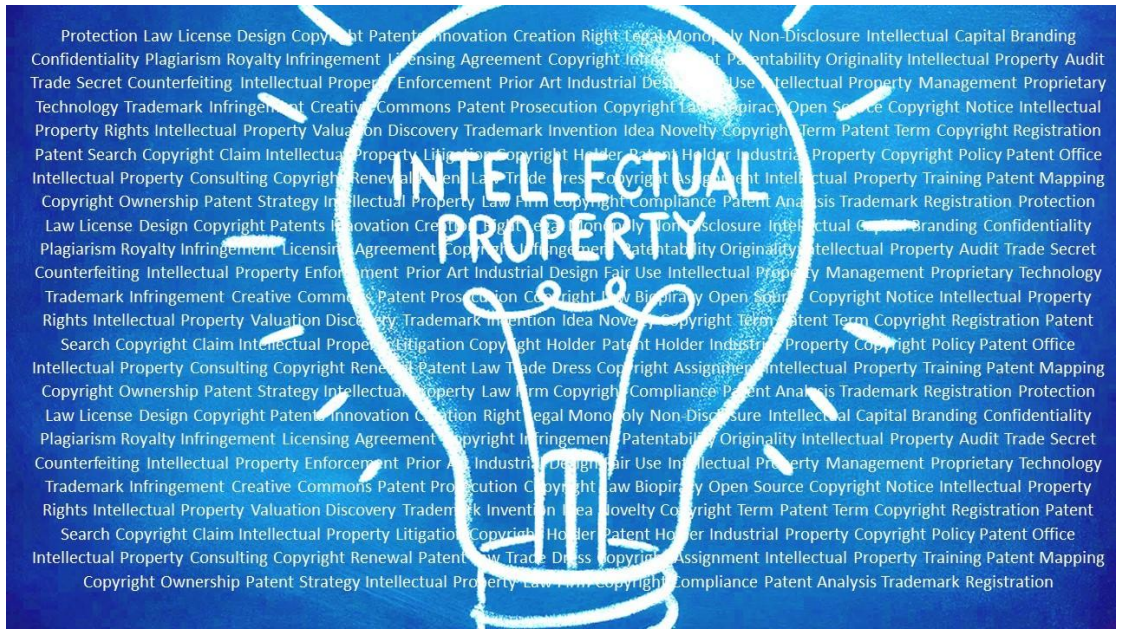
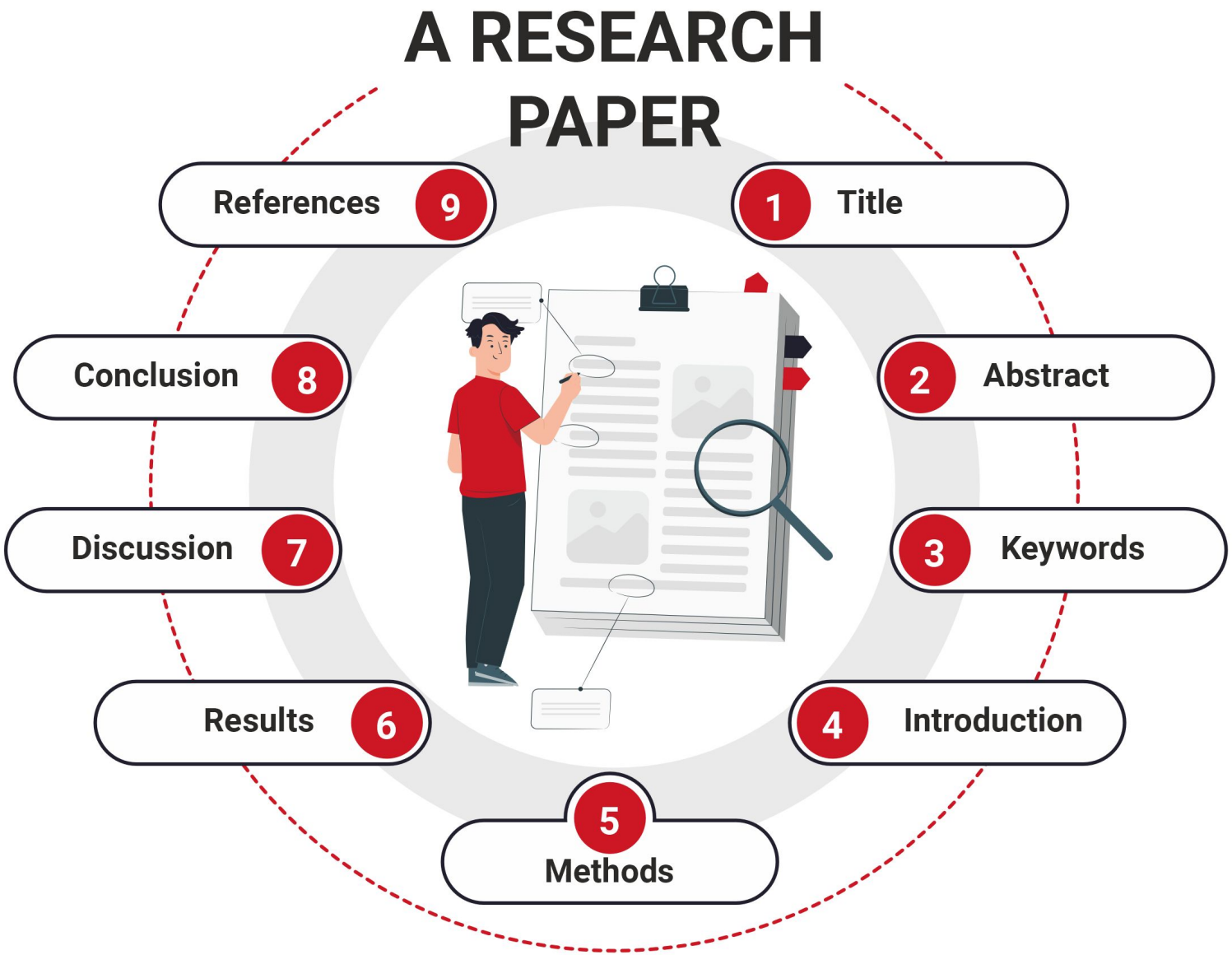
71203002006
Entrepreneurship Development and IPR

