ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8

International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies

http://TuEngr.com

The Academic Cobra Effect: Perverse Incentives and Unintended Consequences of Metric-driven Research Publishing

Bhattraradej Witchayangkoon[1*], Kritsada Anantakarn[2*]

[1]*Department of Civil Engineering, Thammasat School of Engineering, Thammasat University, Rangsit, Pathumtani, THAILAND.*

[2]*Faculty of Engineering and Architecture, Rajamangala University of Technology Tawan-ok, Uthenthawai Campus, Bangkok, THAILAND.*

**Corresponding Author (Emails: wboon @ engr.tu.ac.th, k.anantakarn @ gmail.com).*

Paper ID: 16A2G

Volume 16 Issue 2

Received 23 March 2025
Received in revised form 25 April 2025
Accepted 15 May 2025
Available online 28 May 2025

Keywords:
Academic Publishing; Scopus journal; APC; DORA; JIF; Q1 journal; Q2 journal; Q3 journal; Q4 journal; CiteScore; Research assessment; Journal-level metrics; Scientific quality; SNIP; Ranked journal; SJR; Article-level metrics; Journal-based metrics; SCImago; Journal Rank; Gaming citation metrics; Altmetrics; Incentive research; Fee-driven incentive of APC; Salami slicing of research; Publish-or-perish; OA.

Abstract

This study uses the economic idea of the "Cobra Effect," which describes how a good-intentioned incentive can actually worsen a problem rather than improve it, in relation to the current landscape of academic publishing. We argue that the intense pressure on researchers to publish in Q1–Q4 Scopus®-indexed journals exemplifies the Cobra Effect. The goal of this incentive was to promote high-quality research, but instead, it has resulted in an excessive number of publications—the academic equivalent of breeding cobras. This situation, influenced by how institutions assess researchers and their career advancement, acts like a modern bounty. Consequently, this has triggered a series of negative outcomes akin to breeding cobras for a reward, including the emergence of predatory journals, fragmenting research into smaller parts, citation cartels, and exploiting Article Processing Charge (APC) models. This scenario has overwhelmed the publishing system, reduced the significance of genuine scientific achievements, and introduced various new challenges. The global academic community now faces the task of learning from this narrative. The unforeseen consequences include a drop in scientific quality, loss of trust, a lot of wasted money, and burnout among researchers. They must shift away from rewarding the mere act of producing a "dead cobra" (a publication in a ranked journal) and instead focus on what really matters: fostering a healthy, reliable, and impactful scientific environment. Fixing this systemic issue needs a major change from focusing on journal-level metrics to assessing articles on an individual basis (article-level metrics (altmetrics)) and following the principles outlined in the San Francisco Declaration on Research Assessment (DORA).

Discipline: Multidisciplinary (Research publishing).

Cite This Article:

Witchayangkoon, B., Anantakarn, K. (2025). The Academic Cobra Effect: Perverse Incentives and Unintended Consequences of Metric-driven Research Publishing. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies, 16*(2), 16A2G, 1-13. http://TUENGR.COM/V16/16A2G.pdf DOI: 10.14456/ITJEMAST.2025.14

1 Introduction

The Cobra Effect is when a solution to a problem ends up making it worse. This term comes from a (probably not true) story about British colonial rule in India. The British government worried about the number of poisonous cobras in Delhi, and thus wanted to lower the number of cobras by giving money for each dead cobra that was brought to them. At first, this worked well, as dead cobras were brought in, and payments were given out. This seems successful, as many snakes were killed for the money. It appeared that the snake population was decreasing. But then some clever people started breeding cobras to earn more rewards, causing the cobra population to explode. When the government found out, then canceled the program, and those breeders let the now-useless cobras go into the streets. This made the wild cobra population grow even more than before, making the original issue even worse. Thus, this approach failed so dramatically.

