RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS

BRMK557

Module 1
Chapter 1
Introduction

Course Objectives

CO1. To Understand the knowledge on basics of research and its types.

CO2. To Learn the concept of Literature Review, Technical Reading, Attributions and Citations.

CO3. To learn Ethics in Engineering Research.

CO4. To Discuss the concepts of Intellectual Property Rights in engineering.

Module-1 (5 Hours)	
Introduction: Meaning of Research, Objectives of Engineering Research, and Motivation in Engineering Research, Types of Engineering Research, Finding and Solving a Worthwhile Problem. Ethics in Engineering Research, Ethics in Engineering Research Practice, Types of Research Misconduct, Ethical Issues Related to Authorship.	
Teaching- Learning Process	Chalk and talk method / PowerPoint Presentation.
Module-2(5 Hours)	
Literature Review and Technical Reading, New and Existing Knowledge, Analysis and Synthesis of Prior Art Bibliographic Databases, Web of Science, Google and Google Scholar, Effective Search: The Way Forward Introduction to Technical Reading Conceptualizing Research, Critical and Creative Reading, Taking Notes While Reading, Reading Mathematics and Algorithms, Reading a Datasheet. **Attributions and Citations**: Giving Credit Wherever Due, Citations: Functions and Attributes, Impact of Title and Keywords on Citations, Knowledge Flow through Citation, Citing Datasets, Styles for Citations, Acknowledgments and Attributions, What Should Be Acknowledged, Acknowledgments in, Books Dissertations, Dedication or Acknowledgments.	
Teaching-Learning Process	Chalk and talk method / PowerPoint Presentation

Module-3 (5 Hours)

Introduction To Intellectual Property: Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments in IP Laws and Acts in India.

Patents: Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Module-4(5 Hours)
Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases. **Trademarks**: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.
Module-5(5 Hours)
Industrial Designs: Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights. Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co. **Geographical Indications**: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India. **Case Studies on Patents.** Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**
Teaching- Learning Process | Chalk and talk method / PowerPoint Presentation

Course Outcomes (Course Skill Set)

At the end of the course the student will be able to:

CO 1. To know the meaning of engineering research.
CO 2. To know the procedure of Literature Review and Technical Reading.
CO 3. To know the fundamentals of patent laws and drafting procedure.
CO 4. Understanding the copyright laws and subject matters of copyrights and designs
CO 5. Understanding the basic principles of design rights.


criticism
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feasible
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definition


What is Research?
Research is a kind of study on a particular subject or an issue where the researcher utilizes scientific techniques.
WWW

Research

- Research refers to a careful, well-defined (or redefined), objective, and systematic method of search for knowledge, or formulation of a theory that is driven by inquisitiveness for that which is unknown and useful on a particular aspect so as to make an original contribution to expand the existing knowledge base.

- Research is a process of creating, or formulating knowledge that does not yet exist.

The research cycle starts with basically a practical problem: one must be clear what the problem being attempted to solve is and why it is important.

- This problem motivates a research question without which one can tend to get lost in a giant swamp of information.

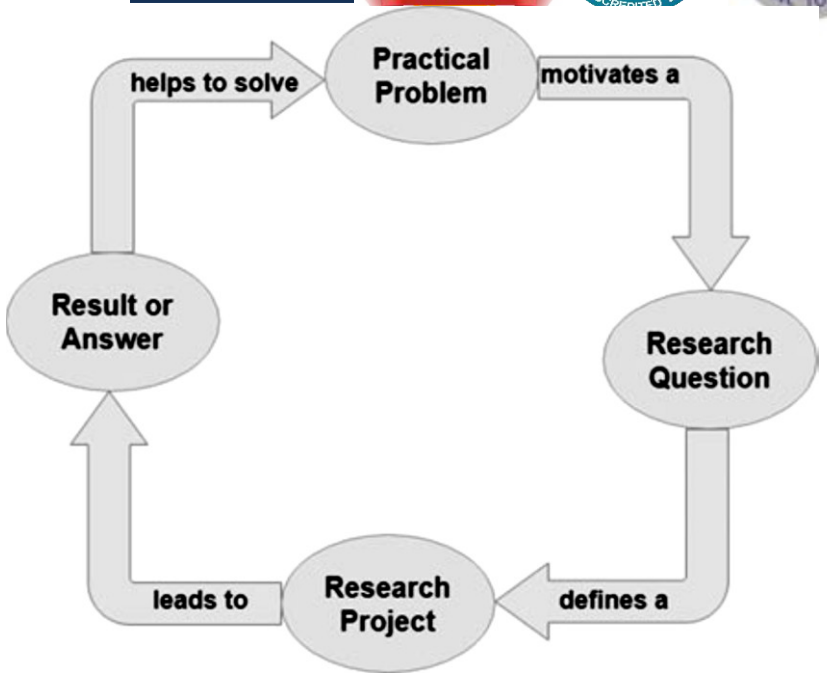

Fig. 1.1 The research flow diagram

The ways of developing and accessing knowledge come in three, somewhat overlapping, broad categories:

(i) **Observation** is the most fundamental way of obtaining information from a source, and it could be significant in itself if the thing that we are trying to observe is **really strange or exciting, or is difficult to observe**. Observation takes different forms from **something like measurements in a laboratory to a survey among a group of subjects to the time** it takes for a firmware routine to run. The observational data often needs to be processed in some form and this leads to the second category of knowledge, the model.

(ii) Models are approximated, often simplified ways of describing sometimes very complex interactions in the form of a statistical relationship, a figure, or a set of mathematical equations. For instance, the modeling equation captures the relationship between different attributes or the behavior of the device in an abstract form and enables us to understand the observed phenomena.

(iii) The final category is a way of arranging or doing things through **processes**, **algorithms, procedures, arrangements, or reference designs**, to get a certain desired result.

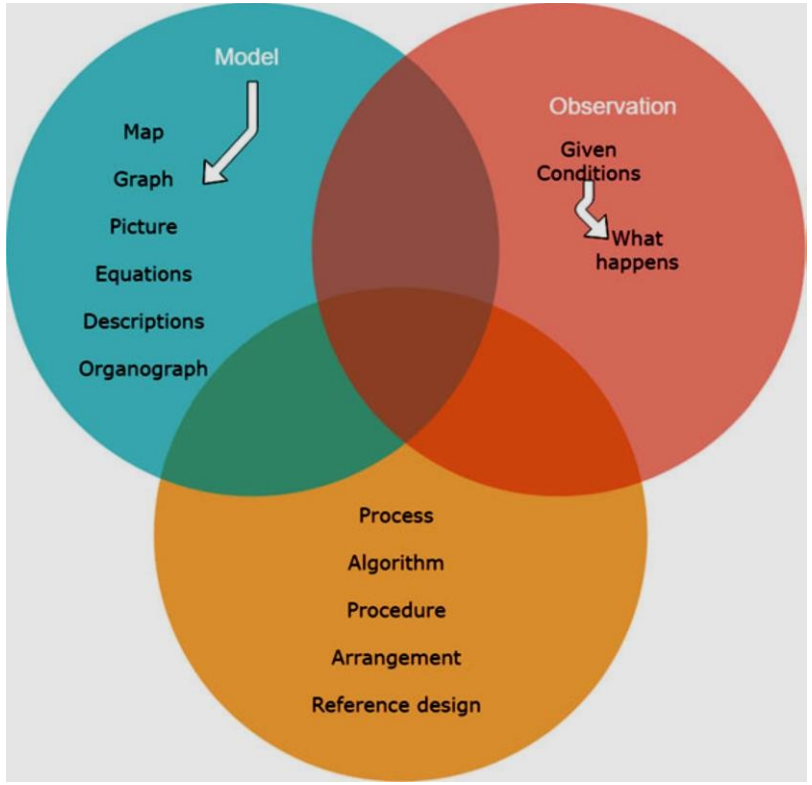

Fig. 1.2 The categories of knowledge in research

- **Good research involves systematic collection and analysis of information and is followed by an attempt to infer a little bit beyond the already known information in a way that is a significant value addition.**

- Usually, engineering research is a journey that traverses from a research area (example: Control Systems), to the topic (example: Control of Microbial Fuel Cells) and finally onto the problem (example: AdaptiveControl of Single Chamber Microbial Fuel Cells) **(Area-> Topic-> Problem).**

- **Getting a good problem to solve is more than half the work done.** However, sometimes the journey can be reverse, for example, the traversal from **(Problem<- Topic<- Area).** This can happen when one is led to a problem through a connection to another problem whose top structure is different.