Dr. Chintan Trivedi



Unit IV

RESEARCH PUBLICATIONS & TECH DISSEMINATION


A RESEARCH PAPER
1 Title
2 Abstract
3 Keywords
4 Introduction
5 Methods
6 Results
7 Discussion
8 Conclusion
9 References

Anatomy of a Journal Article

Know what types of information to expect in each section of an article.

Abstract	• provides a summary of the article
Introduction	• includes background information and a description of the author's purpose
Materials & Methods	• details about how the study was performed with enough detail so that other scientists could repeat the study
Results	• includes new observations, data and findings, figures
Discussion	• a description of what the findings mean and their implications; address potential criticisms

References: Cite the authors, book, website etc.

RESEARCH PUBLICATIONS

- A research publication is a formal document where researchers present the results of their **original study**, **experiments, analysis**, or **review** to the academic and professional community.
- It undergoes **peer review** (in most cases) to ensure **quality**, **novelty, originality**, and **reliability** before being accepted in a **journal, conference, or book chapter**.

Types of Publications

- Journal Articles
- Conference Papers
- Books & Book Chapters
- Thesis & Dissertations
- Technical Reports / White Papers
- Case Studies
- Magazines/Trade Publications

Journal Articles

- A **journal article** is a piece of scholarly writing published in an academic or scientific journal
  - Original Research Articles (Empirical Studies)
  - Review Articles
  - Short Communications / Brief Reports
  - Case Studies / Case Reports
  - Methodological / Technical Articles
  - Opinion / Commentary Articles

Original Research Articles

- Original research articles include a **research question or hypothesis**.
- It usually contain most of the following sections: **methods, results, discussion, conclusion and references.**
- An original research article is written by the person or people that conducted the **experiment or observations.**
- Original research articles are considered **empirical or primary sources and present an original study.**

Original Research Articles (Empirical Studies)

Computer Science / Engineering
Example: "A Deep Learning Approach for Predicting Cybersecurity Threats"
Journal: **IEEE Transactions on Neural Networks and Learning Systems**
Description: Researchers proposed and tested a new neural network model using empirical datasets.

Environmental Science
Example: "Impact of Urbanization on Local Air Quality: A Case Study of Delhi"
Journal: Environmental Research Letters
Description: Based on real-world air pollutant data collected across different city zones.

Review Article

- A **review article** is a journal article that summarizes **the current state of understanding on a topic within a certain discipline**.
- A review article is generally considered a secondary source since it may analyze and discuss the method and conclusions in previously published studies.

Review articles teach about:

- the main people working in a field
- recent major advances and discoveries
- **significant gaps in the research**
- current debates
- **suggestions of where research might go next (future scope)**

Types of Review Articles

Narrative Review:

- Summarizes existing research broadly without strict methodology.
- Example: "A Review of Machine Learning Applications in Healthcare."

Systematic Review:

- Follows a structured method to collect and analyze studies on a topic.
- Example: "Systematic Review on the Effectiveness of Online Learning in Higher Education."

Meta-Analysis:

- Combines statistical data from multiple studies to find overall trends.
- Example: "A Meta-Analysis of the Relationship Between Exercise and Mental Health."

Engineering / Computer Science

Title: "Recent Advances in Artificial Intelligence for Cybersecurity"

Journal: IEEE Access

Description: Summarizes research papers on AI-based intrusion detection, highlighting major algorithms and datasets used.

Medical / Health Sciences

Title: "A Review of COVID-19 Vaccine Development Strategies"