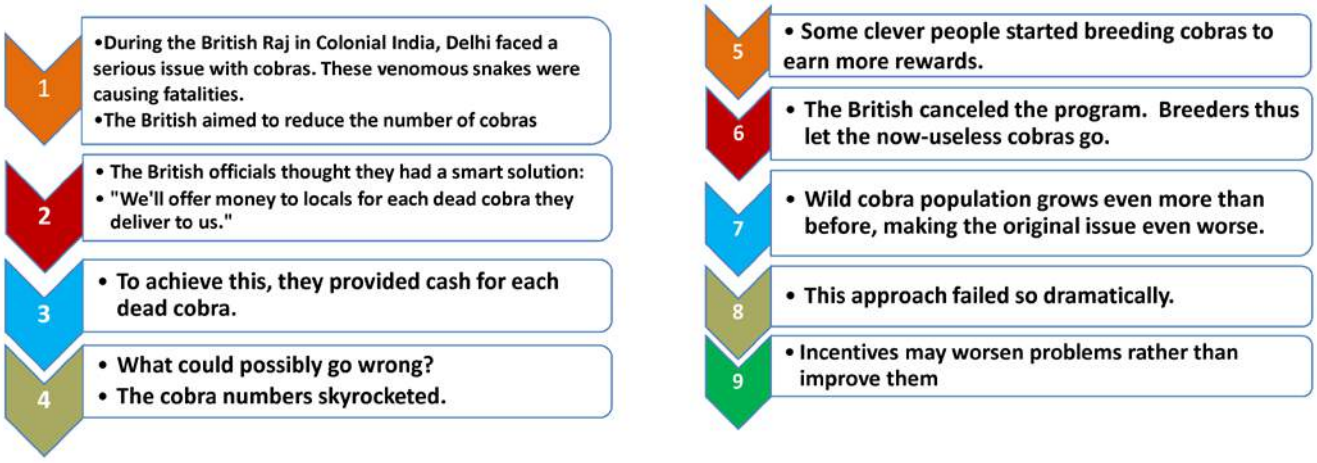

Figure 1: Cobra Effect storyline.

This economic theory, created by German economist Horst Siebert, explains how incentives meant to enhance a system (such as society or an organization) can result in unexpected — or even counterproductive — outcomes that may worsen problems rather than improve them. (Minnaar, 2022, Rajgor, 2025).

The "Cobra Effect" illustrates how the publish-or-perish culture can lead to surprising outcomes. Additionally, some authors produce and some journals release an overwhelming amount of publications. These are similar to breeding cobras, especially in the context of Scopus®-indexed journals.

For Open Access (OA), the main idea was to provide free access to scientific papers that report on studies funded by public money, instead of just being available through subscriptions. At first, it was thought that generous international agencies would cover the publishing costs. However, it quickly became obvious that researchers had to bear most of these expenses themselves. As a result, publishing companies gained more control over the market and increased their profits, all while selling subscriptions and charging authors to publish their work. The worst effect of OA has been the rise of numerous predatory publishers, which has tainted the spread of

scientific knowledge. This model resembles a vanity press, where anyone can pay to publish. Thousands of journals operate with low integrity standards, and many researchers fall for this trap, disregarding serious scientific work. Due to the financial incentives, some reputable publishers also jumped on the bandwagon, creating their own pay-to-publish platforms, which makes it hard to identify and define what 'predatory' really means. The scientific community should discourage scientists from publishing in these outlets by making it harmful to their careers and reputations. Instead, the flooded research articles were created; more snakes (more trouble)! (Della Sala, 2022).

2 Literature Reviews

Chakrabarti et al. (2024) discussed the faculty assessment for universities around the world beyond publishing metrics. The system for hiring faculty and the ways promotions work are becoming more and more reliant on publishing metrics and indices. These metrics also play a big role in determining research funding, which indirectly pushes science in a direction that favors financial rewards. As metrics can be seen as objective and possibly fair tools, a closer look at the flaws in the publication indices currently in use.

Erduran (2023) argued that when it comes to enhancing science education, the analogy of the "cobra effect" could serve as a helpful reminder for us researchers to closely monitor the nature of our research and its outcomes.

According to Inamdar and Parveen (2020), research certainly supports teaching, but this is not the case for every teacher. The process of publishing research has turned into a competition for fame and financial gain rather than a genuine quest for truth, creativity, and knowledge contribution. Academics are feeling a lot of pressure to publish, driven by institutions that prioritize publication over actual qualifications. The push for universities to internationalize, the focus on university rankings as a measure of success, the competition to boost the number of indexed papers and citations in Scopus®, and the systems in place to measure research performance and publication all contribute to a situation where researchers are not encouraged to enhance the quality of their work. Instead, it creates an unhealthy obsession with chasing promotions and rewards, often at the cost of their own integrity (Zein, 2018).

Inamdar and Parveen (2020) stressed that using research publications as a standard for hiring and promotions in academia has led to a cobra effect, which has highlighted the growing issue of predatory journals. These journals offer cheap, fast, and easy publication options that are now readily available to educators.

