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A Systematic Way for Selecting Suitable Journal for Publishing Manuscripts

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ABSTRACT

Selecting suitable journals for publishing manuscripts for publication is one of the most essential processes before publishing any manuscript. Finding the relevant journal is a key factor which proves one's work valuable to the entire society. The final output and the performance of one's research is ultimately validated only if the paper is published in a right journal. One of the greatest mistakes that the authors make is submitting their manuscript in an unsuitable journal. The author should also consider all the six parameters such as Scope, Cite Score, Impact factor, Acceptance Rate, Time to first decision and Time to publication.

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1 Abstract continued

Some authors only consider the acceptance rate and the time to first decision and publication as their main criteria. The author should consider all these parameters while publishing the paper. An algorithm named DEAR is used in the work which can consider all these parameters to find the right journal among the various alternatives. This DEAR method serves as a user-friendly method in selecting the best journal.

2 Introduction

Journal selection is an essential process in publishing any article. Publishing in relevant journal makes a work more valuable. Hence selecting the best journal is of immense importance. Rejections may occur if the submitted paper is out of scope of the journal. To avoid such rejections, a systematic approach called DEAR algorithm is used in this paper to find the proper journal. Despite the vast availability of opportunities in publishing a paper, the quality of each journal must be analyzed. The quality of a journal is predetermined by several key factors such as cite score, impact factor, etc. They are to form the objective and alternate matrix based on which the DEAR Algorithm produces its results. The selection of the best journal is carried out in an efficient manner and the results are ranked in a comprehensible way.

3 LITERATURE REVIEW

Brandsma T W et. al., (2002) in their paper provided an efficient method of finding the required journal of interest. This journal finder is a broader program that makes every individual user to connect directly to their required journal in an electronic way irrespective of their location. Users can find and format the required title and can gain information about the specific title to be published.

Demirkan et. al, (2021) in their paper implemented an efficient way to find the recommended journal for TRIDIZN index which has an increasing number of articles. This paper focuses on reducing the time required for using a journal recommended system. The data of the respective paper is collected, and a suitable journal is provided from TRDIZIN.

Ellington B (2008) in his paper examines the effectiveness and efficiency of the journal finder interface that supplies access not only to the students but also to the faculty and the researchers. It illustrates that the design quality must be evaluated to meet the user's requirements. The user experience is also enhanced by supplying a list of recommendations. In this paper, the usage of journal finder which is a vital service for online publications for the users is inferred.

Kang N et. al., (2015) in their paper focused on recommending journals for paper using the Elsevier Journal Finder. It is a paper that is specific to Elsevier and its recommendations that is a result of a search based on the title and abstract. Choice of a major Domain is suggested to be selected and the search for the right journals is started.

Wen and Li (2009) in their paper focused on Data Envelopment Analysis (DEA), which is a remarkably effective method. This paper presents the traditional DEA Model to a fuzzy framework according to the credibility measure. The hybrid algorithm which is combined with genetic algorithm and fuzzy simulation is presented in their paper to solve the fuzzy model. The fuzzy DEA model is illustrated using a numerical example.

Carrillo m and Jesus M. Jorge (2016) in their paper used a common weight DEA under multi-objective optimization for producing a ranking method to select the best from the available alternatives. They have supplied various numerical examples and computational experiments to prove the efficiency of the ranking method. The procedure proposed by them would be organized and systematic in approach towards decision making using Common weight DEA.

4 METHODOLOGY

The relevant journals suitable to the paper submission are found out using the abstract and keywords in any journal finder. Several journals are found based on important parameters such as scope, domain, cite score, impact factor and acceptance rate, Time to first decision and Time to publication. In this work, the right journal is found out with the use of a systematic method named DEAR Algorithm. The best journal would have maximum cite score, impact factor, acceptance rate and minimum time for first decision and publication. The significant factor to be considered in using the DEAR Algorithm is that its results are not calculated based on any weightages. The steps and procedures for the DEAR Algorithm itself will calculate those weightages which represents the relative importance between the attributes of journals that are being considered and those steps and procedures are explained below in detail with an example.