Journal: The Lancet Reviews

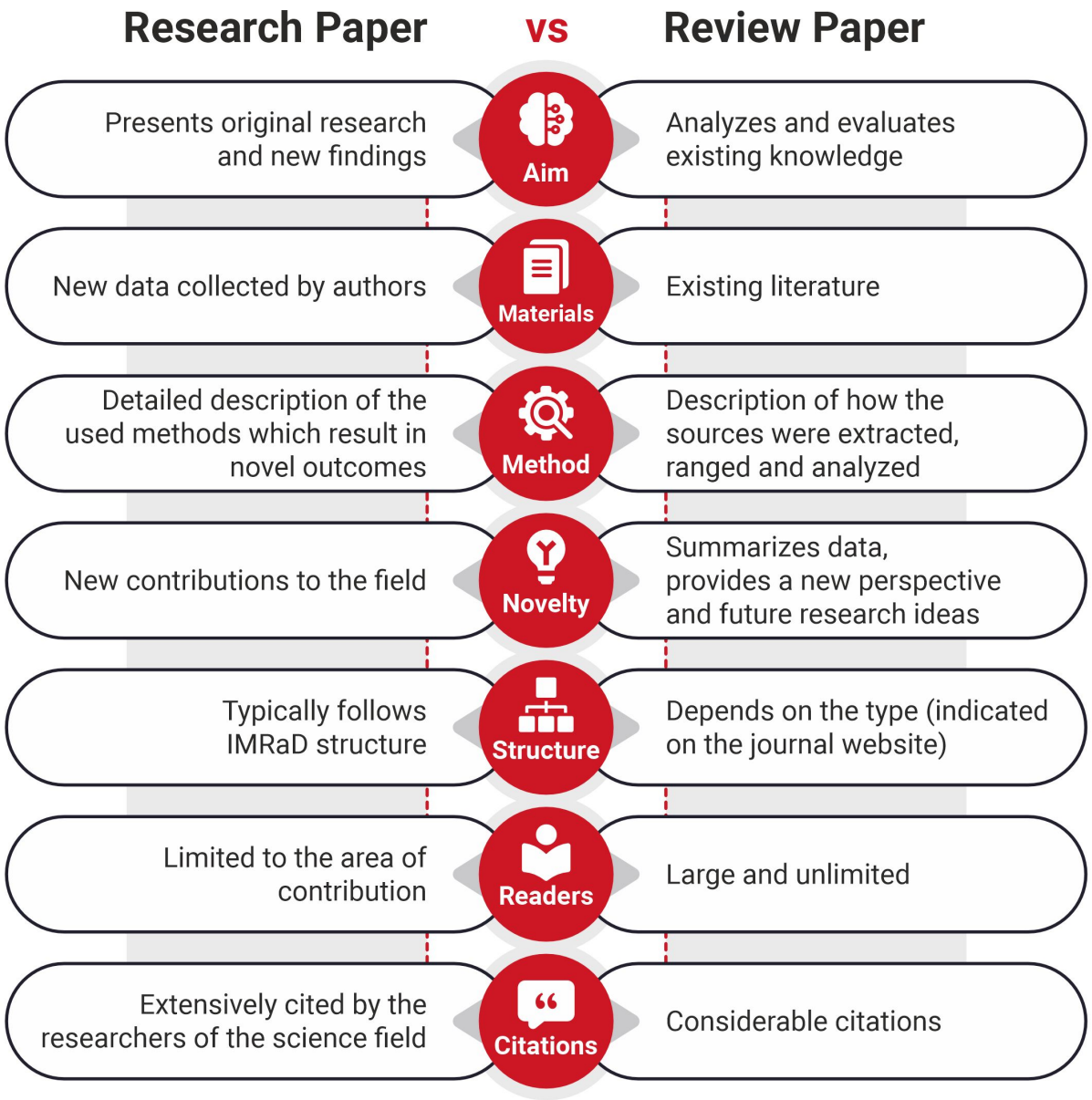
Description: Discusses progress, challenges, and clinical trial outcomes of different vaccine types.

Environmental Science

Title: "A Comprehensive Review of Climate Change Impacts on Agriculture"

Journal: Environmental Research Letters

Description: Reviews dozens of studies about rising temperatures, rainfall variability, and crop yield patterns.


Research Paper
vs
Review Paper
Presents original research and new findings
Aim
Analyzes and evaluates existing knowledge
New data collected by authors
Materials
Existing literature
Detailed description of the used methods which result in novel outcomes
Method
Description of how the sources were extracted, ranged and analyzed
New contributions to the field
Novelty
Summarizes data, provides a new perspective and future research ideas
Typically follows IMRaD structure
Structure
Depends on the type (indicated on the journal website)
Limited to the area of contribution
Readers
Large and unlimited
Extensively cited by the researchers of the science field
Citations
Considerable citations

Short Communications / Brief Reports

- **Short Communications** (also called **Brief Reports** or **Technical Notes**) are concise research papers that describe **new findings**, **preliminary results**, or **small-scale studies** that are **important but not large enough** to be full-length research articles.

EXAMPLES

Engineering / Computer Science

- **Title:** "A Brief Report on a Low-Cost IoT Sensor for Air Quality Monitoring"
- **Journal:** IEEE Sensors Letters
- **Description:** Introduces a small prototype sensor that measures air pollutants, providing initial field test data.

Examples of Short Communications

Medical / Health Sciences

- **Title:** "Brief Report: Early Detection of Dengue Virus Using a Portable Test Kit"
- **Journal:** Journal of Clinical Virology
- **Description:** Presents preliminary results of a new, rapid diagnostic device tested on a small group of patients.

Environmental Science

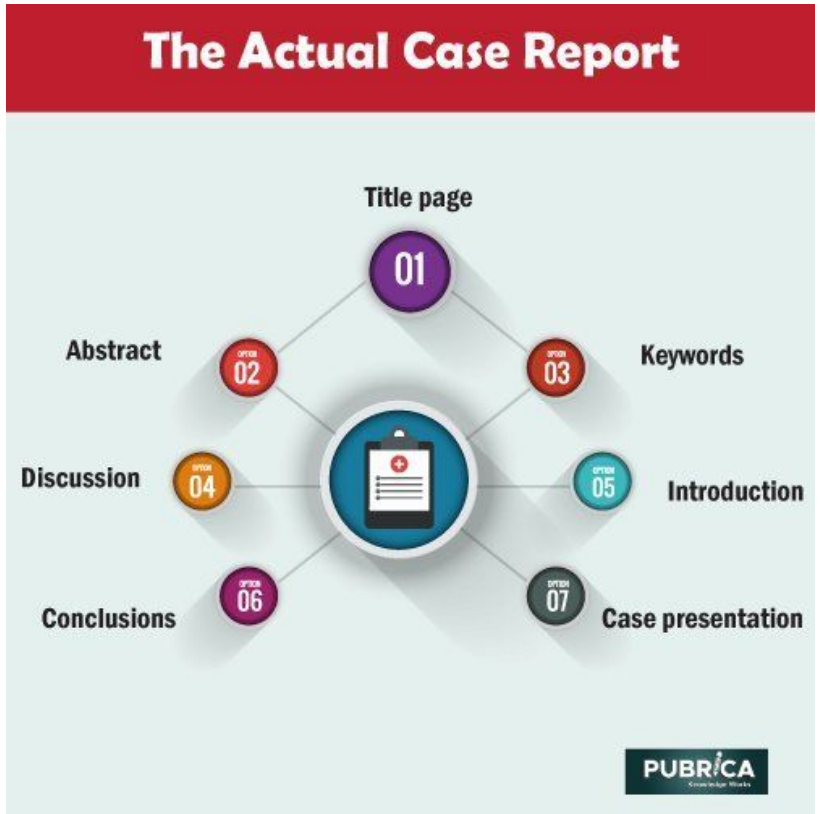
- **Title:** "Short Communication: Microplastic Contamination in River Water of Urban Areas"
- **Journal:** Environmental Monitoring and Assessment
- **Description:** Reports quick sampling and initial findings on microplastic presence in a local river.