Additionally, Chakrabarti et al. (2024) address the rise of predatory/semi-predatory publishers, paper mills, and other unethical research practices that have emerged as a side effect of the “publish or perish” mentality. On a larger scale, Chakrabarti et al. (2024) explore how a focus on publication-driven science impacts scientific advancement and how it might lead to stagnation and a diminished enthusiasm for discovery.

The World Bank (2022) has published a report detailing scientific and technical journal articles categorized by the authors' country, utilizing data from the National Science Foundation

(NSF) as found at the URI: ncses.nsf.gov/indicators. The total number of global articles surged from 1,070,988 in the year 2000 to 3,338,192 in 2022, representing a huge increase of 212%. Further, Christensen et al. (2024) indicated that Indonesia's research output is inundated with articles from journals of questionable quality, often referred to as pseudo-journals, with the number of research papers escalating by 1,788% in fewer than ten years. This influx of low-quality journals has permeated databases that are utilized as indicators of 'quality research,' such as Scopus (Christensen et al., 2024).

According to Della Sala (2022), the unexpected consequences of the Open Access initiative in journal publishing are similar to the Cobra Effect. Instead of paying for each manuscript, researchers/institutions/the funded agencies will need to negotiate package deals with specific publishers to publish a set number of papers each year, to make papers freely available.

Researchers have joined together to support the Declaration on Research Assessment (DORA), which seeks to improve the ways research paper is evaluated. (SFDORA, 2025). One of the DORA badges is "Let's change what we value in research" (SFDORA, 2024).

The authors have discovered that numerous universities in Malaysia have shifted their focus from the Scopus® database to the Web of Science®.

3 How the Cobra Effect Applies to Q1–Q4 Scopus-Indexed Journal Publication Fees

3.1 Q1–Q4 Scopus-Indexed Journals

Scopus journals are academic publications that are indexed by Scopus®, which is a major and respected abstract and citation database owned by Elsevier. These journals are assessed for their quality and impact using citation metrics and are ranked in four quartiles: Q1, Q2, Q3, and Q4.

These quartiles show how a journal ranks relative to others in a specific subject area and are determined by metrics such as CiteScore, SJR (SCImago Journal Rank), or SNIP (Source Normalized Impact per Paper). Table 1 gives a breakdown of what each quartile signifies. Table 2 provides an example of journal rankings and explains why it is important. Table 3 discusses the core lesson and key elements regarding the Cobra Effect.

Table 1: Scopus Quartiles Explained

Quartile	Rank Range	Meaning
Q1	Top 25%	The journal is in the top 25% of journals in its field. These are seen as high-impact, prestigious, and competitive.
Q2	25–50%	The journal is placed in the second quartile — between the top 25% and 50%. These are good-quality journals but a bit less competitive than Q1.
Q3	50–75%	The journal is in the third quartile, meaning it's in the middle-to-lower range of its field. It's still acceptable, but not viewed as high impact.
Q4	Bottom 25%	The journal is in the lowest 25% of its subject area. It's often seen as low-impact, although it is still indexed in Scopus®.

Table 2: Journal ranking example and why it matters

Example	• If a journal in the Computer Science category is ranked: o Q1: It's among the top journals in CS, like IEEE Transactions. o Q2: It's a solid journal, but less cited or prestigious. o Q3/Q4: It's either average or among the least influential in that subject area.
Why it matters	• Researchers strive to publish in Q1 or Q2 journals to enhance their academic credibility. • Institutions frequently assess promotions and grants based on the quartile ranking of published work. • It's a crucial metric for evaluating research impact and visibility.

Table 3: Core lesson and key elements regarding the Cobra Effect.

The core lesson	Key elements
• An incentive that is well-meaning but poorly structured can lead individuals to manipulate the system for their own benefit, ultimately exacerbating the very issue it was intended to address.	• A governing body establishes a success metric. • A reward or penalty is associated with that metric. • Individuals discover methods to achieve the metric without accomplishing the fundamental objective (often through ineffective or deceitful tactics). • The entire system deteriorates.

3.2 The Modern Bounty: The Scopus/Q1-Q4 Journal Metric

Within the international academic landscape, the "bounty" has shifted from a financial incentive for a deceased snake to career advancement, funding opportunities, and prestige. The metric employed to allocate this bounty frequently revolves around the volume of publications in esteemed journals. The framework Table 4 was established with a commendable aim to impartially reward high-quality, significant research and promote academic excellence.

Table 4: Framework of modern bounty/reward related to high-impact Scopus-indexed journal metric.