4.1 Data Envelopment Analysis based Ranking (DEAR) Algorithm:

“Frontier Analysis” i.e.) Data Envelopment Analysis (DEA) was first developed by Charnes. A. Cooper and Rhodes in the year 1978. The productive efficiency of Decision-Making Units (DMUs) is effectively measured by using DEA. To calculate Multi-Response Performance Index (MRPI) the set of original responses are mapped into a ratio. The best among the good alternatives is found by ranking the MRPI value

4.2 DEAR Algorithm Methodology:

These are the basic five steps involved in DEA algorithm as given in Fig. 1.

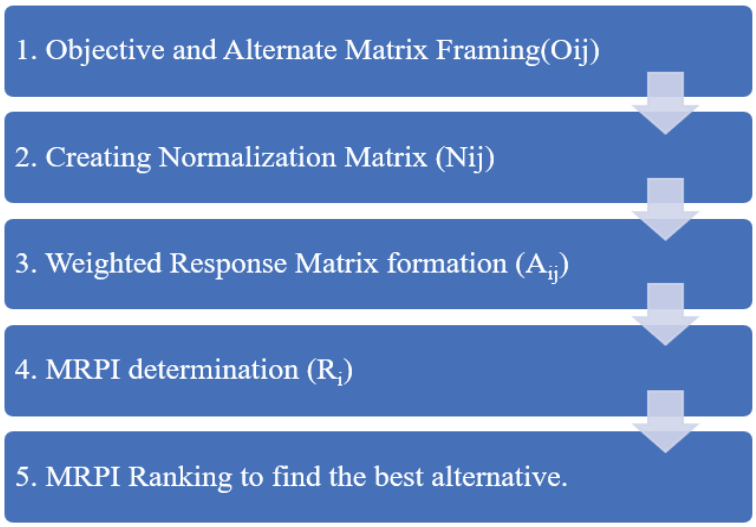

Fig. 1. DEAR Algorithm Methodology

Steps of DEAR algorithm and their implementation in selection of suitable journal is discussed in the subsequent section.

4.3 RESULTS AND DISCUSSIONS

Implementation of the DEAR Algorithm is explained as follows.

4.3.1 Objective and alternate matrix framing (O_{ij})

This is the first step involved in DEAR algorithm, In this step, "i" is represented as the Number of alternatives and "j" is represented as the Number of objectives i.e.) these are the material properties involved in this work. It is given by
– i = 1, 2, 3...n_i (No. of alternatives)
– j = 1, 2, 3...n_j (No. of objectives)
The five important parameters of the journals which is to be considered before publication is listed in table. 1. The values from Table 1 are added up according to the formula of normalized Value (Nij) in table 2 and the normalization values of maximization and minimization are listed in Table 3.

Table 1. Objective Matrix (O_{ij})

Journals	Cite Score (+)	Impact Factor (+)	Acceptance Rate (+)	Time to first decision (-)	Time to publication (-)
Journal X1	8.6	5.186	40	4	3.00
Journal X2	13	7.991	20	2	2.00
Journal X3	8.8	5.234	21	3	3.00
Journal X4	3.5	5.039	32	5	8.00
Journal X5	8.3	5.329	13	2	4.00

Table 2. Sum Calculation

(SUM) for Maximization	42.2	28.779	126	–	–
(1/SUM) for Minimization	–	–	–	1.78	1.54

4.3.2 Creating Normalization Matrix (N_{ij})

This is the second step involved in this method and here the normalized data of the journal attributes are calculated based on the maximization and minimization criteria of the selected attributes. The individual objective value divided by the sum of corresponding objective values is used to calculate the Normalized value (Nij) for maximation as given in equation no. 1

$$\text{Normalized value } (N_{ij}) = \text{Maximation} = N_{ij} = \frac{O_{ij}}{\sum_{i=n}^{ns} O_{ij}} \quad (1)$$