Case Studies / Case Reports

- **Case Studies** or **Case Reports** are detailed descriptions and analyses of a **single case** (or a small number of cases).
- They are used to highlight **unique, rare, or instructive examples** of real-life situations, experiments, or phenomena.

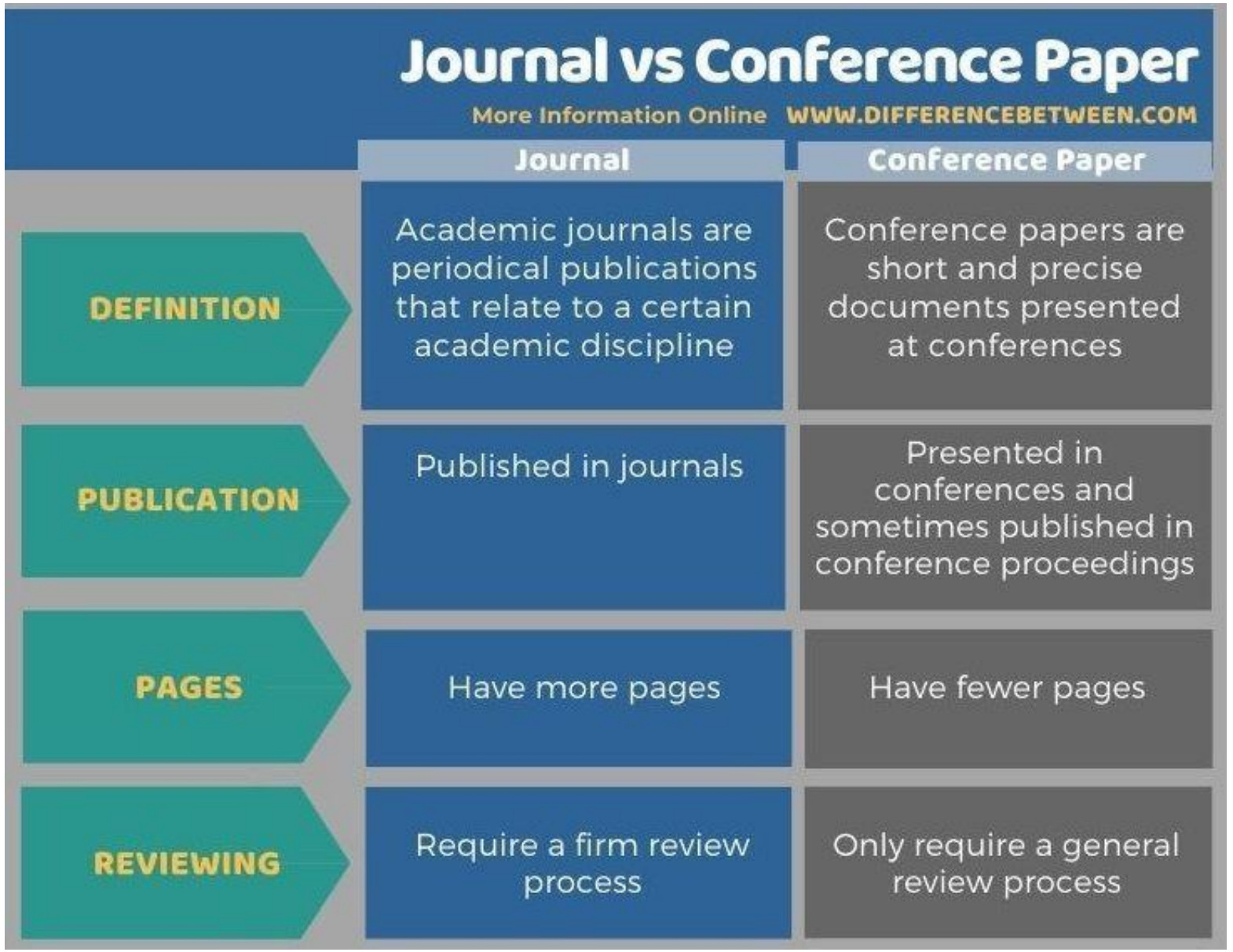
In research, case studies are commonly used in:

- **Business and management**
- Medicine and healthcare
- Education
- Social sciences
- Engineering and technology



