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DEVELOPING A PREDATORY JOURNAL FINDER: INNOVATIONS IN SAFEGUARDING RESEARCH QUALITY

Wan Asiah binti Wan Muhamad Tahir* (a), Nor Hafiza Abd Samad (b), Nor Hafiza Haron (c), Fatimah Bibi Hamzah (d), Anis Juanita Mohd Zainudin (e), Rukhiyah Binti Adnan(f), Mohd Azahari Mohd Yusof (g)

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(a)Universiti Poly-Tech Malaysia, wanasiah@uptm.edu.my
(b)Universiti Poly-Tech Malaysia, hafiza@uptm.edu.my
(c)Universiti Poly-Tech Malaysia, afieza*@uptm.edu.my*
(d)Universiti Poly-Tech Malaysia, bibi*@uptm.edu.my*
(e)Universiti Poly-Tech Malaysia, anis_juanita*@uptm.edu.my*
(f)Universiti Poly-Tech Malaysia, rukhiyah@uptm.edu.my
(g)Universiti Teknologi MARA, azahariyusof@uitm.edu.my

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ABSTRACT

With the proliferation of Open Access journals and the shift to online publishing, academic publishing has changed dramatically. The number of journals has expanded significantly as the publishing business has evolved. There are currently more journals where authors can publish their work. With the numerous advantages of open-access publication for writers and readers, credible publishers are launching hundreds of new open-access journals. However, due to their increased popularity, less respectable journals have emerged, abusing the author-pay model and jeopardizing the integrity of published research. They do not adhere to academic publishing norms; they usually publish a paper quickly. Publishing research findings in such publications harms the writers and undermines public trust in scientific research. As a result, an application was developed to detect predatory journals, which will guide researchers in evaluating a journal or publisher. The apps will help users identify predatory publications and determine whether or not a journal is legitimate by checking databases such as SCOPUS and Web of Science. To

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accomplish the goal of this study, Beall's List and other lists of predatory publishers will be employed.

1.0 INTRODUCTION

The most serious threat to academic research's integrity and knowledge spread is the proliferation of predatory journals. Predatory journals misuse the open-access model; many do not apply the rigorous peer review common in more established journals, so substandard or even misleading research might be published. This is an act that undermines the whole reputation of a legitimate scholarly communication and affects far-reaching implications on several fields, medicine, social science, and natural sciences (Gopalakrishna et al., 2021). The more pressure put on researchers to publish; the more the tendency for the submission of work to these journals will rise, and the more it enhances the problem of research misconduct and questionable practices (Fanelli et al., 2015).

The potential of a predatory journal finder in safeguarding research quality and upholding the standards of academic integrity is apparent. It would help researchers find suitable options and thus avoid predatory journals, which is a way of promoting a culture of responsible research practices (Labib & Evans, 2021). This becomes all the more important in such disciplines where the consequences of disseminated flawed research can directly interplay with public health and safety, including medical and health sciences (Aggarwal et al., 2017). In addition, a predatory journal finder could also play an educational role in letting researchers know what characteristics a good journal maintains and how important peer review can be (Jing et al., 2020).

This has more extensive implications for society beyond academia. The baseless research findings can lead to misinformed policies, poor resource allocation, and a general diminution of public trust in scientific findings (Hastings et al., 2022). For example, in the area of health, low-quality research published in predatory journals can ultimately affect clinical guidelines and patient care practices, hence affecting health outcomes (Mahomed et al., 2022). It therefore becomes important to safeguard the integrity of research publications, not only for the scholarly community but also for the sake of society's well-being. Promoting an environment where high-quality research is paramount would enable us to raise the quality bar for knowledge-supporting decision-making processes across various fields (Yazdani et al., 2019).

If we are researchers, we want to publish our research results in high-level journals. We will also find many journals related to our study to help the research. However the journal or the article obtained may not be of high quality and may be published without evaluation by any competent reviewer. some journals, for instance, may feel no compulsion to adhere to good scientific practice but rather use the academic publication market for commercial reasons benefiting only the publishers. Such publications also charge authors publication fees or article processing charges, often referred to as "predatory journals," but do not conduct peer reviews or other quality control forms because the review process is slow and inconsistent. There are apprehensions about bias, lack of transparency, and the occasional failure to catch errors or fraudulent research.