1.1 Objectives of Engineering Research

- The objective of engineering research is to **solve new and important problems,** and since the conclusion at the end of one's research outcome has to be new, but when one starts, the conclusion is unknown. So, the start itself is tricky, one may say.

- The answer is, based on **"circumstantial evidence", intuition, and imagination, one guesses what may be a possible conclusion**.

- The main aim of the research is to **apply scientific approaches to seek answers to open questions,** and although each research study is particularly suited for a certain approach, in general, **the following are different types of research studies: exploratory or formulative, descriptive, diagnostic, and hypothesis-testing**.

- The **objectives of engineering research should be to develop new theoretical or applied knowledge** and not necessarily limited to obtaining abilities to obtain the desired result.

Motivation in Engineering Research

- The possible motives may be the result of one or more of the following desires:

(i) Studies have shown that **intrinsic motivations like interest, challenge, learning, meaning, purpose, are linked to strong creative performance;**

(ii) Extrinsic motivating factors like rewards for good work include **money, fame, awards, praise, and status** are very strong motivators, but may block creativity.

For example**: Research outcome may enable obtaining a patent which is a good way to become rich and famous**.

(iii) Influences from others like competition, collaboration, commitment, and encouragement are also motivating factors in research. For example: my friends are all doing research and so should I, or, a person that I dislike is doing well and I want to do better.

(iv) **Personal motivation** in solving unsolved problems, intellectual joy, service to community, and respectability are all driving factors.

- The following factors would be a mix of extrinsic and intrinsic aspects:

(i) Wanting to do better than what has been achieved in the world,

(ii) improve the state of the art in technology,

(iii) Contribute to the improvement of society,

(iv) Fulfillment of the historical legacy in the immediate sociocultural context.

- Several other factors like government directives, funding opportunities in certain areas, and terms of employment, can motivate people to get involved in engineering research.

Types of Engineering Research

The different types of research are

(i) **Descriptive versus Analytical:** Descriptive research includes **comparative** and **correlational** methods, and **fact-finding inquiries**, to effectively describe the present state of art. **The researcher holds no control over the variables; rather only reports as it is**. Descriptive research also includes attempts to determine causes even though the variables cannot be controlled. On the contrary, in analytical research, **already available facts for analysis and critical evaluation are utilized. Some research studies can be both descriptive and analytical.**

- (ii) **Applied versus Fundamental:** Research can either be applied research or fundamental (basic or pure) research. Applied research seeks to **solve an immediate problem** of the organization, whereas fundamental research is **concerned with generalizations and formulation of a theory**. Research concerning **natural phenomena or relating to pure mathematics are examples of fundamental research.**

- (iii) **Quantitative versus Qualitative:** Quantitative research uses **statistical observations of a sufficiently large number of representative cases** to draw any conclusions, while qualitative researchers rely on a **few nonrepresentative cases or verbal narrative in behavioral studies.**

Finding and Solving a Worthwhile Problem

- The recommended steps to solve a research problem are

(i) Understand the problem, restate it as if its your own, visualize the problem by drawing figures, and determine if something more is needed.

(ii) One must start somewhere and systematically explore possible strategies to solve the problem or a simpler version of it while looking for patterns.

(iii) Execute the plan to see if it works, and if it does not then start over with another approach. Having delved into the problem and returned to it multiple times, one might have a flash of insight or a new idea to solve the problem.

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Chapter 5
Ethics in Engineering Research


integrity
moral
principles
value
honesty
honor
ETHICS
right
choice
fairness
conscience
responsibility

Ethics generally refers to a **set of rules distinguishing acceptable and unacceptable conduct, distinguishing right from wrong, or wise aphorisms** like the sayings of Chanakya.

Most people learn such norms in their formative years , but moral development continues through different stages of growth.

Government bodies, and universities worldwide have adopted certain codes for research ethics. Research ethics and the responsible conduct of research are often erroneously used interchangeably.

Research ethics **examines the appropriate application of research outcomes**, while responsible conduct of research deals **with the way the work is undertaken**.

1. Ethics in Engineering Research Practice

- The reason that ethics matter in data used in engineering research is usually because there is impact on humans.

- Certain practices may be acceptable to certain people in certain situations, and the reasons for unacceptability may be perfectly valid.

- Engineering ethics gives us the rule book; tells us, how to decide what is okay to do and what is not.

Types of Research Misconduct

- Engineering research should be conducted to improve the state-of-the-art of technologies. Research integrity encompasses dealing fairly with others, honesty about the methods and results, replicating the results wherever possible so as to avoid errors, protecting the welfare of research subjects, ensuring laboratory safety, and so forth. In order to prevent mistakes, peer reviews should take place before the research output is published.

- **Fabrication** (Illegitimate creation of data): Fabrication is the act of conjuring data or experiments with a belief of knowledge about what the conclusion of the analysis or experiments would be, but cannot wait for the results possibly due to timeline pressures from supervisor or customers.
- **Falsification** (Inappropriate alteration of data): Falsification is the misrepresentation or misinterpretation, or illegitimate alteration of data.

- **Falsification and fabrication** of data and results, hamper engineering research, cause false empirical data to percolate in the literature, wreck trustworthiness of individuals involved, incur additional costs, impede research progress, and cause actual and avoidable delays in technical advancement. Misleading data can also crop up due to poor design of experiments or incorrect measurement practices.

- **Plagiarism (Taking other's work sans attribution):** Plagiarism takes place when someone uses or reuses the work (including portions) of others (text, data, tables, figures, illustrations or concepts) as if it were his/her ownwithout explicit acknowledgement. Verbatim copying or reusing one's own published work is termed as self-plagiarism and is also an unacceptable practice in scientific literature. The increasing availability of scientific content on the internet seems to encourage plagiarism in certain cases, but also enables detection of such practices through automated software packages.
- A commonly used tool among researchers is **iTheticate:** http://www.ithenticate.com/.
- iThenticate is a plagiarism detection service for the corporate market, from Turnitin, LLC, which also runs Plagiarism.org.

How are supervisors, reviewers or editors alerted to plagiarism?

(i) Original author comes to know and informs everyone concerned.

(ii) Sometimes a reviewer finds out about it during the review process.

(iii) Or, readers who come across the article or book, while doing research.

(iv) Other Aspects of **Research Misconduct:** Simultaneous submission of the same article to two different journals also violates publication policies.