Examples of Reputed Journals

- **Science & Technology**
- Nature (Springer Nature)
- Science (AAAS)
- IEEE Transactions (Various IEEE journals)
- Journal of Applied Physics
- **Engineering**
- ASME Journal of Mechanical Engineering
- IEEE Transactions on Robotics
- International Journal of Mechanical Sciences
- Journal of Manufacturing Processes
- **Medicine & Life Sciences**
- The Lancet
- New England Journal of Medicine (NEJM)
- BMJ (British Medical Journal)
- Journal of Biological Chemistry
- **Social Sciences & Humanities**
- American Journal of Sociology
- Harvard Business Review (though more practitioner-oriented)
- Journal of Educational Research
- Economic & Political Weekly (EPW


Journal vs Conference Paper
More Information Online WWW.DIFFERENCEBETWEEN.COM
Journal
Conference Paper
DEFINITION
Academic journals are periodical publications that relate to a certain academic discipline
Conference papers are short and precise documents presented at conferences
PUBLICATION
Published in journals
Presented in conferences and sometimes published in conference proceedings
PAGES
Have more pages
Have fewer pages
REVIEWING
Require a firm review process
Only require a general review process

International Conferences Engineering and technology

https://academicworldresearch.org/india/engineering-and-technology

Journal Indexing

- SCI – Science Citation Index
- SCIE – Science Citation Index Expanded
- Scopus
- Web of Science (WoS)
- UGC-CARE

Indexing	Managed by	Coverage	Example Journals	Key Point
SCI	Clarivate	Core Science	*Nature*, *TPAMI*	Elite journals
SCIE	Clarivate	Expanded Science	*Energy Conversion & Management*	Wider coverage
Scopus	Elsevier	All disciplines	*LNCS*, *Computers & Education*	Largest coverage
Web of Science	Clarivate	SCI, SCIE, SSCI, AHCI	*Nature Nanotech*, *JBR*	Global credibility
UGC-CARE	UGC (India)	Indian + Global (Scopus/WoS)	*Indian J. of Public Health*	For Indian academia

Importance of Journal Publication

Research ID

- Google Scholar Profile
- Research Gate
- Scopus Author ID
- ORCID (Open Researcher and Contributor ID)
- SciProfiles

Rahul Vaish

Professor, IIT Mandi
Verified email at iitmandi.ac.in - Homepage
Materials Science

FOLLOW

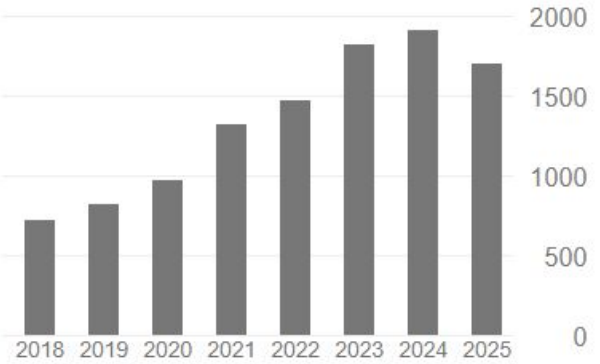
GET MY OWN PROFILE

TITLE	CITED BY	YEAR
BaTiO3-based piezoelectrics: Fundamentals, current status, and perspectives M Acosta, N Novak, V Rojas, S Patel, R Vaish, J Koruza, GA Rossetti, ... Applied Physics Reviews 4 (4)	1441	2017
Pyroelectric materials and devices for energy harvesting applications CR Bowen, J Taylor, E LeBoulbar, D Zabek, A Chauhan, R Vaish Energy & Environmental Science 7 (12), 3836-3856	941	2014
Anti-ferroelectric ceramics for high energy density capacitors A Chauhan, S Patel, R Vaish, CR Bowen Materials 8 (12), 8009-8031	337	2015
A review of piezoelectric energy harvesting tiles: Available designs and future perspective S Sharma, R Kiran, P Azad, R Vaish Energy Conversion and Management 254, 115272	174	2022
Magnetic material selection using multiple attribute decision making approach A Chauhan, R Vaish Materials & Design (1980-2015) 36, 1-5	163	2012
Selection and performance assessment of Phase Change Materials for heating, ventilation and air-conditioning applications M Rastogi, A Chauhan, R Vaish, A Kishan Energy Conversion and Management 89, 260-269	161	2015
Candle soot: Journey from a pollutant to a functional material MR Mulay, A Chauhan, S Patel, V Balakrishnan, A Halder, R Vaish Carbon 144, 684-712	140	2019

Cited by

VIEW ALL

	All	Since 2020
Citations	12484	9270
h-index	53	41
i10-index	274	225



Public access

VIEW ALL

77 articles — not available

73 articles — available

Based on funding mandates

Co-authors

Anil Kumar, PhD (IIT-Delhi), PDF (Thailand), Fellow (IEI), C.Eng., Research Fellow: NERPS

FOLLOW

GET MY OWN PROFILE

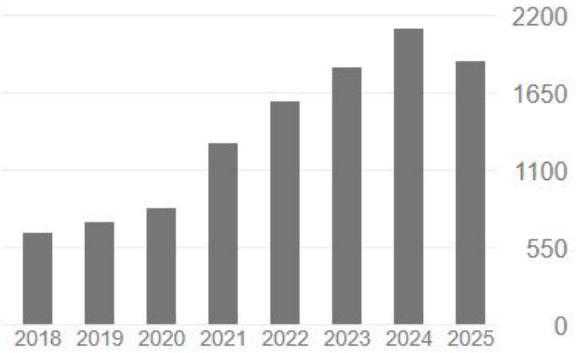
Professor, Dept. of Mechanical Engineering, Delhi Technological University, Delhi (India)
Verified email at dtu.ac.in - Homepage