Key components	Modern Bounty/Reward linking with High-impact Journal Metric
The Authority	University promotion panels, national research evaluation frameworks (such as the UK's REF), and funding organizations.
The Metric	The quantity of publications, especially in high-impact journals, the Scopus database, featuring its CiteScore and SJR/SNIP metrics that categorize journals into Quartiles (with Q1 representing the top 25%), has emerged as a key indicator of quality.
The Reward	Tenure, promotions, research funding, salary increases, and global recognition.

4 The "Cobra Breeding" in Academic Publishing

This is where the detrimental incentives come into play. Researchers (the "agents") must navigate and succeed within this framework. The compulsion to publish in Q1/Q2 journals has resulted in various counterproductive actions that resemble cobra breeding.

4.1 The Emergence of Predatory Journals and Quote Farms

Similar to how breeders cultivated cobras for profit, an entire sector of "predatory" or substandard journals has surfaced that imitate authentic Q1-Q4 journals. They take advantage of researchers' publishing needs by providing:

- Assured, swift publication (for a fee),

- Deceptive metrics purporting to be Scopus-indexed or boasting a high impact factor,
- Inadequate or non-existent peer review.

Researchers, eager to boost their publication tally, may resort to these outlets, tainting the scientific record with inferior or even fraudulent articles. Although Scopus endeavors to remove such journals from its listings, the "breeders" consistently stay ahead, establishing new ones.

4.2 The Salami Slicing of Research

Rather than publishing a single comprehensive, significant paper (one "large cobra"), researchers are encouraged to divide their work into the "least publishable unit" ("numerous small cobras"). This practice inflates their publication count but clutters the literature with incremental, less impactful studies. It maximizes the number of bounty claims derived from a single research initiative.

According to the World Bank (2022), Figure 2 illustrates the rise in published articles, comparing selected countries from 1996 to 2022. The trends for Indonesia and the Russian Federation exhibit similar significant increases in the number of publications. The Russian Federation experienced a growth from 36,532 articles in 2012 to 100,842 articles in 2022, representing a 176% increase (almost threefold). In contrast, Indonesia saw an increase from 2,111 articles in 2012 to 39,566 articles in 2022, which accounts for a 1,774% increase (over 18.7 times). It is evident that the production of scientific articles prioritizes measurement (the number of published articles) rather than performance (the quality of published articles).

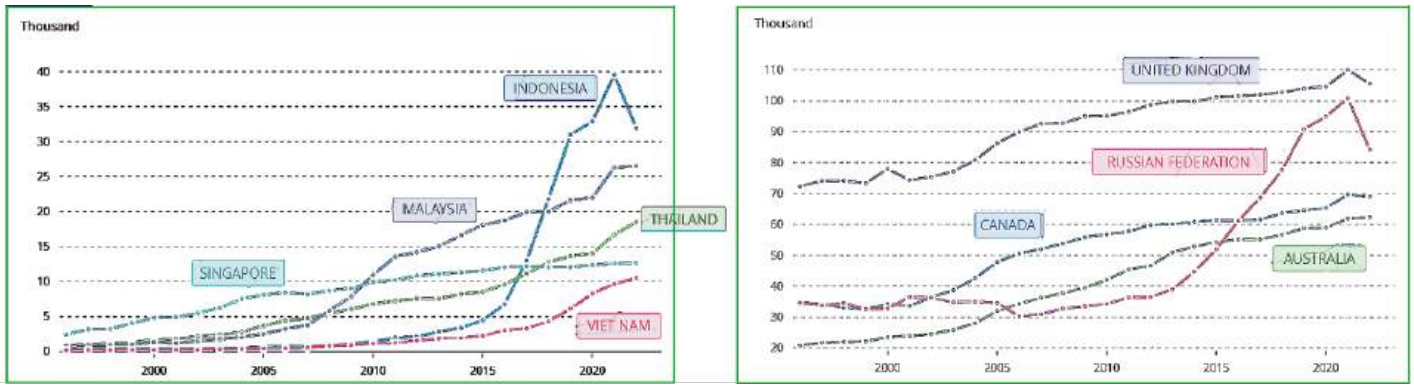

Figure 2: Scientific and technical journal published articles during 1996 to 2020 - Indonesia, Thailand, Malaysia, Viet Nam, Singapore, Canada, Australia, United Kingdom, and Russian Federation. Data are based on the National Science Foundation (NSF), URL: ncses.nsf.gov/indicators (Charts are used under Creative Commons CC BY-4.0 licensed from the World Bank Group).

