratively.

I find parts of the discussion lack a clear connection with the collected data, and that there is an imbalance between the prominence of "code and software" in title and abstact compared to the fact that no scoring results on the article level for code availability was shown or discussed - this should be revised. But overall the manuscript presents adequate conclusions given the collected information and largely connects with the relevant related literature.

The article should briefly introduce or clearly name existing definitions for important terms (repro.., code vs. software).

The manuscript must connect presentation (Tables, Figures) better to the underlying data, and, for the sake of reproducibility, must make sure the shared data is better formatted and should also share the file used to create the visualisations (if not switching to create visualisations with a script).

The manuscript supports similar previous findings in the context of reproducibility and hopefully is a building block towards a change in practices as a new readership learns about these work's findings.

The manuscript's recommendations are hopefully welcome in your discipline and communities and contribute to the discourse on Openness. The manuscript does not require major revisions in my view, as the collected data and presentation of results is sound and adequate. Thank you for a good read!

Decision: Return to author - Minor revisions

Reviewer B:

- Wynn Tranfield

Overall, the topic is interesting. A couple major issues stand out.

First, there is consistent confusion surrounding the use of reliability, repeatability, and replicability, which ought to be addressed. Reliability and repeatability are mentioned in the abstract, reproducibility and reliability are searched as part of the limited title search, and reproducibility and repeatability are used to label Figure 1, contrary to textual explanations.

The analysis was to consist of three parts. There are some concerns with each of the three components:

• *A systematic review of the extent to which reproducibility in*

geophysics is explored in the literature

The analysis is not a systematic review. The search was conducted quickly, only using two terms restricted to the title with the goal of identifying studies related to reproducibility in geophysics. If the authors wanted the search itself to be more robust, I would suggest consulting a librarian and building a string of more terms. For example, even [reproduc* OR reliab*] would return titles with variations on either concept. If the authors would like to leave the search as-is, that's fine, but using the term "systematic review" or "approach akin to a systematic review" is misleading. The term "mapping review" may be more accurate, but I would consider it a limited literature review. Crucially, if the authors want this study to be reproducible, an exact search string should be included in an appendix.

There was also no discussion about the actual relevancy of articles returned in the search using those terms. What proportion of articles with the term "reliability" in the title actually related to reproducibility in the field of geophysics? The article mentioned that The Bulletin of Earthquake Engineering has published the most articles with reliability in the title, but a quick search of the journal indicated most of those articles with reliability in the title are about structural or seismic reliability, not reproducibility in the field. If the search itself isn't turning up relevant articles, we're not learning anything meaningful by the analysis.

• *A review of journal's policies on the requirements for providing*

code, software, and data for submission

The article mentions you evaluate a list of 20 geophysical journal titles, however, your supplementary data (table 4) lists 22 journals. Also, it's unclear if one individual was responsible for scoring journal requirements, or if several scored and compared results. Scoring results appear to align with journal publisher.

• *For a random selection of articles examines the availability of code, software, and data*

How were these articles randomly selected? The data (table 5) doesn't contain any DOIs so the reader can't identify which articles were analyzed.

Finally, the conclusion seems rushed and contains statistics not clearly supported by data that has already been introduced. It could use some editing to draw the three analyses together. I don't know what was gained by the first (literature review) component of the study considering the questionable relevancy of search results.

Response to Reviews

Specific Responses (all line numbers refer to the marked up manuscript – with 'All Markup' shown)

1. Terminology - Reliability, repeatability, reproducibility

Excellent suggestion. Definitions added. Please see lines 75 -95, and also Figure 1.

2. Systematic Reviews - comments regarding the process for a Systematic Review.

We agree that this is not a 'systematic review'. We have changed wording according. Please see section 3.1 and lines 180 – 197.

3. Search Results/Methods

We have added additional keywords. Please see Table 1.

4. Scoring methodology and "TOP guidelines"

We have included reference to the TOP (lines 117 – 119). We have opted to maintain our current scoring. We consider that it is reproducible as we have detailed how the scores related to the criteria (the same way as the TOPS does). We have noted in our discussion that currently TOPS does not include any geophysical journals (lines 382 – 384)

5. Consideration of data, code and software

We have expanded the analysis of 'software'. See lines added between 345 – 350 and also section 5.4 in discussion

6. Author contributions, particularly as you make revisions, and note that author contributions should include a data role

Please see updated contributions on page 1.

Reviewer A:

7. The abstract could mention the number of journals in the dataset.

Added line 35

8. A possible improvement would be to touch on the most important result for all aspects mentioned in the title.

Added – line 43

9. Also, the distinction between "code" and "software" in the title is not clear, maybe "software" suffices?

Change to 'software' in title with clarification over the use of the term 'software' added to methodology – see lines 225 – 229

10. Line 36: Possibly "..articles include a data .." ?

Changed

11. Suggest to briefly introduce the used terms and reconsider using "repeatability", as it is not broadly used in the literature on reproducibility and replicability, and therefore might confuse readers.

Definitions added. Please see lines 75 -95, and also Figure 1.