Renewable Energy Solar Energy Heat Transfer and Environ…

TITLE	CITED BY	YEAR
A review on biomass energy resources, potential, conversion and policy in India A Kumar, N Kumar, P Baredar, A Shukla Renewable and Sustainable Energy Reviews 45, 530–539	644	2015
Natural Dyes for Dye Sensitized Solar Cell: A Review G Richhariya, A Kumar, P Tekasakul, B Gupta Renewable & Sustainable Energy Reviews 69, 705-718	567	2017
Experimental and analytical studies of earth–air heat exchanger (EAHE) systems in India: a review TS Bisoniya, A Kumar, P Baredar Renewable and Sustainable Energy Reviews 19, 238-246	280	2013
Exergo-environmental analysis of an indirect forced convection solar dryer for drying bitter gourd slices S Vijayan, TV Arjunan, A Kumar Renewable Energy 146, 2210-2223	272	2020
Solar stills system design: A review PV Kumar, A Kumar, O Prakash, AK Kaviti Renewable and Sustainable Energy Reviews 51, 153-181	271	2015
Solar greenhouse drying: A review O Prakash, A Kumar Renewable and Sustainable Energy Reviews 29, 905-910	267	2014
Historical and recent development of photovoltaic thermal (PVT) technologies K Anil, B Prashant, Q Uzma Renewable and Sustainable Energy Reviews 42, 1428-1436	261	2015

Cited by VIEW ALL

	All	Since 2020
Citations	12267	9580
h-index	61	53
i10-index	182	179



Co-authors VIEW ALL


Perapong Tekasakul
Prince of Songkla University


Prof. Atul Sharma
Non-Conventional Energy Labor…


Dr. Asim Ahmad
IRC-SES, King Fahd University o…


Bhupendra Gupta
Associate Professor, Mechanical…

Importance of Citations

- A **citation** is a reference to the source of information or ideas that you use in your research work.
- It gives **credit to the original author** and helps readers **trace the source** of the information.

Citations are usually given in the form of:

- In-text references (e.g., Smith, 2022, kumar et al., kumar, J., [1])
- Footnotes or endnotes
- Reference lists or bibliographies at the end of the paper

Importance of Citations

Reason	Explanation	Example
Give Credit	Acknowledge others' ideas	Quoting a theory from Newton
Support Ideas	Make arguments stronger	Citing research data
Help Readers	Trace sources easily	Linking to original paper
Avoid Plagiarism	Maintain honesty	Using proper referencing
Show Knowledge	Indicate wide reading	Referencing multiple studies

h - index

- It is a number that represents both productivity and the impact of a particular researcher/scientist/scholar's output.
- It is a widely used research metric across the world including Web of Science and Google Scholar.
- **h-index = 'h' has at least 'h' papers that have been cited 'h' times**
- For Example: If a scholar has h-index of 12, it means that he has 12 papers that have been cited at least 12 times.

i10- index

- The **i10-Index** is a **citation metric** created by **Google Scholar**.

  It measures the **number of publications (papers)** by an author that have been **cited at least 10 times** by others.

- It is a simple way to check the **impact and productivity** of a researcher.

Formula for i10 index

- **i10-Index = Number of papers with 10 or more citations**
- Example: if an author has **8 papers** that have each been cited **at least 10 times**, then **i10-Index will be 8.**

Find out the i10

Paper Title	Number of Citations
Paper A	50
Paper B	25
Paper C	11
Paper D	9
Paper E	5

i10 index = 3

nature

View all journals | Search | Log in

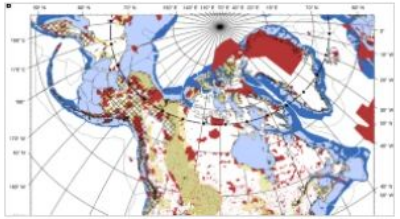
Explore content | About the journal | Publish with us | Subscribe | Sign up for alerts | RSS feed

A revolution is sweeping Europe's farms: can it save agriculture?

Momentum is building for regenerative agriculture, a set of approaches that could help farms to weather the changing climate and make them more profitable.

These nations are wooing

Can researchers stop AI



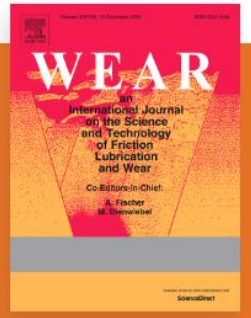
A prudent planetary limit

Daily briefing: A polo-

ADVERTISEMENT

ScienceDirect

Journals & Books | Help | Search | My account | Sign in



Wear

Supports open access

10.4 CiteScore | 6.1 Impact Factor

Articles & Issues | About | Publish | Order journal ↗ | Search in this journal | Submit your article ↗ | Guide for authors

About the journal

An International Journal on the Science and Technology of Wear

WEAR journal is dedicated to the advancement of fundamental and applied knowledge concerning the nature of wear of materials. Broadly, topics of interest range from development of fundamental understanding of the mechanisms of wear to ...

View full aims & scope

Article publishing options

Open Access

Article Publishing Charge (APC): **USD 4,240 (excluding taxes).**
The amount you pay may be reduced during submission if applicable.
Review this journal's open access policy.