Given the issues outlined above, there is a clear need for a system and method to detect predatory documents. While existing systems and methods in the prior art address this concern, significant room remains for improvement to enhance their practical application. It produces a new publishing platform to assist researchers, academics, students, publishers, and institutions in doing research by accessing the quality and legitimacy of journals which indexed in the renowned SCOPUS and WoS in one platform. It also assists and improves the work in the publication of high-impact journals either in the Scopus or WOS databases. One reason for searching the Scopus and Web of Science (WoS) databases is their commitment to indexing authentic articles based on rigorous criteria, such as the quality of peer review, editorial board composition, and adherence to publication ethics. Journals that meet these standards are generally considered more reputable. Additionally, Scopus and WoS conduct periodic reviews of the journals they index, and a journal can be removed from the index if it fails to maintain these standards, indicating that a journal's status can change over time.

2.0 LITERATURE REVIEW

Predatory journals have been a problem of late, garnering increasing attention over the past few years and reflecting a growing awareness of the threats such publications pose to the integrity of academic publishing. Predatory journals exploitatively feature practices that often include minimal or no peer review, false claims about indexing, and aggressive solicitation of manuscripts, which may lead to the dissemination of poor-quality or fraudulent research (Cukier et al., 2019; Cobey et al., 2019). It is very unnerving to see the rise of such journals. For instance, it has been reported that the number of predatory journals increased from about 800 in 2010 to about 8,000 by the year 2014, hence showing enormously huge proliferation within a very short period of time (Gurnani & Kaur, 2021; Alrawadíeh, 2018). The rapid growth places critical questions concerning the quality of the research being published and its propensity in consequences for scientific discourse.

Previous literature has pointed out that scholars in general are not aware of predatory journals. For example, in the survey of veterinary and medical authors, it was found that about 25.8% of respondents were familiar with the term "predatory journal" (Christopher & Young, 2015). This is of concern, especially for early-career researchers who, inexperienced and possibly under pressure to publish, might be more susceptible to the lure of predatory journals (Richtig et al., 2018; Swanberg et al., 2020). It has also been stated that the motives for publishing in such journals are often multi-factorial, about the lack of understanding of legitimate publishing practices and under pressure by the urgency to fulfill the requirements of publications and perceived ease of acceptance of predatory venues (Cobey et al., 2019; Kurt, 2018).

Fighting the boom in predatory journals has also attempted to fight by providing educational resources and checklists, enabling authors to identify and avoid predatory journals (Cukier et al., 2019; Cukier et al., 2020). As such, Cukier et al. proposed a consensus-driven checklist that could prove to be a useful tool for researchers (Cukier et al., 2019). It is in that spirit that increased awareness and understanding of predatory publishing practices, especially for institutions in regions where resources are scarcer, have been advised (Bairi et al., 2023; Shrestha, 2021). Clear definitions and criteria defining predatory journals characteristics would also show guidance in making informed decisions on where to submit work for publication (Cukier et al., 2020; Shrestha et al., 2018).

Several applications have been studied to help researchers before developing the application. These tools facilitate the identification of potentially predatory publications and promote greater awareness of ethical publishing practices. Below are three notable applications that serve as valuable resources for researchers aiming to avoid predatory journals and uphold the integrity of their scholarly contributions.

Here are three applications that can help detect predatory journals:

a. Cabell's Predatory Journal List

Cabell's, all in all, comes with a full database presenting a predatory journal list, advanced metrics, and evaluation criteria. One can search for any journal and get information on editorial practices, peer review, and its reputation. It contains advanced search options, journal analytics, and insights into publisher behavior.

b. Think. Check. Submit.