Ethical Issues Related to Authorship

- Academic authorship involves communicating scholarly work, establishing priority for their discoveries, and building peer-reputation, and comes with intrinsic burden of acceptance of the responsibility for the contents of the work**. It is the primary basis of evaluation for employment, promotion, and other honors.**
- Credit for research contributions is attributed in three major ways in research publications:
- By **authorship** (of the intended publication), **citation** (of previously published or formally presented work), and through a **written acknowledgment** (of some inputs to the present research). Authorship establishes both accountability and gives due credit. A person is expected to be listed as an author only when associated as a significant contributor in research design, data interpretation, or writing of the paper.

- Including **"guest" or "gift"** (coauthorship bestowed on someone with little or no contribution to the work) authors dilutes the contribution of those who actually did the work, inappropriately inflates credentials of the listed authors, and is ethically a red flag highlighting research misconduct.

- There is also an unfortunate malpractice of coauthorship that can be described as **"Career-preservation authorship"** wherein a head of the department, a dean, a provost, or other administrators are added as Coauthors because of **quid pro quo** arrangement wherein the principal author benefits from a "good relation" with the superiors and the administrator benefits from authorship without doing the required work for it.

- **Double submission** is an important ethical issue related to authorship, which involves submission of a paper to two forums simultaneously. The motivation is to increase publication possibility and possibly decrease time to publication. Reputed journals want to publish original papers, i.e., papers which have not appeared else- where, and strongly discourage double submission.

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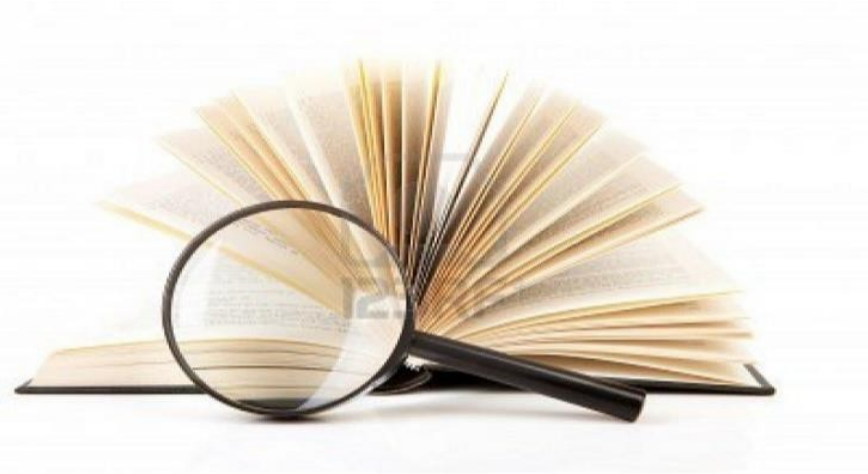
MODULE-I

1. What is Research? With the help of neat diagram explain Research Flow?
2. Explain categories of knowledge research with a diagram?
3. Mention and explain the objective of Engineering Research?
4. Explain the motivation of Engineering Research?
5. Mention the different types of Research?
6. Explain analytical, descriptive, and applied research?
7. What is Ethics? Explain Ethics in Engineering Research Practice?
8. Explain different types of Research Misconduct?
9. What are the ethical issues related to Authorship?

MODULE-2

Chapter 2

Literature Review and Technical Reading



A lit review surveys, summarizes, and links information about a given topic.

A good lit review assesses this information and distills it for the reader.

How to write a literature review

Literature Review Process

Preparation
- What is your topic?
- What resources do you have?
- How will you keep track of your research?

Retrieval
- Brainstorm search terms
- Use filters to narrow
- Keep a record of searches you've tried

Appraisal
- Skim the articles you're finding
- Do they look relevant?
- Do they meet your criteria?

Synthesis
- Read and take notes
- Notice any themes emerging across sources
- Pay attention to what other articles are cited

Write-up
- Consider audience for format, length, tone
- Can group articles by theme
- Include analysis/critique

Sharing
- How to reach your target/imagined audience?
- Are there others who might be interested?
- What are the best avenues to share?

Future
- Document your work along the way so your process can be replicated
- Make sure your work is safely stored so it can be accessed later

This process doesn't have to be linear!
You can return to each step as needed throughout your research.

WHAT DOES A LIT REVIEW DO?

- Clarifies understanding of the field
- Explains the rationale for your research
- Places your research within a broader context
- Evaluates the results of previous research
- Defines key concepts and ideas
- Identifies research in related areas that is generalizable or transferable to your topic
- Identifies relevant methodological issues

WHAT'S THE PROCESS?

- Define/refine topic
- Determine approach
- Research effectively
- Read critically
- Analyze and evaluate
- Take great notes
- Be organized
- Draft written product
- Edit and refine

DETERMINE APPROACH

- Develop a set of questions to be applied to all articles
- How will you structure your lit review?
  - Chronologically

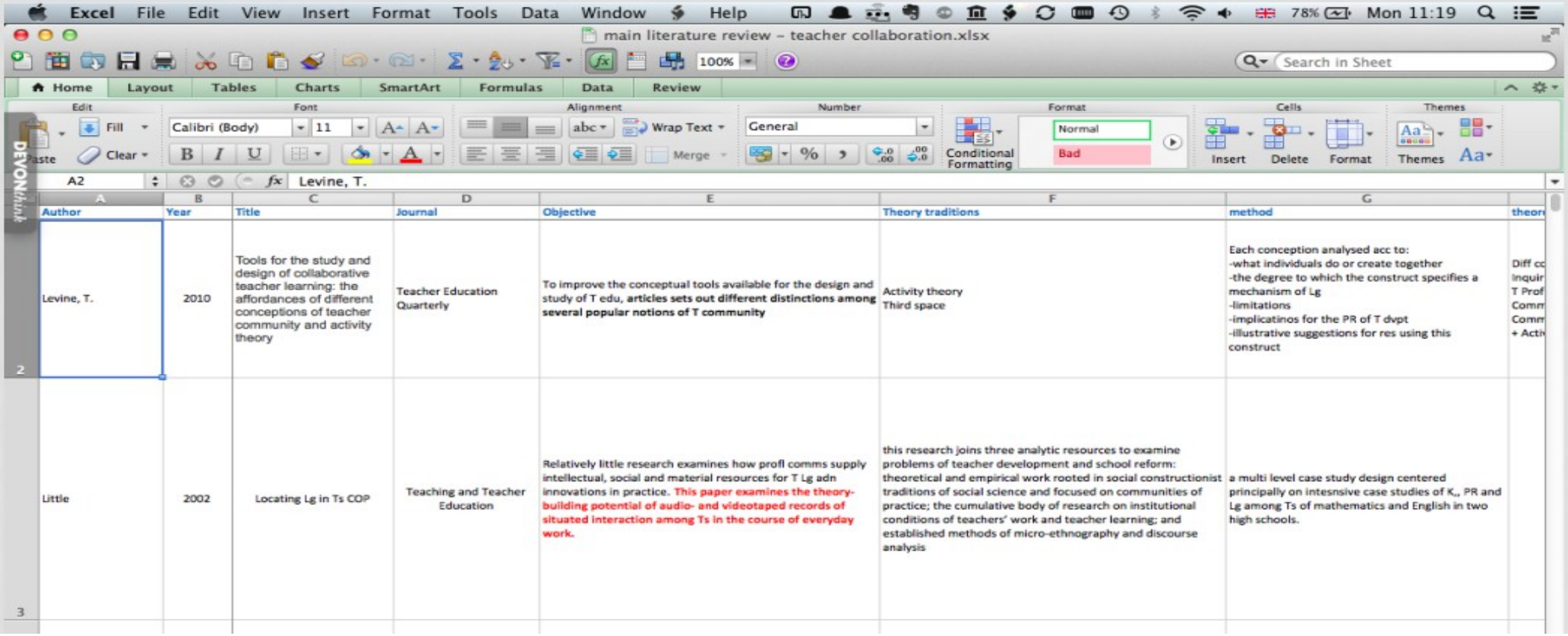
  - Thematically

  - By relationship to your own work

TAKE GREAT NOTES

- Highlighting is good for skimming
- Margin notes suggest your analysis and connections of material
- Outlines may be useful for complex or important works
- Spreadsheets or grids help track numerous sources across consistent variables or metrics
- Checklists help track progress and connections
- Summaries with additional notes from your own analysis and processing – and written in your own words – help cut down transaction costs when reading and reviewing many sources