4.3 Typical Fee Ranges (as of 2024–2025)

Table 5 shows the estimated article processing charge (APC) of Scopus®-indexed journals. It should be noted that high fees do not reflect the high quality of the published article. In addition, some Q1 journals are free, and some Q4 journals charge high fees without rigorous peer review.

Table 5: APC of Scopus-indexed journals classified according to quartile.

Quartile	Estimated APC	Notes
Q1	**$1,000–$5,000+**	Often high-prestige, hybrid, or open-access, some are predatory/semi-predatory
Q2	**$500–$2,500**	Lower fees, but still quality peer review, some are predatory/semi-predatory
Q3	**$300–$1,500**	Variable quality, some are predatory/semi-predatory
Q4	**$100–$1,000**	Often easier to publish in, lower prestige, some are semi-predatory

4.4 The Fee-Driven Incentive of Article Processing Charges (APCs)

Numerous legitimate open-access journals in Q1-Q4 impose APCs. This establishes a direct financial motivation for the journal itself to accept a greater number of papers, as its income is linked to publication volume rather than rejection rates. While reputable journals uphold standards, the financial strain can, at the margins, result in the acceptance of papers that might have been declined under a subscription model. The journal's success metric (profit) is at odds with the system's objective (ensuring quality). Table 6 shows how the "Cobra Effect" manifests in this academic context.

Table 6: Cobra Effect manifests in academic publishing.

Problem	Attempted Solution	Unintended Consequence ("Cobra Effect")
Pressure to publish in Scopus (especially Q1/Q2) for academic promotion, funding, or ranking.	Academics (and institutions) pay high fees to publish in Scopus-indexed journals.	Predatory or low-quality journals mimic Scopus indexing or inflate fees, leading to a rise in pay-to-publish models.
Need for more Q1/Q2 publications.	Researchers chase Q1/Q2 labels regardless of the actual quality or relevance of the research.	Journal rankings become a proxy for quality, and meaningful, impactful research in Q3/Q4 or non-indexed journals is undervalued or ignored.
Countries/institutions link funding or bonuses to journal rank.	Faculties flood certain journals with submissions, often via aggressive co-authorship networks.	Results in citation cartels, fake peer review, or ghostwriting – worsening the credibility of science.

However, the still high pay for the bulk publishing policy has serious implications. Researchers will have to cover some of the costs, leading to inequalities across different fields. Those at less wealthy institutions will struggle to get their work published. It will be challenging to publish studies that are not funded by grants, such as observations, unexpected findings, discussions, or commentaries. Younger researchers with limited financial backing will be at a disadvantage, which may force them to accept honorary authorship from more established seniors. (Della Sala, 2022)

The focus on publishing will shift to financial factors instead of quality, distorting the idea of merit. In the end, in a market driven by money, who will care about ensuring rigor and quality in scientific publications? Not the publishers, since they profit more the more they publish; not the institutions that can set a budget for publications; not the researchers who might prefer easier publication routes; and not the readers who gain free access to journals that were once behind paywalls, even if the content has not been thoroughly reviewed. (Della Sala, 2022)

4.5 Gaming Citation Metrics

Researchers create citation cartels: “You reference my paper, and I will reference yours.” “Your journals reference articles published in my journals, and my journals reference articles published in your journals.” Certain journals advise authors to include citations to other articles from the same journal or journals owned by the same owners before acceptance. This practice artificially boosts the journal's CiteScore, aiding it in maintaining or achieving Q1 status, which subsequently draws in more authors willing to pay Article Processing Charges (APCs). This represents a method of cultivating artificial impact.

5 The Released Cobras: The Unintended Consequences

The outcome of these actions is a deterioration of the entire academic ecosystem, contrary to the intended objective. Table 7 gives the unintended consequences with details.

Table 7: The Unintended Consequences.

The unintended consequences	Details of the outcome.
• **Erosion of Trust**	The overwhelming number of low-quality publications complicates the identification of authentic scientific breakthroughs. It diminishes public and institutional confidence in science.
• **Wasted Resources**	Millions of dollars in research grants and APCs are allocated to publishing and reviewing papers that possess minimal scientific or societal significance.
• **Researcher Burnout**	The unrelenting pressure to "produce cobras" (papers) results in significant stress, anxiety, and unethical conduct among academics, causing many skilled individuals to exit the field.
• **Distortion of Science**	Research priorities are influenced by what is most likely to be published in a high-impact journal (novel, positive findings) rather than what holds the greatest scientific relevance (including replication studies and null results).
• **Financial Drain on Institutions**	Universities in developing nations incur substantial expenses in APCs to Q1-Q4 journals in the West, effectively reallocating research funds from less affluent to more affluent countries without a guaranteed return on scientific quality.