The inverse of individual objective value *(Oij)* divided by the sum of inversed objective values is used to find the Normalized value (Nij) for minimization as given in equation no. 2.

$$\text{Normalized value } (N_{ij}) = \text{Minimization} = N_{ij} = \frac{\frac{1}{O_{ij}}}{\sum_{i=1}^{ns} \frac{1}{O_{ij}}} \quad (2)$$

Table 3. Normalized Matrix (N_{ij})

Journals	Cite Score (+)	Impact Factor (+)	Acceptance Rate (+)	Time to first Decision (-)	Time to Publication (-)
Journal X1	0.2037915	0.180200841	0.317460317	0.140186916	0.216216216
Journal X2	0.3080569	0.277667744	0.158730159	0.280373832	0.324324324
Journal X3	0.2085308	0.181868724	0.166666667	0.186915888	0.216216216
Journal X4	0.0829384	0.175092950	0.253968254	0.112149533	0.081081081
Journal X5	0.1966825	0.185169742	0.103174603	0.280373832	0.162162162

4.3.3 Weighted Response Matrix formation (A_{ij})

The respective objective matrix and normalized matrix value is multiplied to find the weighted response of each value as shown in equation no. 3 and is reflected in table 4.

Maximum objective weighted response (W_{mxi}) = $\sum_{j=1}^{max} A_{ij}$ (3)

Table 4. Weighted Response Matrix (A_{ij})

Journals	Cite Score (+)	Impact Factor (+)	Acceptance Rate (+)	Time to first Decision (-)	Time to Publication (-)
Journal X1	1.752606635	0.934521561	12.69841270	0.560747664	0.648648649
Journal X2	4.004739366	2.218842941	3.174603175	0.560747664	0.648648649
Journal X3	1.83507109	0.951900900	3.500000000	0.560747664	0.648648649
Journal X4	0.29028436	0.882293374	8.126984127	0.560747664	0.648648649
Journal X5	1.632464455	0.986769554	1.341269841	0.560747664	0.648648649

4.3.4 MRPI determination (R_i)

The ratio between the sum of maximum objective weighted response to the sum of minimum objective weighted response is done to find the Multi Response Performance Index value (MRPI) which is shown in table. 5.

MRPI determination (R_i) (4)

Maximum objective weighted response (W_{mxi}) = $\sum_{j=1}^{max} A_{ij}$ (5)

Minimum objective weighted response (W_{mmi}) = $\sum_{j=1}^{min} A_{ij}$ (6)

Table 5. Calculated MRPI Values

Journal	MRPI
Journal X1	12.72167009
Journal X2	7.770972474
Journal X3	5.198438201
Journal X4	7.689424688
Journal X5	3.274777515

4.3.5 Ranking and finding the best

MRPI values were ranked to find the best alternative. The relative ranking for the selected suitable journals is listed in Table. 6.

Table 6. Ranking of journals

Journal	MRPI	Rank
Journal X1	12.72167009	1
Journal X2	7.770972474	2
Journal X3	5.198438201	4
Journal X4	7.689424688	3
Journal X5	3.274777515	5

From the Table 6, it is observed that journal X1 is the suitable journal to submit the manuscript so that it can be published at the earliest.

5 CONCLUSIONS

The method of finding the proper journal is successfully validated in this work. The effective use of DEAR algorithm to find the suitable journal is revealed in this paper. The best journal is selected based on the DEAR ranking method. Since DEAR Algorithm doesn't involve any weightage on specific parameters, it would be the optimal choice for the selection of best suitable journal of one's work. In this work, Journal X1 is selected as the best journal. Conclusively, the Selection of a suitable journal can be efficiently done by using DEAR algorithm. The papers will be published more accurately according to the scope in the right journal by using this systematic way of DEAR Algorithm.

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