TRACK INFORMATION CONSISTENTLY



main literature review – teacher collaboration.xlsx

Author	Year	Title	Journal	Objective	Theory traditions	method	theor
Levine, T.	2010	Tools for the study and design of collaborative teacher learning: the affordances of different conceptions of teacher community and activity theory	Teacher Education Quarterly	To improve the conceptual tools available for the design and study of T edu, **articles sets out different distinctions among several popular notions of T community**	Activity theory Third space	Each conception analysed acc to: -what individuals do or create together -the degree to which the construct specifies a mechanism of Lg -limitations -implicatinos for the PR of T dvpt -illustrative suggestions for res using this construct	Diff cc Inquir T Prof Comn Comn + Acti
Little	2002	Locating Lg in Ts COP	Teaching and Teacher Education	Relatively little research examines how profl comms supply intellectual, social and material resources for T Lg adn innovations in practice. This paper examines the theory-building potential of audio- and videotaped records of situated interaction among Ts in the course of everyday work.	this research joins three analytic resources to examine problems of teacher development and school reform: theoretical and empirical work rooted in social constructionist traditions of social science and focused on communities of practice; the cumulative body of research on institutional conditions of teachers' work and teacher learning; and established methods of micro-ethnography and discourse analysis	a multi level case study design centered principally on intesnsive case studies of K,, PR and Lg among Ts of mathematics and English in two high schools.	

BE ORGANIZED

EndNote Web

"A lit review should provide a conceptual framework." – Dean Schwartz

- The primary goal of literature review is to **know the use of content/ideas/approaches** in the literature to correctly identify the problem that is vaguely known beforehand, to advocate a specific approach adopted to understanding the problem, and to access the choice of methods used.

- It also helps the researcher understand clearly that the research to be undertaken would contribute something new and innovative. The quality of such review can be determined by evaluating if it includes appropriate breadth and depth of the area under study, clarity, rigor, consistency, effective analysis.

2.1 New and Existing Knowledge

- New knowledge in research can only be interpreted within the context of what is already known, and cannot exist without the foundation of existing knowledge.

- The existing knowledge is needed to make the case that there is a problem and that it is important.

- Where does this **existing knowledge come from**? Normally, one finds this knowledge by **reading** and **surveying** the literature in the field that was established long ago and also about the more recent knowledge which is in fact always changing.

- Often, but not always, the **textbooks contain the older established knowledge** and the **research papers the newer work.** Reading the textbooks on one's topic provide the established knowledge and the background to be able to read the newer work usually recorded in the research papers.

- Researcher may find oneself continuously going back to other sources to try and interpret what is going on in a particular research paper. It can be difficult to find the right work to read, but the objective with all this reading and learning is to be able to get the knowledge that one needs to build the foundation.

- The review process must explain how a research item builds on another one. This is because useful research should elucidate how and why certain technical development took place, so that it is easy for the reader to comprehend why the present talk is being undertaken, and a good literature survey would provide a convincing answer to that question.

- An effective review of **literature ensures** a firm foundation for advancing knowledge, facilitates theoretical growth, eliminates as areas that might be of interest, and opens new avenues of possible work. An efficient literature review is centered around concepts and not on authors.

- Generally, a good literature survey is the **first expectation** of a **supervisor** from the research student, and when done well can create a good impression that the state of art in the chosen field is well understood.

- A good literature review would not draw hasty conclusions and look into the individual references to determine the underlying causes/assumptions/mechanisms in each of them so as to synthesize the available information in a much more meaningful way.

- A literature review should be able to summarize as to what is already known from the state of the art, detail the key concepts and the main factors or parameters and the underlying relationships between those, describe any complementary existing approaches, enumerate the inconsistencies or shortcomings in the published work, identify the reported results that are inconclusive or contradictory, and provide a compulsive reason to do further work in the field.

A good literature survey is typically a two-step process as enumerated below:

(i) Identify the major topics or subtopics or concepts relevant to the subject under consideration.

(ii) Place the citation of the relevant source(article/patent/website/data, etc.) in the correct category of the concept/topic/subtopic.

It could be that as one is reading and comes across something that one considers to be very important for one's work, a core principle or a description of something that just sounds really good, and one is excited to have found it. Naturally, one highlights that section or underlines it, or put an asterisk in the margin, so that one could come back to it later. Effectively, one is saying that it is important and hence the marking so as not to forget it.

Then one should write about the highlighted part without copying it. As one writes about why one thinks that part is important and what it contains, one is automatically changing it and making it fit into one's foundation in the way that makes sense. There are shaping and crafting of that piece of knowledge to fit where one needs it to be. To build the knowledge foundation, one needs to be reading and learning continuously. But that is not enough, one also needs to be writing about what one has read.

A comprehensive literature survey should methodically analyze and synthesize quality archived work, provide a firm foundation to a topic of interest and the choice of suitable research methodologies, and demonstrate that the proposed work would make a novel contribution to the overall field of research.

Analysis and Synthesis of Prior Art

A literature survey grid of **N topics and M sources** is shown below to help crystallize the information in different categories.

A researcher should analyze the relevant information ascertained in Table 2.1 by undertaking the following steps:

(i) Understanding the hypothesis,

(ii) Understanding the models and the experimental conditions used,

(iii) Making connections,

(iv) Comparing and contrasting the various information, and

(v) Finding out the strong points and the loopholes.