6 DORA

The San Francisco Declaration on Research Assessment (DORA) is a declaration that criticizes the practice of linking the journal impact factor to the value of a particular scientist's work. This declaration also points out that such a practice leads to biases and inaccuracies in evaluating scientific research. Further, it emphasizes that the journal impact factors (JIFs) should not be used as a replacement "indicator of the quality of individual research articles, or in decisions regarding hiring, promotion, or funding." DORA’s central aim is to improve the evaluation of scholarly research outputs and researchers by moving away from the over-reliance on JIFs and other journal-based metrics. (USheffield, 2025; Wikipedia, 2025)

6.1 DORA Core Principles and Recommendations

DORA is founded on the idea that research should be judged based on its own value, not the journal where it appears. It offers advice for various players in the academic world, such as funding

organizations, universities, publishers, and researchers themselves. Table 7 gives some key suggestions.

6.2 Implementing DORA

Putting DORA into practice requires a major cultural change in academia. Numerous universities, funding organizations, and professional societies around the globe have endorsed the declaration and are actively trying to adjust their policies to align with its principles. (Wikipedia, 2025). By promoting a shift away from basic metrics, DORA seeks to create a more inclusive, fair, and thorough method for assessing research and the individuals behind it (SFI, 2017), see Table 8.

Table 8: DORA key suggestions. (SFDORA, 2025; USheffield, 2025; OLS, 2025).

DORA Suggestions
• Do not rely on the Journal Impact Factor (JIF) as the main way to assess a researcher's work or in decisions about hiring, promotions, or funding. DORA points out that JIF measures a journal, not individual articles or researchers, and using it can lead to bias.
• Evaluate research based on its own value. The emphasis should be on the scientific content, quality, and impact of a specific piece of research. This promotes a more qualitative assessment of the work itself.
• Acknowledge a wider variety of research outputs. DORA encourages recognizing all significant contributions to scholarship, which extend beyond just peer-reviewed journal articles. This includes datasets, software, patents, conference talks, and contributions to policy or public engagement.
• Be clear and open about the criteria used in research evaluations. Institutions and funders should explicitly communicate what they prioritize in assessments, especially for early-career researchers, to ensure the process is fair and understandable.
• Use a range of metrics and indicators wisely. While DORA advises against misusing JIF, it does not reject all metrics. It supports using a variety of indicators that give a fuller view of a researcher's work and its impact.

7 Potential Solutions: How to Avoid Breeding Cobras

Addressing this issue necessitates a departure from the flawed metric. The answer is not to eliminate incentives but to create more intelligent ones. Table 9 gives potential solutions to avoid breeding cobras.

Table 9: Potential solutions to avoid breeding cobras

Solutions	Details
• **Eliminate Journal-Based Metrics**	Academic institutions should cease the practice of utilizing journal rankings (Q1-Q4) as a substitute for evaluating article quality. Research should be assessed based on its own merits through article-level metrics (altmetrics) and expert evaluations.
• **Encourage Responsible Metrics**	Embrace the San Francisco Declaration on Research Assessment (DORA), which promotes the evaluation of research based on its inherent content.
• **Recognize a Wider Array of Outputs**	Acknowledge not only publications but also data sets, software, policy impacts, public engagement, and excellence in teaching.
• **Reform Peer Review**	Investigate models such as open peer review to enhance accountability and implement post-publication review to continuously evaluate quality.
• **Enhance Database Curation**	Scopus and Web of Science need to be more transparent, rigorous, and prompt in identifying and removing predatory journals. It is also suggested to consider Google Scholar as a supplement.

8 Altmetrics: Article-level Metrics

Altmetrics stands for "alternative metrics." Altmetrics are non-traditional bibliometrics, an alternative to h-Index, Impact Factor, and CiteScore. In fact, in scholarly and scientific publishing, altmetrics refer to article-level metrics (ALMs) (Binfield, 2009). While many people associate altmetrics primarily with articles, they can actually be used to evaluate various things, including individuals, journals, books, data sets, presentations, videos, software/source code repositories, web pages, blog posts, and more. Altmetrics capture attention and engagement across various online platforms and sectors of society.

8.1 What Do Altmetrics Measure?

Altmetrics track the digital footprint of research. Common data sources are shown in Table 10.

