

Review of: "Science desperately needs disruptive innovation"

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Potential competing interests: No potential competing interests to declare.

Comments on "Science desperately needs disruptive innovation"

This paper proposes a new index to measure the disruption innovation. The existing index that is based on the number of citations, though broadly applied in scientific fields, has significant disadvantage to measure the innovation activities. Alternatively, authors use the innovation investments to construct a new index for measuring the innovation activities. This is an interesting topic, but needs more revisions before publication.

Major comments:

1. In section 2, it is unclear for the meaning of each part of math steps. More detailed notifications on each step of the index construction are required. For example, explain why the disruption pattern index D_{pi} can be calculated as the intertemporal difference of DI . Please make more notes on each formula.
2. Can you show some real data on the disruption innovation timing line? It's important to compare the real data with the disruption innovation index constructed in this paper to ensure the robustness of the index. For example, during the peak of the disruption innovation described by the index, there were several famous invents or breakthroughs in the real world.
3. Whether is the disruption index applied to different countries? If so, how can you deal with the change of exchange rate when measuring the index with different currencies. Will you unify the currency in U.S. dollars? Discuss this issue.
4. Can the disruption index be applied to all industries? Discuss the heterogeneity and effectiveness among industries.

Minor comments:

1. In the first paragraph, the words Incremental Progression are in bold and italic, while the word disruption being in bold. Please check the format.
2. In section 2.3, it is unclear about the meaning of the four stages, i.e., Exploration, Exploitation, Plateau, and Exhaustion. Please make the notation on these stages.
3. In the first paragraph of section 3, there is no space in the word 'The hi-tech'.
4. The title for figure 3 is too long. Please put the rest sentences of the title as the figure note. Moreover, unify the format of the figure name. The title of figure 3 is in bold, but other figures are not.
5. In the second paragraph of section 4.1, the word 'such' is too close to the word 'Causal Logic'. In the fourth paragraph, the word 'Micro-economic' is in half bold. Some words are in bold and italic, but others are not. Please

double-check all these typos.

6. Author et al. (2023) is cited in the manuscript, but doesn't show up in the reference section.