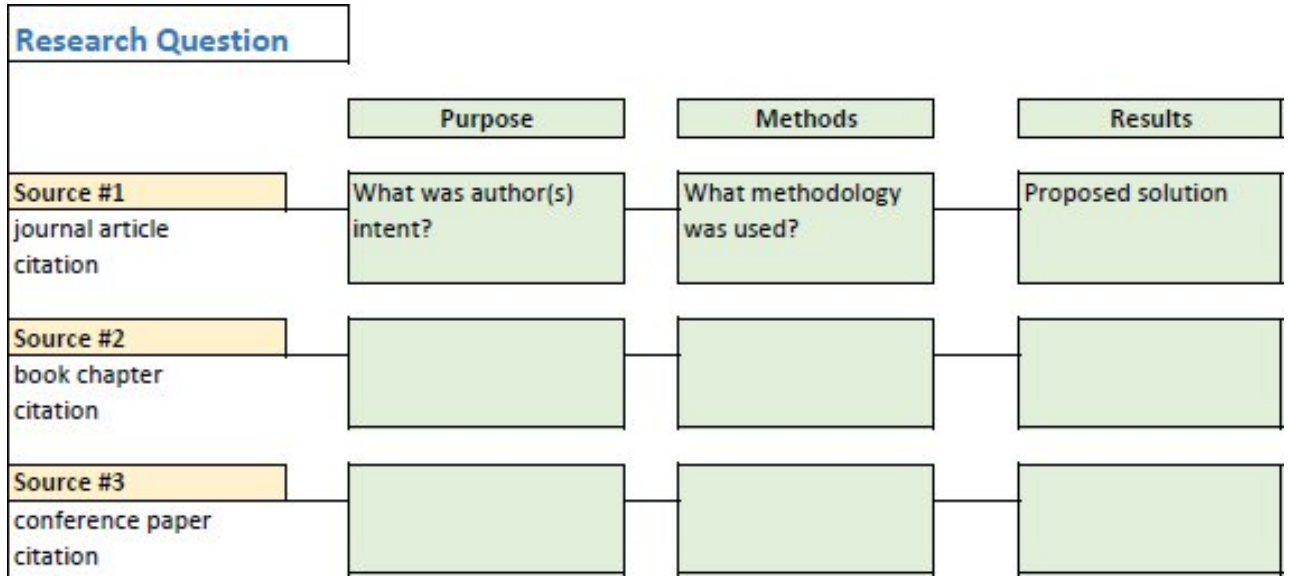
"The best lit reviews tell a good story." – Regina Winters

- A lit review provides context and background for your work.

- It's an essay, a synthesis of information relevant to your work.

	Source 1	Source 2	…	Source M
Topic 1		✓		
Topic 2	✓			✓
⋮				
⋮				
Topic N	✓	✓		

Table 2.1 The literature survey grid



- The goal of literature survey is to bring out something new to work on through the identification of unsolved issues, determine the problems in the existing models or experimental designs, and present a novel idea and recommendations.

Here are a few criteria that could help the researcher in the evaluation of the information under study:

- **Authority**: What are the author's credentials and affiliation? Who publishes the information?
- **Accuracy**: Based on what one already knows about the topic or from reading other sources, does the information seem credible? Does the author cite other sources in a reference list or bibliography, to support the information presented?
- **Scope**: Is the source at an appropriate comprehension or research level?

There are other criteria to consider as well, such as currency, objectivity, and purpose. It is important to ensure that the search question is neither too narrow nor too broad.

TOP ACADEMIC JOURNAL PUBLISHERS

Springer, Elsevier,

Nature, IEEE, Wiley .....,

PHDTALKS.ORG

Title of Journals	Number of Papers
Applied Energy	366
Energy Conversion and Management	339
Journal of Cleaner Production	310
Energies	279
Applied Thermal Engineering	236
Renewable Energy	143
Sustainability (Switzerland)	123
Energy	96
International Journal of Hydrogen Energy	76
Renewable and Sustainable Energy Reviews	65
Solar Energy	58
Journal of Renewable and Sustainable Energy	49


WIKIPEDIA
The Free Encyclopedia


PMC


Europe PMC


PubMed


Scopus


Web of Science


WILEY


Google


Google Scholar


ORCID
Connecting research and researchers


Springer


ScienceDirect


Taylor & Francis Online


Science


nature


MDPI


frontiers


SAGE
Publishing


medRxiv


bioRxiv


SPIE.


PLOS


IOP
Institute of Physics

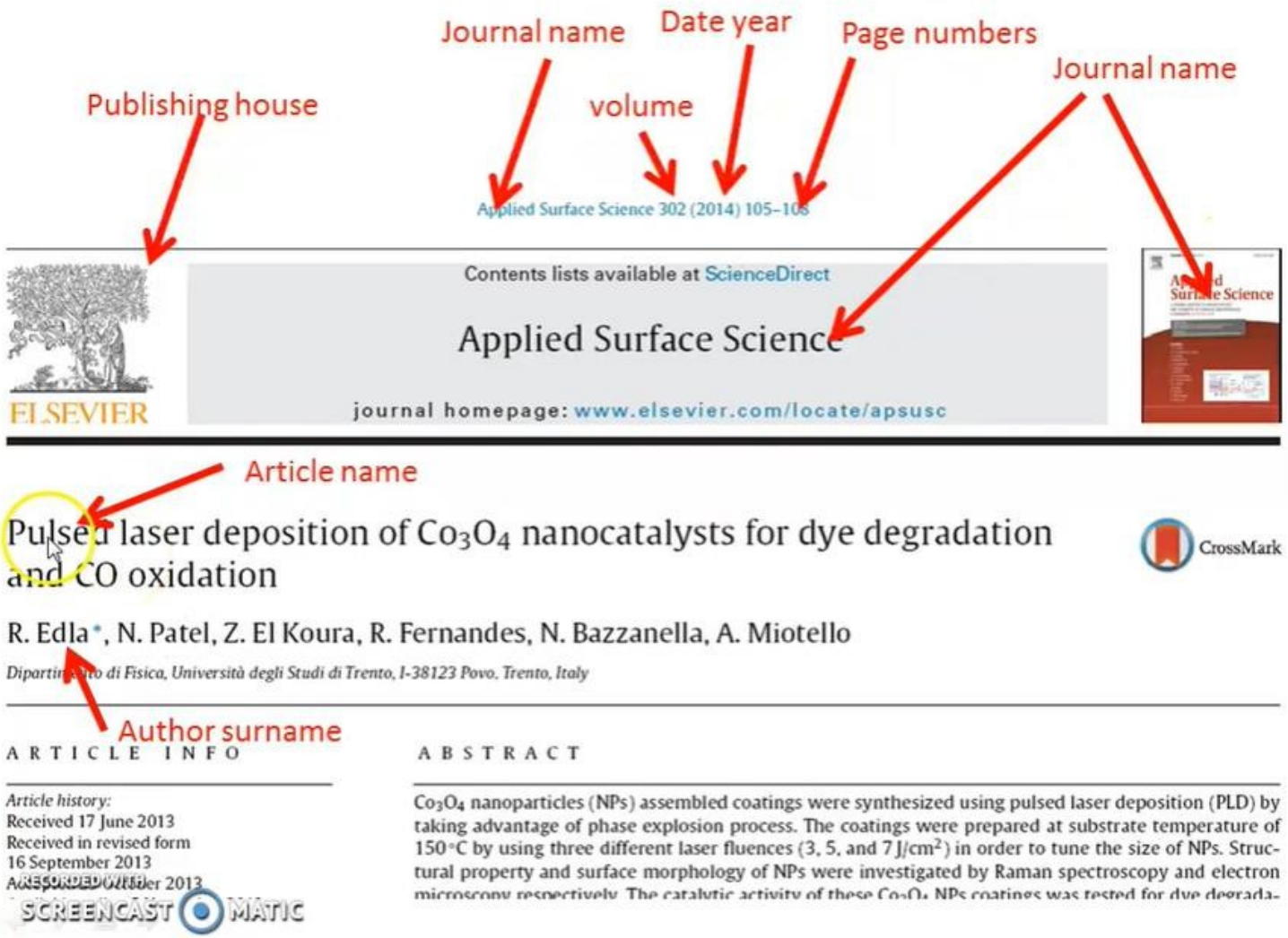

PNAS


Thieme


fsg


Karger


IUCr


Journal name
Date year
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Journal name
Applied Surface Science 302 (2014) 105–108
Contents lists available at ScienceDirect
Applied Surface Science
journal homepage: www.elsevier.com/locate/apsusc
ELSEVIER
Article name
Pulsed laser deposition of Co_3O_4 nanocatalysts for dye degradation and CO oxidation
CrossMark
R. Edla*, N. Patel, Z. El Koura, R. Fernandes, N. Bazzanella, A. Miotello
Dipartimento di Fisica, Università degli Studi di Trento, I-38123 Povo, Trento, Italy
Author surname
ARTICLE INFO
ABSTRACT
Article history:
Received 17 June 2013
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16 September 2013
Accepted 17 September 2013
Co_3O_4 nanoparticles (NPs) assembled coatings were synthesized using pulsed laser deposition (PLD) by taking advantage of phase explosion process. The coatings were prepared at substrate temperature of 150 °C by using three different laser fluences (3, 5, and 7 J/cm^2) in order to tune the size of NPs. Structural property and surface morphology of NPs were investigated by Raman spectroscopy and electron
SCREENCAST MATIC