Table 10: Altmetrics measurement platforms/media.

Platforms/media	Detail
• **Scholarly Platforms**	Mentions in policy documents, patents, and other scholarly works (e.g., on Dimensions).
• **Social Media**	Shares, likes, and comments on Twitter/X, Facebook, LinkedIn, Reddit, etc.
• **Mainstream Media**	Mentions in news articles by outlets like The New York Times, BBC, or Reuters.
• **Public Engagement**	Saves, shares, and readers on reference managers like Mendeley and Zotero (which can also be a predictor of future citations).
• **Other Platforms**	Mentions in Wikipedia articles, blog posts, YouTube videos, and GitHub repositories.

8.2 Connection of Altmetrics to the Cobra Effect and Journal Fees

The push for altmetrics is a direct reaction to the negative incentives created by the journal-level metric system, often referred to as the "Cobra Effect."

8.2.1 A Possible Solution to the Cobra Effect

Stakeholders ought to redirect their focus from journals to content. Altmetrics assess the article itself, rather than the reputation of the journal in which it was published. This reduces the "reward" associated with solely publishing in a Q1 journal. A paper with significant impact in a Q2/Q3/Q4 journal may exhibit considerable influence through its altmetrics, thereby demonstrating its value more effectively than a rarely cited paper in a Q1 journal.

Stakeholders should discourage the practice of salami slicing in research. A truly significant finding from a research project is likely to garner more attention and achieve higher altmetrics than multiple minor, incremental contributions. This promotes researchers to produce more substantial and comprehensive work.

Stakeholders should expose predatory journals. Research published in such journals rarely receives genuine engagement from the academic community or the public. Consistently low or nonexistent altmetrics for all articles within a journal can act as a warning sign, aiding in the identification of cobra breeding farms.

8.2.2 A New Set of Challenges and Potential for Manipulation

However, like any metric, altmetrics can be manipulated or misinterpreted, leading to a new risk of a "Cobra Effect" if not implemented correctly. Table 11 gives details for altmetrics manipulation.

Table 11: New challenges and potential for altmetrics manipulation

Cobra effect risks	Detail
• **The Viral Incentive**	If institutions reward high altmetrics scores, researchers might be encouraged to create "clickbaity" studies or oversimplify complex findings to boost social media shares, which could compromise scientific integrity.
• **Manufactured Attention**	Just as one can breed cobras or create citation cartels, one can purchase social media bots to artificially increase shares and downloads, giving a misleading impression of impact.
• **Disciplinary Bias**	Research in areas like health science, climate change, and technology naturally garners more public and media attention than highly specialized, theoretical work. Using altmetrics to compare across different fields would be inherently unfair.

8.3 Altmetrics: A Tool, Not a Panacea

Altmetrics are not a perfect replacement for citations or peer review. Instead, they are a crucial complementary tool (Table 12).

Table 12: Altmetrics tool.

Altmetrics	Detail
• **Altmetrics assess various types of impact.**	Citations evaluate scholarly impact (the influence on fellow researchers). In contrast, altmetrics assess societal impact (interest from the public, policymakers, and practitioners) and velocity (the speed at which attention is attracted).
• **Altmetrics offer a more comprehensive narrative.**	A solitary figure (such as a citation count) cannot convey the entire narrative. A high altmetrics score indicates that research is being discussed, bookmarked for future reading, utilized in policy-making, and featured in the media. This provides a much more complete representation of a work's importance.

In terms of Q1-Q4 journal fees, a heightened institutional dependence on altmetrics would assist in separating research evaluation from the exploitative APC market. It would recognize the inherent impact of the work, irrespective of the journal's quartile, ultimately fostering a healthier, more genuine, and more impactful research environment. The essential point is to employ them judiciously—as measures of engagement, rather than as a new simplistic reward to be manipulated.

9 Conclusion

The pressure to publish in Q1-Q4 Scopus journals exemplifies the Cobra Effect. The incentive, intended to foster high-quality science, has inadvertently led to the mass production of publications—the academic equivalent of breeding cobras. This has inundated the system, diminished the value of authentic scientific accomplishments, and generated numerous new challenges.

The global academic community faces the task of learning from this narrative and ceasing to reward the mere production of a "dead cobra" (a publication in a ranked journal) while instead prioritizing the true objective: the nurturing of a healthy, reliable, and impactful scientific ecosystem. To prevent encountering more cobras, the scientific community needs to set aside their arrogance and reconsider their approach.