12. terminology in line with the prevalent use: https://the-turing-way.netlify.app/reproducible-research/overview/overview-definitions.html

Added reference – see line 81 and 83

13. a brief definition of how you define "code" vs. "software" is needed.

see lines 225 – 229

14. related work, I would like to point you to https://doi.org/10.1080/13658816.2018.1508687

Reference added – line 104

15. Line 75: "There has been no empirical consideration ..." - I suggest to, again, mention geophysics in this sentence, just to be crystal clear.

See lines 105 – 107 – specifically mention geophysics

16. Line 103: Gomes on biological science - do you consider these barriers transferable to geophysics?

Added additional wording to make link to other disciplines and research more broadly – see lines 153 - 155.

17. Line 126: Probably should be "does NOT use the SJR as a measure" ?

Corrected

18. Regarding the Subject Review Protocol: this might be a limitation of the used software, but I see a limitation in the used search terms. Have you considered searching articles with the word stems reprod* and replic* to also catch reproduce, reproduction, replicate, and replication?

Changed search strings – see Table 1.

19. Related to that in line 121 you write ".. to sub sample the journal population" but then you take the top 100 ranked journals - I suggest to rephrase and not use "sample", which can be misinterpreted as "randomly sample".

Removed reference to sub sampling

20. Scoring: Can you please elaborate how the scoring was done? Did you work for a concensus among all authors, or did one contributor do the scoring for all policies? The contributions statement suggests BA and AI likely collaborated on the scoring but others did not confirm it. You do mention the possible subjectivity, which is not an issue, but I'd strongly suggest to be transparent and be clear about the degree of subjectivity applying here.

We have clarified the methodology and the scoring – see lines 204 -205. This is a similar approach to that used by COS and TOPS where individuals submit their evaluation.

21. Re. journal policy criteria (Table 1): Can you clarify why you did not include a "Guidance to include software/code in a repository", which does exist for data? Same for "Guidance to include software in supplementary materials".

We found that the lack of any consistency across journals for where to report software used made the information from these searches both difficult to carry out and unreliable to interpret.

22. Re. Table 3, Score 4 and related to discussion lines 297ff.: You could point out that supplementary files are not considered to be a part of the "record" of an article, and therefore, for example, if a journal moves from one publisher to the other, supplementary files can easily be lost. I fully agree that the wording here is tricky, you speak about "supplementary data tables" for your own CSV files, which a deposited in a repository in a citable way, not in the "supplementary materials" of the journal website.

We have added additional wording – see lines 405 to 409

23. Re. Figure 2, the sectors of the diagramme for "no mention" have the same size for 10% in a) and 5% in b). I don't think that is possible. Also, you introduce the scoring system above, so it would be helpful to also show the scores here, not only the names of the scores. In terms of readability and comparability, I would favour a stacke bar chart here.

Changed to stack bar. Include categories at bottom and show scores in legend. See Figure 5.

24. It is unclear why you choose those two variables for the plot, and not include plots for all of the variables - can you clarify that in the text?

Figure 5 now shows all variables.

25. Line 250: Suggest to stick to "score" and not use "categories 4-6".

Done

26. Re. Table 4: Please explain in the caption which scores the counts are based on ("Yes" = score 1, "No" = any other score - right?).

Clarified in Table caption.

27. Re. "Perceived Barriers": I find this part of the discussion lacking a direct connection with the collected data. Did you annotate/code the reason "data size" for scores of 5 or 6, or did you note when large data did still receive a score of 1? I do not think the statements in section 5.1 are wrong, but they are a general discussion based on existing literate and reasonable assumptions, unlike othe subsections in the discussion that have a clearer connection with the results.

We agree with the reviewer that these are more generalised. We do not have any quantitative data on these aspects. We have moved this section to the end of the discuss, but have retained it as we still think (as the reviewer indicates) that this is relevant. We have also revised the first part of the discussion to focus on our results – see first paragraph of discussion.

28. Line 293: Please consider a counter argument: for publishers, ambiguity in the guidelines are beneficial from a commercial point of view because they allow them to publish more articles (higher standards would lead some authors elsewhere).

Added this – see lines 393 - 396

29. Line 315: A misplaced "do"? Please check.

Corrected

30. Line 331: ".. such statements" - do you mean data and software availability statements?

Clarified

31. Re. section 5.3: There is only sparse data on code availability - could you please discuss this as a result, or explain why code is not discussed here?

As previous we have expanded the analysis of ‘software’. See lines added between 345 – 350 and also section 5.4 in discussion

32. Line 335ff: The editorial board and office is reponsible for ... regarding data, but not for code? Why is the reviewer responsible to check both data and code?

Added in reference to software – line 438.

33. I feel like the lack of an extra scoring category for code/software is a missed opportunity, and here it becomes quite clear: what are prevalent programmign languages or softwares used? Are these open and free, cited with version (score 1) or are they common but not open (MS Excel?) ? Possibly an avenue for future research.