2.3 Bibliographic Databases

- "Bibliographic databases" refer to "abstracting and indexing services" useful for collecting citation-related information and possibly abstracts of research articles from scholarly literature and making them available through search.
- A researcher should be able to quickly identify the databases that are of use in the idea or problem that one wishes to explore
- ***Web of Science***

Web of Science (formerly known as ISI or Thomson Reuters) includes multiple databases, as well as specialized tools. It is a good search tool for scholarly materials requiring institutional license and allows the researcher to search in a particular topic of interest, which can be made by selection in fields that are available in drop down menu such as title, topic, author, address, etc. The tool also allows sorting by number of citations (highest to lowest), publication date.

- A structured search like this that enables narrowing and refining what one is looking for is effective to ensure that the results throw up relevant sources and time spent in studying those is likely to bewell utilized. Based on the researcher's need the search result can be broadened or narrowed down using the built-in fields provided in this website. When clicked on any of the search results, this website provides the title of the paper, authors, the type of journal, volume, issue number and year of publication, abstract, keywords, etc., so that the researcher has enough information to decide if it is worthwhile to acquire the full version of the paper.

Google and Google Scholar

- Google is a great place to start one's search when one is starting out on a topic. It can be helpful in finding freely available information, such as reports from governments, organizations, companies, and so on. However, there are limitations:

- (i) It's a "black box" of information. It searches everything on the Internet, with no quality control—one does not know where results are coming from.
- (ii) There are limited search functionality and refinement options.

Google Scholar limitations:

1. Some of the results are not actually scholarly. An article may look scholarly at first glance, but is not a good source upon further inspection.

2. It is not comprehensive. Some publishers do not make their content available to Google Scholar.

3. There is limited search functionality and refinement options.

There are search operators that can be used to help narrow down the results. These help one find more relevant and useful sources of information. Operators can be combined within searches. Here are some basic ones that one can use:

(i) OR—Broadens search by capturing synonyms or variant spellings of a concept. Example: Synchronous OR asynchronous will find results that have either term present.

(ii) Brackets/Parentheses ( )—Gather OR'd synonyms of a concept together, while combining them with another concept. Example: RAM (synchronous OR asynchronous).

(iii) Quotation marks " "—Narrow the search by finding words together as a phrase, instead of separately. Example: RAM (synchronous OR asynchronous) "Texas Instruments".

(iv) Site—limits the search to results from a specific domain or website. This operator is helpful when searching specific websites such as the BC government, which is Example: RAM (synchronous OR asynchronous) "Texas Instruments" site: http://ieeexplore.ieee.org.

(v) Filetype—limits the search to results with a specific file extension one could look for pdf's, PowerPoint presentations, Excel spreadsheets, and so on. Example: RAM (synchronous OR asynchronous) "Texas Instruments" site: http://ieeexplore.ieee.org, filetype: pdf.

2.4 Effective Search: The Way Forward

Searching is an iterative process:

- Experiment with different keywords and operators;
- Evaluate and assess results, use filters;
- Modify the search as needed; and
- When relevant articles are found, look at their citations and references.

Literature survey is a continuous and cyclical process that may involve the researcher going back and forth till the end of the research project.

- It is very important to **not lose sight of the purpose of an extensive search or literature survey**, for it is possible to spend a very significant amount of one's time doing so and actually falsely think that one is working hard.
- **It is mandatory for a Ph.D. scholar to write a synopsis of the topic and submit it to the doctoral committee for approval**. During this stage, the scholar needs to undertake an extensive literature survey connected with the problem. **For this purpose, the archived journals and published or unpublished bibliographies are the first place to check out. One source leads to another**.

Introduction to Technical Reading

- Finding the right work to read can be difficult. The literature where knowledge is archived is very fragmented and there are bits and pieces all over the place. Very rarely will one find everything that one wants close together in one place.
- However, it is obvious that the number of papers relevant to a particular researcher is very few, compared to
  the actual number of research papers available from peer-reviewed technical sources.

- Given the abundance of journal articles, it is useful to adopt a quick, purposeful, and useful way of reading these manuscripts. It is not the same as reading a newspaper. It may require re reading the paper multiple times and one might expect to spend many hours reading the paper.

- There will also be papers where it is notworth reading all the details in the first instance. It is quite possible that the details are of limited value, or simply one does not feel competent to understand the information yet.

- Start out the skimming process by reading the title and keywords (these are any- ways, probably what caught the initial attention in the first place). If on reading these, it does not sufficiently seem to be interesting; it is better to stop reading and look for something else to read. One should then read the abstract to get an overview of the paper in minimum time. Again, if it does not seem sufficiently important to the field of study, one should stop reading further. If the abstract is of interest, one should skip most of the paper and go straight to the conclusions to find if the paper is relevant to the intended purpose, and if so, then one should read the figures, tables, and the captions therein, because these would not take much time but would provide a broad enough idea as to what was done in the paper.

- If the paper has continued to be of interest so far, then one is now ready to delve into the Introduction section to know the background information about the work and also to ascertain why the authors did that particular study and in what ways the paper furthers the state of the art. The next sections to read are the Results and Discussion sections which is really the heart of the paper. One should really read further sections like the Experimental Setup/Modeling, etc., only if one is really interested and wishes to understand exactly what was done to better understand the meaning of the data and its interpretation.

Conceptualizing Research

- The characteristics of a research objective are that it must have new knowledge at the center, and that it must be accepted by the community of other researchers and recognized as significant. But how do we actually conceptualize the research? Besides being original and significant, **a good research problem should also be solvable or achievable.**

- This requirement already asks us to think about the method and the tools that could be used to obtain that new knowledge. Now, the significance and the originality and all the theory that we read and tools and methods that we need to take on a problem, **all of these normally come from the existing recorded literature and knowledge in the field.**

However, if one is working on a research project that is of a smaller scope than a Ph.D., let us say a master's thesis, then conceptualizing the research is possibly too tough to do, and one does not have the time that it takes to become that expert at the edge of knowledge.

In this case, the researcher needs the help of someone else, typically the supervisor who may already be an expert and an active researcher in that field, and may advise on what a good research objective might be. An established researcher in any field should be able to immediately point to the landmark literature that one should read first. Otherwise one would need to spend a lot of time reading the literature to discover.

As engineers, *we like to build things, and that's good, but the objective of research is to make knowledge*. If one's research is about building something, *one ought to take a step back and ask if new knowledge is being formulated.*

Critical and Creative Reading

- **Reading a research paper is a critical process**. The reader should not be under the assumption that reported results or arguments are correct. Rather, being suspicious and asking appropriate questions is in fact a good thing. Have the authors attempted to solve the right problem? Are there simpler solutions that have not been considered?