According to Della Sala (2022), universities should take back control of scientific publishing by managing their own Open Access journals. This means there will be no economic incentives to publish more, ensuring that quality is maintained. Overall, this leads to more good science, fewer cobras.

As article-level metrics, altmetrics monitor the online attention and engagement that a scholarly work garners, reflecting its societal impact beyond mere citations. All metrics need to be cautious of potential manipulations. Therefore, employing multiple metrics may be preferable to relying on a single metric.

10 Availability of Data and Materials

All information is included in this article.

11 References

Binfield, P. (2009). Article-Level Metrics at PLoS - what are they, and why should you care? (Video). University of California, Berkeley. http://www.youtube.com/watch?v=Z05j5fsVfHA

Chakrabarti, S. S., Kaur, U., Patwardhan, K., & Chakrabarti, S. (2024). Assessing Faculty for Universities: Beyond Publishing Metrics. In *Scientific Publishing Ecosystem: An Author-Editor-Reviewer Axis* (pp. 105-122). Singapore: Springer Nature Singapore. DOI: 10.1007/978-981-97-4060-4_6

Della Sala, S. (2022). Plan S and the Cobra effect. *The Psychologist, 35*, 2-3. https://thepsychologist.bps.org.uk/volume-35/june-2022/plan-s-and-cobra-effect

Erduran, S. (2023). Cobra Effect in Science Education?. *Sci & Educ* **32**, 877-878 http://doi.org/10.1007/s11191-023-00453-4

Inamdar, S., & Parveen, S. (2020). The National Education Policy (NEP) 2020-Galvanizing the rusting higher education in India. *Vidyawarta Interdisciplinary Multilingual Peer-Reviewed Journal*, 9, 229-233.

Minnaar, J. (2022). The Cobra Effect: Never Invent Rules From The Ivory Tower. http://www.corporate-rebels.com/blog/leaders-rules Accessed January 2025.

OLS. (2025). San Francisco Declaration on Research Assessment – DORA. Ouvrir la Science. http://www.ouvrirlascience.fr/san-francisco-declaration-on-research-assessment-dora

Rajgor. (2025). Cobra Effect. http://x.com/meetMrajgor/status/1942281810358276324 Accessed Jul 2025.

SFDORA. (2025). San Francisco Declaration on Research Assessment. http://sfdora.org/read

SFDORA. (2024). DORA badges. http://sfdora.org/resource/dora-badges

SFI. (2017). Science Foundation Ireland is committed to the principles of the San Francisco Declaration on Research Assessment (DORA). Science Foundation Ireland (SFI).

USheffield. (2025). DORA: Responsible research assessment. The University of Sheffield.

http://sheffield.ac.uk/openresearch/home/dora-responsible-research-assessment

Wikipedia. (2025). San Francisco Declaration on Research Assessment. http://en.wikipedia.org/wiki/San_Francisco_Declaration_on_Research_Assessment

World Bank. (2022). Scientific and technical journal articles – Indonesia, Thailand, Malaysia, Vietnam. https://data.worldbank.org/indicator/ip.jrn.artc.sc?end=2022&locations=ID-TH-MY-VN-SG&start=1996&view=chart Accessed January 2025.

Zein, R. A. (2018). The Cobra Effect: Indonesian Lecturers are Obsessed with the Scopus Index and Despicable Practices towards World-Class Universities. http://world.edu/the-cobra-effect-indonesian-lecturers-are-obsessed-with-the-scopus-index-anddespicable-practices-towards-world-class-universities

Dr.Bhattraradej (Boonsap) Witchayangkoon is an Associate Professor of the Department of Civil Engineering at Thammasat School of Engineering, Thammasat University. He received his B.Eng. from King Mongkut's University of Technology Thonburi with Honors. He continued his PhD study at the University of Maine, USA, where he obtained his PhD in Spatial Information Science & Engineering. His interests encompass the application of emerging technologies within the field of Civil Engineering.

Dr. Kritsada Anantakarn is an Assistant Professor at the Department of Civil Engineering Technology, Faculty of Engineering and Architecture, Rajamangala University of Technology Tawan-ok, Uthenthawai Campus, Thailand. He earned his Bachelor of Engineering (Civil Engineering) from Rajamangala Institute of Engineering, and a Master's degree in Urban and Environmental Planning from King Mongkut's Institute of Technology Ladkrabang, and a PhD from Thammasat University. He is interested in GPS/GNSS, Spatial Engineering & Technology.