The reviewer makes a good point here. We have gone to the effort to undertake an analysis of software available. To do so we have added text to explain this in the methodology. Rather than adopt a scoring criteria, we have gone through all the sample of the articles are identified the software used and categorised based on its licence. We have discussed the locations where ‘software’ should be reported – see lines 470 – 475

34. Re. the limitations: The searches undertaken as such are not reproducible with the given information: when did you conduct them using which search URLs, for example? I agree with the limitation, but I think you could also be more transparent. For example, provide an annex with URLs (possible to the Web Archive) to the journal policy pages that were scored or include these URLs in the data.

We have provided an expanded description of the search methods used. We now consider that the searches for mapping are reproducible. We have updated the data repository to include scripts to recreate the plots.

35. Line 375: Missign a full stop after "is accessible" and before "Examples"?

Done

36. Line 379ff: That is why dataset access should be scripted, if possible, or if not then have extensive manual instructions. If possible, can you clarify if a "score 1" or "2" would enable a scripted access, e.g., a direct download URL and then a specific file name in the retrieved archive?

Clarified

37. Line 410: Could you please elaborate in the article why you chose to anonymise this data?

We made the decision to anonymise the data as we considered that this review was centred on the field of geophysics rather than highlighting the reproducibility of any individual published piece of work.

38. Possible issues with DataTable4: values in column A should be replicated (publishers) should be replicated, also, the double column names can complicate the loading of the data in some tools, I suggest to drop the categories in line 1 (line 2 column names are already unique) or pre-/append categories to the names.

Resolved

39. Possible issues with DataTable5: values in column B should be replicated, typo in column name "CODE AVALIBILITY", and column I has no column name.

Resolved

40. With a limited data size as from your survey, I suggest to open the CSV files in a simple text editor and see if it still makes sense and is readable. For example, DataTable5_...csv also ends with a bunch of empty lines that can, if missed by others loading the data, lead to wrong results.

Resolved

41. For all Tables and Figures in the manuscript, please mention the data file that they are based on so that readers can easily jump from your presentation to the actual data.

Resolved

42. Software is not made available. Even if you created plots with a commercial prodct, would you consider adding the .xlsx file to the data deposit? It would be great to have access to that, too, and confirm that the data matches the figures (even if the data volume is small).

Resolved. All plots are now created using Python and we have included the scripts to do this. Therefore it is possible to download the data tables and recreate the plots (and the statistics).

43. Please revisit the conclusions statements where you only mention data (e.g., line 392) and consider where you can rightfully also add "code/software".

Done

44. The article should briefly introduce or clearly name existing definitions for important terms (repro.., code vs. software).

Done

45. The manuscript must connect presentation (Tables, Figures) better to the underlying data, and, for the sake of reproducibility, must make sure the shared data is better formatted and should also share the file used to create the visualisations (if not switching to create visualisations with a script).

Done.

Reviewer B:

46. First, there is consistent confusion surrounding the use of reliability, repeatability, and replicability, which ought to be addressed.

Definitions added as mentioned previously.

47. The analysis is not a systematic review. The search was conducted quickly, only using two terms restricted to the title with the goal of identifying studies related to reproducibility in geophysics. If the authors wanted the search itself to be more robust, I would suggest consulting a librarian and building a string of more terms. For example, even [reproduc* OR reliab*] would return titles with variations on either concept. If the authors would like to leave the search as-is, that's fine, but using the term "systematic review" or "approach akin to a systematic review" is misleading. The term "mapping review" may be more accurate, but I would consider it a limited literature review. Crucially, if the authors want this study to be reproducible, an exact search string should be included in an appendix.

We have modified the search terms (see Table 1). We agree this is not a systematic review and termed it a mapping review as suggested. We have also clarified our methodology.

48. There was also no discussion about the actual relevancy of articles returned in the search using those terms. What proportion of articles with the term "reliability" in the title actually related to reproducibility in the field of geophysics? The article mentioned that The Bulletin of Earthquake Engineering has published the most articles with reliability in the title, but a quick search of the journal indicated most of those articles with reliability in the title are about structural or seismic reliability, not reproducibility in the field. If the search itself isn't turning up relevant articles, we're not learning anything meaningful by the analysis.

We have expanded the article to cover reliability as well as reproducivbility – as defined by the Turing Way. We already discuss the limitations of our mapping review in section 5.6. See lines 524 -525.

49. The article mentions you evaluate a list of 20 geophysical journal titles, however, your supplementary data (table 4) lists 22 journals. Also, it's unclear if one individual was responsible for scoring journal requirements, or if several scored and compared results. Scoring results appear to align with journal publisher.

We have updated the table 4. Our original table included 'Review journals' which we excluded from the analysis. We have also clarified the scoring method (see lines 204 – 205).

50. How were these articles randomly selected? The data (table 5) doesn't contain any DOIs so the reader can't identify which articles were analysed.

We have updated the methodology -and changed the wording to not refer to it as 'random'. See lines 215 – 218. See explanation above for why articles are anonymised

51. The conclusion seems rushed and contains statistics not clearly supported by data that has already been introduced. It could use some editing to draw the three analyses together. I don't know what was gained by the first (literature review) component of the study considering the questionable relevancy of search results.

We have restricted the discussion and emphasised the significance of our findings.