A collaborative effort that provides a simple checklist to help researchers determine the trustworthiness of journals before submitting their work. It guides the user through a set of questions relating to the practices of the journal and provides resources for further evaluation. It is also very easy to use, with its checklist and educational resources and links to trusted publishing guidelines.

c. Predatory Publishing Database (PPD)

The PPD is an online database of catalogues of suspected predatory journals submitted by its users and through research. It enables users to search for journals by name with explanations provided for why they are held predatory. It also hosts user-generated reports on the journals, their rating, and community feedback about questionable publishing practices.

These tools can go a long way in assisting scholars in finding and avoiding predatory journals, thus saving the integrity of their published work.

3.0 METHODOLOGY

The methodology used in this research is a mixed-method where qualitative and quantitative approaches will be applied. The qualitative approach will take place regarding data requirements and gathering which will be provided to proceed with the mobile application implementation. It will also include a review of website /mobile application design; user interface, usability, etc. Meanwhile, the quantitative approach is conducted when the implementation and deployment phases take place. To make sure that the mobile application meets all the user requirements, the survey will include the acceptance model. This will guide the researcher in terms of feedback and evaluation towards the open-access predatory journal application. The research flow is as follows:

Figure 1: Research Flow Chart

Each phase involved in the methodology for addressing predatory journals and developing a journal finder are explained below:

a. Identify Problems

In this initial phase, the focus is on recognizing and articulating the specific challenges associated with predatory journals. Their characteristic features include non-peer review, high publication fees, and exploitation within the open-access model. The publication landscape engages various stakeholders, including researchers, academic institutions, and publishers, to get their experiences and challenges in dealing with predatory journals. Laying this ground is important as it paves the way for solutions development.

b. Define Objectives of Solutions

Once the problems are identified, it becomes possible to set measurable objectives that any proposed solution must meet. This includes the determination of what the journal finder should do: whether it is meant to improve the identification of predatory journals, better facilitate users' access to reliable publications, or eventually educate by offering resources on how to evaluate journals. That kind of set objectives ensures development is focused and result-oriented, covering specific user needs.

c. Design and Development

In this stage, technical specifications and functionalities of the journal finder will be designed and developed. This will include creating a user-friendly interface, database integrations of SCOPUS and Web of Science into the application, and setting up algorithms to evaluate the legitimacy of journals based on predefined criteria. The design must balance giving ease of use, yet ensuring back-end process strength in retrieving and analysing data. Development refers to the system's coding, infrastructure building, and ensuring the platform is scalable and secure.

d. Exhibition

This phase involves showcasing the developed journal finder to potential users and stakeholders. Demonstrations may include live presentations, user testing sessions, and webinars highlighting the tool’s features and benefits. The exhibition serves to gather initial feedback from users, allowing developers to refine the tool based on real-world interactions and usability assessments. This phase is crucial for generating interest and building a community around the tool.

e. Evaluation

After launching the journal finder, there will be a mature evaluation stage where its impact and effectiveness are assessed. It may involve gathering user feedback, usage data analysis, and comparison of the outcomes with the defined objectives. Evaluation helps in pointing out the strengths and weaknesses in the system for future iterations and improvements. The metrics can include user satisfaction, accuracy in identifying predatory journals, and overall adoption rates among researchers.

f. Communication

The final stage is disseminating results, achievements, and continuing development to the wider academic community. This may be through published reports, outreach activities, or conference and workshop participation. Proper communication ensures stakeholders understand how the tool should be used, its benefits, and the best practices involved. This also creates a forum where further collaboration and continued discussion of the challenges posed by predatory publishing and the need for research integrity can continue.

These phases, therefore, come together for a holistic methodology aimed at problems posed by predatory journals, hence providing a reliable means for journal selection among researchers.

4.0 EXPERIMENTATION AND RESULTS

The system for detecting predatory documents includes an authentication module designed to validate request information sent to a publication database. It features an Application Programming Interface (API) engine that facilitates communication with the publication database by accessing and processing the request information. Additionally, a query processor is included, which works with the API engine to process requests from the authentication module and retrieve

information from the publication database. The query processor is further enhanced by components such as a user interaction module, a verification module, an asynchronous module, a backend communicator, and an evaluation model.