- What are the limitations (both stated and ignored) of the solution and are there any missing links? Are the assumptions that were made reasonable? Is there a logical flow to the paper or is there a flaw in the reasoning? These need to be ascertained apart from the relevance and the importance of the work, by careful reading.

- Additionally, it is important to ascertain whether the data presented in the paper is right data to substantiate the argument that was made in the paper and whether the data was gathered and interpreted in a correct manner. It is also important to decipher whether some other dataset would have been more compelling.
- Critical reading is relatively easy. It is relatively easier to critically read to find the mistakes than to read it so as to find the good ideas in the paper. Anyone who has been a regular reviewer of journal articles would agree to such a statement.
- Reading creatively is harder, and requires a positive approach in search. In creative reading, the idea is to actively look for other applications, interesting generalizations, or extended work which the authors might have missed? Are there plausible modifications that may throw up important practical challenges? One might be able to decipher properly if one would like to start researching an extended part of this work, and what should be the immediate next aspect to focus upon.

Taking Notes While Reading

- A researcher needs to write and writes well only if the reading skills are good. The bridge between reading and actually writing a paper is the act of taking notes during and shortly after the process of reading.
- There is a well-known saying that the **faintest writing is better than the best memory,** and it applies to researchers who need to read and build on that knowledge to write building on the notes taken.
- Many researchers take notes on the margins of their copies of papers or even digitally on an article aggregator tool. In each research paper, there are a lot of things that one might like to highlight for later use such as definitions, explanations, and concepts. If there are questions of criticisms, these need to be written down so as to avoid being forgotten later on. Such efforts pay significantly when one has to go back and reread the same content after a long time.

- A Good technical reading should end with a summary of the paper in a few sentences describing the contributions. But to elucidate the technical merit, the paper needs to be looked at from comparative perspective with respect to existing works in that specific area. A thorough reading should bring out whether there are new ideas in the paper, or if existing ideas were implemented through experiments or in a new application, or if different existing ideas were brought together under a novel framework.

Reading Mathematics and Algorithms

- Mathematics is often the foundation of new advances, for evolution and development of engineering research and practice. An engineering researcher generally cannot avoid mathematical derivations or proofs as part of research work. In fact, **these are the heart of any technical paper.** Therefore, one should avoid skimming them. By meticulous reading of the proofs or algorithms, after having identified the relevance of the paper, one can develop sound understanding about the problem that the authors have attempted to solve.

- Nonetheless, **one might skim a technical section** if it seems like an explanation of something already known, or if it is too advanced for the research at the present moment and needs additional reading to be understandable, or if it seems to specialized and unlikely to be needed in the course of the research program in which case one can get back to it later on. Implementation of an intricate algorithm in programming languages such as C, C++ or Java is prone to errors. And even if the researcher is confident about the paper in hand, and thinks that the algorithm will work, there is a fair chance that it will not work at all. So one may wish to code it quickly to check if it actually works.

Reading a Datasheet

- Researchers in different fields of engineering will need to read certain types of documents. For example, mechanical and civil engineers would need to read drawings related to mechanical parts and buildings. Researchers in the field of electronics need to read datasheets. On occasions, researchers in other fields may also need to incorporate a certain electronic part in which case careful reading of the datasheet is imperative.

- Datasheets are instruction manuals for electronic components, which (hopefully) details what a component does and how one may use it. Datasheets enable a researcher (or a working professional) to design a circuit or debug any given circuit with that component. The first page of the datasheet usually summarizes a part's function and features, basic specifications, and usually provides a functional block diagram with the internal functions of the part.

- However,the objective of the authors herein has been to use datasheets as an example to state the need to pay attention to the art of reading such documents. Technical published papers or books are not the only contents that a researcher has to master reading!

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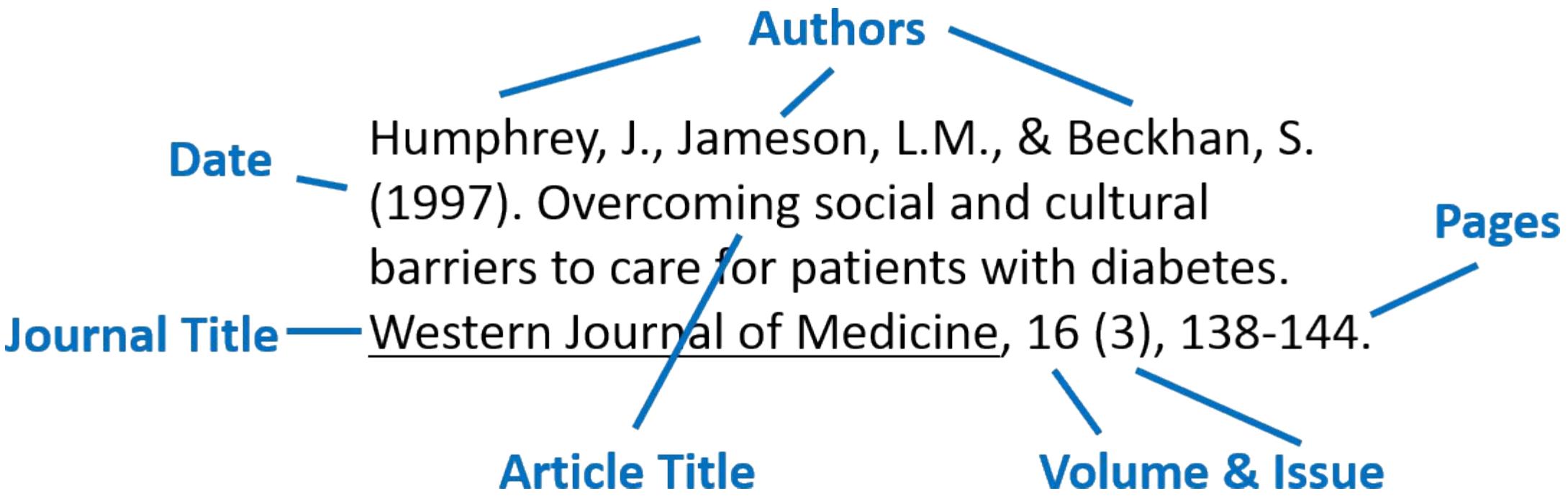
MODULE-II

1. Write a short note on Literature Review?
2. Explain Existing knowledge and New Knowledge?
3. List and explain the criteria that could help the researcher in the evaluation of information under study?
4. Write a short note on Bibliographic Database?
5. Explain various search operators in Web of Science while doing effective research?
6. Explain Technical reading with respect to engineering research?

Chapter 3

Attributions and Citations: Giving Credit Wherever Due



Giving Credit Where Credit is Due

Acknowledgment and Recognition

Honesty and Integrity

Accuracy and Precision

Fair Use and Copyright

References

Agder NW, Brown K, Conway D et al. (2003) Adaptation to climate change in the developing world. *Progress in Development Studies* 3: 179–195.

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Common Mistakes to Avoid When Citing Sources

01 Not citing sources at all

02 Incorrectly citing sources

03 Using unreliable sources

04 Not citing sources in the proper format

05 Not citing sources in-text

06 Copying and pasting

- we highlight the importance of **expanding attributions and acknowledgments to roles and responsibilities beyond primary authors of journal articles** or principal investigators of grant proposal documents. This would be applicable especially to scientific research projects that involved diverse skill sets and expertise.

- Attribute Vs Citation - Both are acknowledging that someone else contributed content that you are using in your material.