Subscription

No publication fee charged to authors, and published articles

Article

Latent resistance mechanisms of steel truss bridges after critical failures

https://doi.org/10.1038/s41586-025-09300-8

Received: 2 April 2025

Accepted: 17 June 2025

Published online: 3 September 2025

Open access

Check for updates

Juan C. Reyes-Suárez[1], Manuel Buitrago[1], Brais Barros[1], Safae Mammeri[2], Nirvan Makoond[1], Carlos Lázaro[3], Belén Riveiro[2] & Jose M. Adam[1]✉

Steel truss bridges are constructed by connecting many different types of bars (components) to form a load-bearing structural system. Several disastrous collapses of this type of bridge have occurred as a result of initial component failure(s) propagating to the rest of the structure[1–3]. Despite the prevalence and importance of these structures, it is still unclear why initial component failures propagate disproportionately in some bridges but barely affect functionality in others[4–7]. Here we uncover and characterize the fundamental secondary resistance mechanisms that allow steel truss bridges to withstand the initial failure of any main component. These mechanisms differ substantially from the primary resistance mechanisms considered during the design of (undamaged) bridges. After testing a scaled-down specimen of a

Nature's Impact Factor

- As of **2024**, Nature has a **2-year Journal Impact Factor (JIF)** of **48.5**. Nature+1
- Its **5-year impact factor** is **55.0**. Nature+1
- Nature's immediacy index (which shows how quickly its articles are cited after publication) is **11.8** for 2024.

Impact Factor

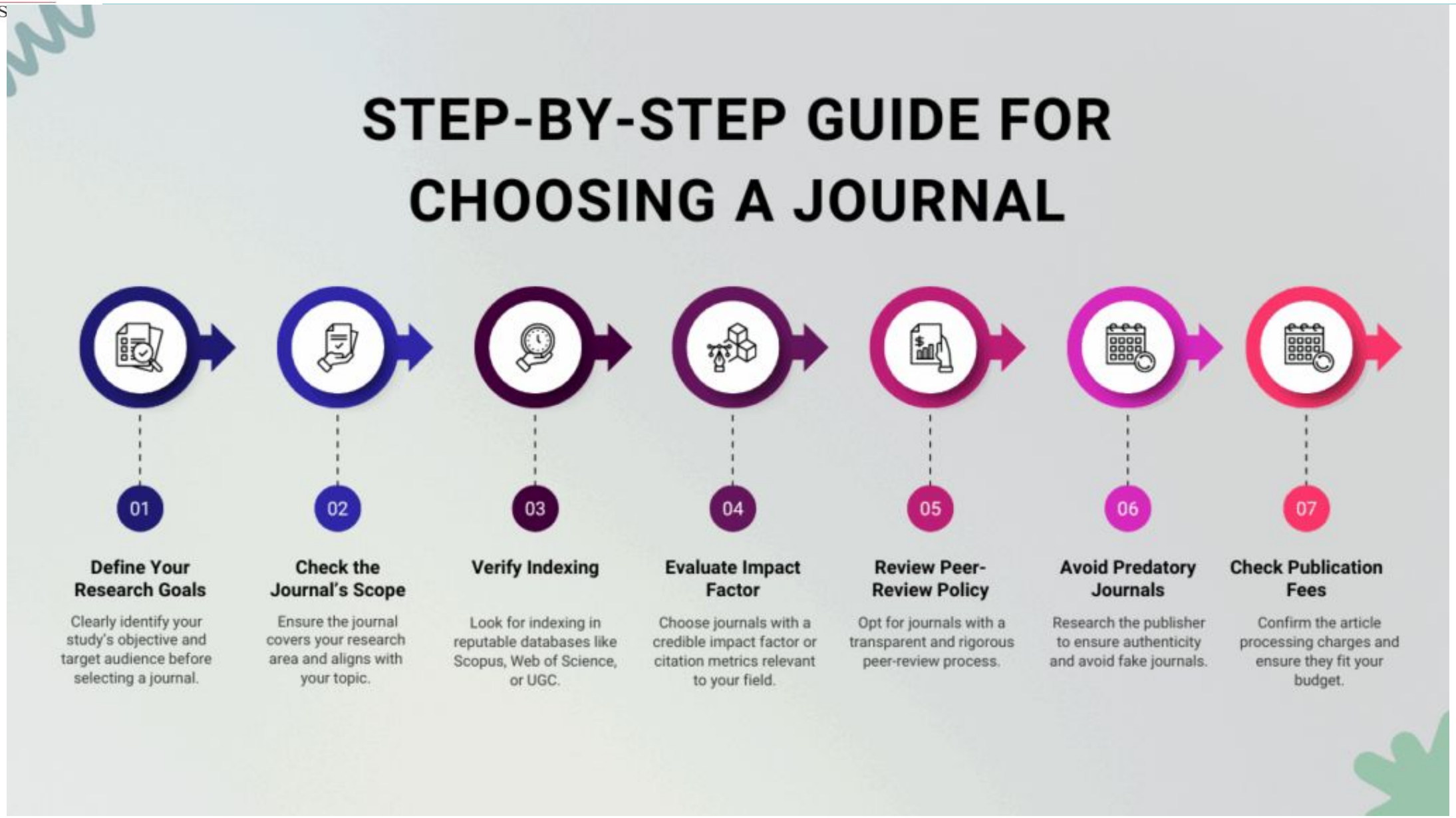
- It is a metric that reflects the yearly average number of citations to recent articles published in that journal.
- It is often used as a proxy for relative importance of a journal within its field.
- It must be noted that journals with higher impact factors are considered more important as compared to lower ones.