Once the request is authenticated, the API engine processes the information, enabling communication with the publication database by handling the authentication request. The publication databases utilized are SCOPUS and Web of Science (WoS). The API key serves as a unique identifier that grants permission to interact with the SCOPUS database.

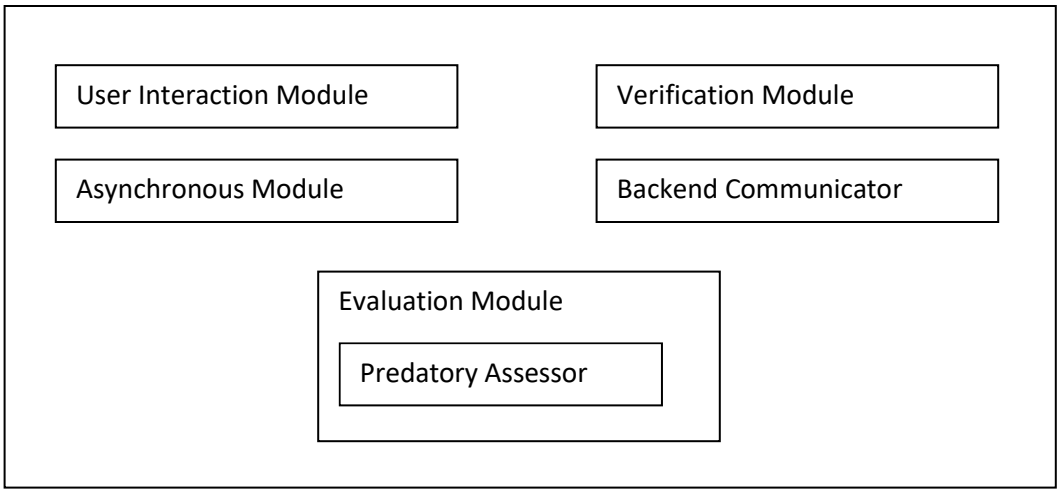

Figure 2: Query processor for processing and retrieving the request information

The user interaction module acts as the interface between the system and the user, facilitating communication with the frontend framework. This allows users to input journal information and initiate the detection process. The verification module validates the information received from the user interaction module. This step is crucial to ensure that only legitimate and accurate requests are processed further within the system.

Following successful verification, the verified information is transmitted from the frontend programming framework to a backend server, facilitated by the asynchronous module.

The backend communicator is designed to enable communication with the backend server, ensuring smooth interaction with publication databases like SCOPUS. Responses from SCOPUS are processed on the backend server before being sent back to the frontend for user access.

Additionally, the evaluation module includes a predatory assessor, which analyzes the retrieved information based on predefined criteria, such as journal and publisher details, to evaluate the publisher's reputation and history.

The table below shows an example of an input of the information and the output.

Table 1: Example input and output

INPUT EXAMPLE	OUTPUT EXAMPLE
i. Journal Name: International Journal of Innovative research ii. Journal ISSN: 1234-5678 iii. Journal Title: Science Advances	i. Journal Status: Legal ii. Reputation and Evaluation: The journal's indexing and peer review process are questionable. iii. Reasoning: The journal is not indexed in reputational databases. And its peer review process lacks transparency. iv. Additional Information: The journal has a history of publishing low-quality research.

A "Legal" status indicates that the system didn't identify significant factors associated with predatory journals.

5.0 CONCLUSION

The pursuit of publishing research in reputable journals is critical for researches, yet the rise of predatory journals poise significant challenges to the integrity of academic publishing. Most of the journals compromise on the issue of quality and ethics; thus, non-validated and misguided research gets published. In view of such concerns, the need for an effective system of predatory publications detection becomes very apparent. Though the current solutions provide a little help, there remains much room for further improvement in the interest of researchers and academics. The proposed platform will provide a complete resource through which journal quality may be evaluated, based on the stringent indexing standards used by SCOPUS and Web of Science. The platform will also provide access to credible journals that will support researchers in their publishing efforts and will also ensure the scientific literature reliability. In these ways, we hope to help ensure that quality research continues to thrive within the academic community

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