

Analysis of trends in publications and citations of papers on nuclear science and technology field in Korea: Focusing on the Scopus Data Base

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1. Introduction

As the media for research process and results, papers play an important role in the evaluation of research projects. While the traditional methods for evaluation of research results have been focused on quantity aspects, the implication of quality aspect is increasingly recognized. Most national labs have begun to shift from quantity to quality in their criteria for overall evaluation of research results. It is therefore desired to maximize the quality level of the research papers for which the trends in citation as quality indicator could be analyzed as well as the quantity aspect. This paper looks at the trends in the number of citation and papers as the indicators of quality and quantify, as drawn from Scopus Data Base. It also suggest top 5 Science Citation Index(Expanded) journals in terms of increase rate in both number of papers and citations. The purpose is to compare them with top 20 Science Citation Index(Expanded) journals in which Korea Atomic Energy Research researchers have published their papers in the past 10 years from 2005 to 2014 were submitted.

2. Analysis and Suggestion

2.1 Analysis of the journals belonging to subject the Nuclear Energy and Engineering field in Scopus Data Base.

Scopus provides a Data Base with such bibliographic information as index, abstracts, reference, number of citations for publications (22,245) and books (87,105) from over 5,000 publishers in the world. It is used a tool for quality evaluation of a variety of research results.

In the selection of papers in the area of Nuclear Energy and Engineering journals with top 20 Scopus Data Base in which Korea Atomic Energy Research Institute researchers have published for the period 10 years from 2005 to 2014 were addressed.

2.2. Analysis scope and results

In consideration of fair analysis, some 50 journals in the area of Nuclear Energy and Engineering have been selected for the starting year of 2005, excluding journals before that timeframe, thus leaving only 35 journals for analysis. The study analyzed the yearly rate of increase to observe the trends by graphics, based on the data on the number of papers and citations for 2005-2014 in the 35 journals selected. The analysis revealed there are 24 Science Citation Index(Expanded) journals among the 35 journals in the area of Nuclear Energy and Engineering.

It also revealed the Impact Factor ranged from 0.088 to 4.3.

The top 5 journals of the Science Citation Index(Expanded) in terms of the number of papers and citations among the 35 journal are listed in the Table I and Table II.

Table I: Top 5 journals of the SCI(E) in terms of the number of papers among the 35 journal

| ISSN | Journal Name | Annual Growth rate of papers |
|-----------|------------------------------|------------------------------|
| 0033-8451 | Radioprotection | 15.6% |
| 0164-0313 | Journal of Fusion Energy | 13.5% |
| 0306-4549 | Annals of Nuclear Energy | 13.4% |
| 0149-1970 | Progress in Nuclear Energy | 13.2% |
| 0022-3115 | Journal of Nuclear Materials | 12.9% |

Table II: Top 5 journals of the SCI(E) in terms of the number of citations among the 35 journal

| ISSN | Journal Name | Annual Growth rate of citations |
|-----------|---|---------------------------------|
| 0149-1970 | Progress in Nuclear Energy | 28.7% |
| 0164-0313 | Journal of Fusion Energy | 27.4% |
| 0144-5987 | Energy Exploration and Exploitation | 24.5% |
| 0932-3902 | Kernteknik | 22.5% |
| 0742-4795 | Journal of Engineering for Gas Turbines and Power | 22.1% |

As shown by the tables above, the top journals both in terms of numbers papers and citations are Progress in Energy and Journal of Fusion Energy.

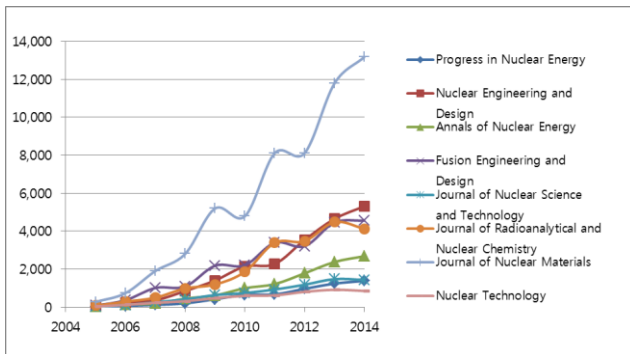


Fig.1. The trends in the increase and decrease in the number citations in the 8 journals

Fig.1. Shows the trends in the increase and decrease in the number citations in the 8 journals that overlapped with top 20 journals in which Korea Atomic Energy Research Institute researchers published papers for 10 years from 2005 to 2014, among the 35 journals in the area of Nuclear Energy and Engineering.

As shown by the Figure, the number of paper citations has been in steady increase, but with partly ripples for some years. It also shows there are only 8 journals in the trends among the top 20 journals for the period of 2005-2014 in the total of 35 journals the area of Nuclear Energy and Engineering.

3. Conclusion

This paper looked at the trends in the number of papers and citations as an indicator of quality of the research papers in the area of Nuclear Energy and Engineering which is in fact a limitation to the key subject area, not covering the whole nuclear science and technology.

The data on the top 20 journals in the Science Citation Index(Expanded) for 10 years from 2005 to 2014 indicated the first and second positions for Korean papers were occupied by the Korean journals, which implied the need for globalization of target journals to publish Korean papers.

Further study is required for comparative analysis of the factors impacting on the number of papers and citations, which is the criteria for quality evaluation of papers, in other area than the Nuclear Energy and Engineering to which this study was limited.

REFERENCES

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