Basic 2-Year Impact Factor Formula

$$\text{Impact Factor (year X)} = \frac{\text{Citations in year X to items published in years (X-1) and (X-2)}}{\text{Number of citable items published in years (X-1) and (X-2)}}$$

Example:

- Suppose we are calculating the **2024 Impact Factor** for a journal:
- Citations in **2024** to articles published in **2022 and 2023** = **10,000**
- Number of "citable items" (articles, reviews, etc.) published in **2022 and 2023** = **200**
- Impact Factor (2024)=10,000/200 = 50.0
- **A citation is a reference in one research work (like a journal article, book, or thesis) to another published source.**


STEP-BY-STEP GUIDE FOR CHOOSING A JOURNAL
01
Define Your Research Goals
Clearly identify your study's objective and target audience before selecting a journal.
02
Check the Journal's Scope
Ensure the journal covers your research area and aligns with your topic.
03
Verify Indexing
Look for indexing in reputable databases like Scopus, Web of Science, or UGC.
04
Evaluate Impact Factor
Choose journals with a credible impact factor or citation metrics relevant to your field.
05
Review Peer-Review Policy
Opt for journals with a transparent and rigorous peer-review process.
06
Avoid Predatory Journals
Research the publisher to ensure authenticity and avoid fake journals.
07
Check Publication Fees
Confirm the article processing charges and ensure they fit your budget.

Journal	Main Focus Area(s)	Approx. Impact / Notes
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)	Computer vision, pattern recognition, AI	approximately **20.8** for 2023
ACM Computing Surveys	Survey/tutorial articles across CS fields	Impact ~ 23.8 in 2023.
Artificial Intelligence (journal)	Broad AI topics (theory, applications)	IF ~ 14.4 recently.
Information Fusion	Multisource data fusion, signal processing, AI integration	IF ~ 15.5 recently
IEEE Transactions on Neural Networks and Learning Systems	Neural networks, deep learning, ML theory/methods	Strong reputation; high IF. (Illinois Library Guides)
Knowledge-Based Systems	AI with knowledge systems, expert systems, reasoning, etc.	One of Elsevier's high-IF journals in the AI area. (Insights to Tech Info)
Pattern Recognition	Pattern recognition, image analysis, computer vision	Good IF; often cited in CS/AI literature. (Insights to Tech Info)
Neurocomputing	Neural networks, machine learning, computational intelligence	IF ~ 5.5 in 2023. (Wikipedia)
Advanced Intelligent Systems	AI systems, robotics, automation, smart/sensing systems, etc.	IF ~ 7.4 (2022). (Wikipedia)
AI (Journal "AI – Basel" etc.)	Interdisciplinary applications of AI	Current IF ~ 5.0. (MDPI)

PUBLISHER

- **Elsevier** – Science Direct Journals (e.g., Applied Energy, Materials Today)
- **Springer Nature** – Nature, Springer Journals
- **Wiley-Blackwell** – Advanced Materials, International Journal of Energy Research
- **Taylor & Francis** – International Journal of Production Research
- **IEEE Xplore** – IEEE Transactions series

Peer Review

- **Peer review** is the process by which academic research papers are evaluated by independent experts ("peers") in the same field before being accepted for publication in a journal.
- It ensures that published research is **Accurate** (free from major errors), **Relevant** (contributes to the field), **Original** (not plagiarized), and **Reliable** (based on sound methods).

Types of Peer Review

- **Single-blind** → Reviewers know the author's identity, but authors don't know the reviewers.
  - Common in many **medical and engineering journals**.

- **Double-blind** → Neither author nor reviewers know each other's identity.
  - Used in **social sciences, humanities, and some computer science journals**.

- **Open review** → Both parties know each other's identity, and sometimes reviews are published along with the paper.

Peer Review Works Steps

Step-1: Submission: Author submits a manuscript to the journal.

Step-2: Initial Screening : Editor checks if the paper fits the journal scope.

Step-3: Reviewer Assignment: Experts in the subject are invited to review.

Step-4: Review Process : Reviewers evaluate methodology, originality, clarity, and contribution.

Step-5: Feedback : Reviewers suggest:

- Accept,
- Revise (minor/major), or
- Reject.

Step-6: Decision : Editor makes the final call based on reviews.

Step-7: Publication: Only after quality checks, the paper is published.

Examples of Journals with Peer Review

In Engineering & Computer Science

- **IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)** – double-blind peer review.
- **ACM Transactions on Computer Systems (TOCS)** – rigorous peer review, multiple rounds of revisions.
- **Information Fusion (Elsevier, Impact Factor ~ 20+)** – uses expert reviewers to ensure originality and scientific value.

In General Science

- **Nature** (Springer Nature) – extremely strict review process, often multiple revisions.
- **Science** (AAAS) – high rejection rate, peer reviewers ensure groundbreaking originality.
- **The Lancet** (Medical Journal) – uses double-blind peer review for clinical research.

Predatory Journals

- **Predatory Journals** are unethical or fake academic journals that exploit researchers by charging high publication fees without providing legitimate editorial and publishing services (such as peer review, quality control, and indexing).

Features of Predatory Journals

- **Fake Peer Review** – Articles are published quickly without proper evaluation.
- **Misleading Claims** – Claiming false impact factors, indexing, or affiliations.
- **Excessive Publication Fees** – High charges without transparency.
- **Spam Emails** – Aggressively inviting researchers to submit papers or join editorial boards.
- **Low-Quality Content** – Publishing plagiarized, irrelevant, or poorly written research.
- **Fake Editorial Board** – Listing names of academics without consent.

Predatory Journals List

- https://www.predatoryjournals.org/the-list
- https://www.researchgate.net/publication/342313111_Predatory_Publishers_Journlas_List_2020-Version

Role of Research in Product Development (Tech-Transfer)

- Foundation for innovation
- Intellectual property (IP)
- Product and process development
- Risk mitigation

"Innovation is the soul of engineering,
but protecting your ideas through IPR is what transforms creativity into lasting impact"!!