- Academic writing, by definition, must follow certain rules and conventions.
- Among the most important of these are the rules and conventions about citing, referencing, attributing, and acknowledging the works of others. That means giving proper credit wherever due. **Citing is the practice of quoting from, referring to other authors' works and ideas in the text of our work in such a way that the context is clear to the reader. Referencing** is the listing of the **full publication details of a published work that is cited so as to give background information** to the readers.

Acknowledgment in research publications indicates contributions to scientific work. However, acknowledgment, attributions, and citations differ in the manner of their application. Acknowledgment is arguably more personal, singular, and simply an expression of appreciations and contribution.

Citations: Functions and Attributes

- Citations (references) credit others for their work, while allowing the readers to trace the source publication if needed. Any portion of someone else's work or ideas in papers, patents, or presentations must be used in any new document only by clearly citing the source. This applies to all forms of written sources in the form of texts, images, sounds, etc. and failure to do may be considered **plagiarism.**

- **The researcher may need to give due credit to the creator of the original source.**

- While it is true that a research needs to leverage the prior art in the area of research interest so as to make further development, at the same time it is important to ensure that credit for that existing knowledge is suitably acknowledged.

- The researcher provides due credit through the use of a citation. Citations help the readers to verify the quality and importance of the new work and justification of the findings.
- It is a way to tell readers that certain material in the researcher's present work has come from another source and as an ethical responsibility, appropriate credit has been given to the original author or writer. Materials that can be cited include journal papers, conference proceeding, books, theses, newspaper articles, websites, or other online resources and personal communication.
- Preferably, citations should be given at the end of a sentence or the end of a paragraph as can be seen even in this particular paragraph.
- Citation must contain enough details so that readers can easily find the referenced material [1].

- A researcher needs to cite each source twice:

(i) in-text citation, in the text of the article exactly where the source is quoted or paraphrased, and

(ii) a second time in the references, typically at the end of the chapter or a book or at the end of a research article.

- It is also important to mention the date the source was published and sometimes also the particular date it was accessed by the researcher if it is related to web content.

- **There are three main functions of citation:**

(i) Verification function: Authors have a scope for finding intentional or unintentional distortion of research or misleading statements. Citation offers the readers a chance to ascertain if the original source is justified or not, and if that assertion is properly described in the present work [2].

(ii) Acknowledgment function: Researchers primarily receive credit for their work through citations. Citations play crucial role in promotion of individual researchers and their continued employment. Many reputed organizations and institutes provide research funding based on the reputations of the researchers. Citations help all researchers to enhance their reputation and provide detailed background of the research work.

(iii) Documentation function: Citations are also used to document scientific concepts and historical progress of any particular technology over the years [3].

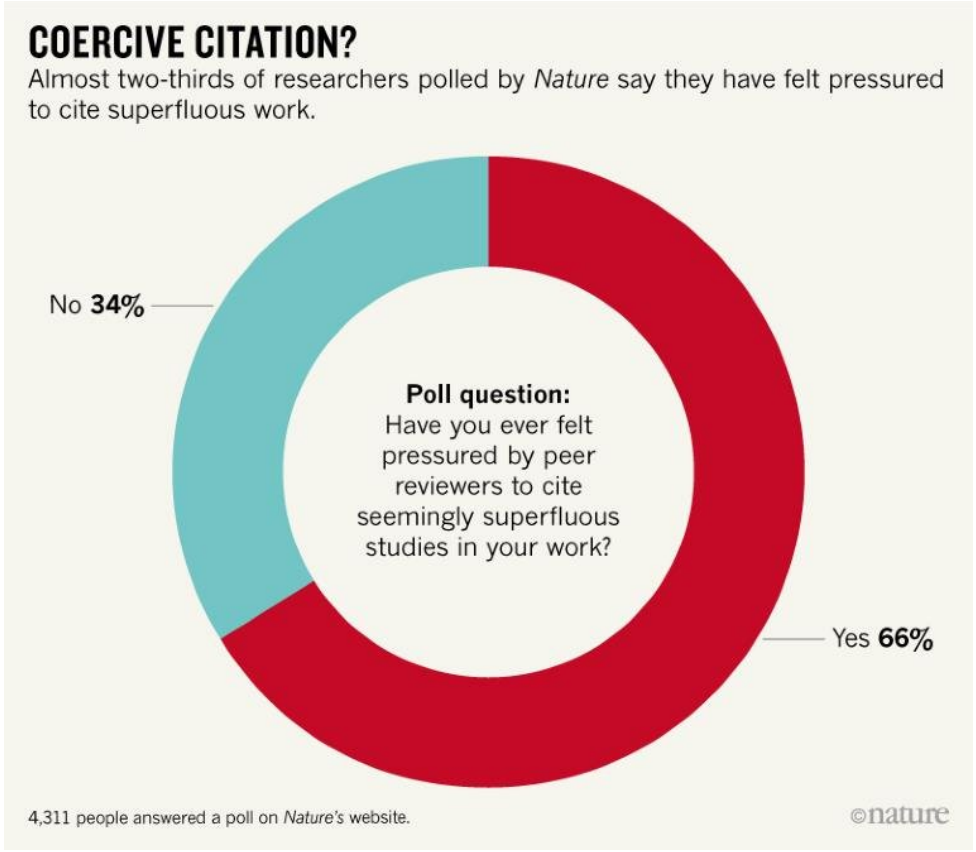
There are certain cases when references do not fulfill the actual goal of citations and acknowledgments, and thus do not benefit the reader.

- **Spurious citations:** In certain cases, when citation is not required or an appropriate one is not found, if the author nevertheless goes ahead with including one anyways, it would be considered as a spurious citation.

- **Biased citations:** When authors cite the work of their friends or colleagues despite there being no significant connection between the two works, or when they do not cite work of genuine significance because they do not wish to give credit in the form of citation to certain individuals, then such actions can be classified as biased citations. Neglect of citations to prior work whose conclusions or data contradict the current work is also biased.

- **Self-citations:** There is nothing wrong in citing one's prior work if the citation is really relevant. Self-citation of prior papers is natural because the latest paper is often a part of a larger research project which is ongoing. Sometimes, it is also advantageous for the reader because citations of all the related works of the same author are given in one paper and this may reduce the effort of the reader in trying to find the full versions of those papers. However, it is helpful and ethical only if all the papers are really relevant to the present work.

- **Coercive citations:** Despite shortcomings, impact factors remain a primary method of quantification of research. One side effect is that it creates an incentive for editors to indulge in coercion to add citations to the editor's journal. Even if not explicitly stated, the implied message is that the author could either add citations or risk rejection. Such demands consequently diminish the reputation of the journal.


COERCIVE CITATION?
Almost two-thirds of researchers polled by Nature say they have felt pressured to cite superfluous work.
No 34%
Poll question:
Have you ever felt pressured by peer reviewers to cite seemingly superfluous studies in your work?
Yes 66%
4,311 people answered a poll on Nature's website.
©nature

Impact of Title and Keywords on Citations

- The citation rate of any research paper depends on various factors including significance and availability of the journal, publication types, research area, and importance of the published research work. Other factors like length of the title, type of the title, and selected keywords also impact the citation count.

- ***Title is the most important attribute of any research paper***. It is the main indication of the research area or subject and is used by researcher as a source of information during literature survey. Title plays important role in marketing and makes research papers traceable. *A good title is informative, represents a paper effectively to readers, and gains their attention. Some titles are informative but do not capture attention of readers, some titles are attractive but not informative or related to the readers' research area*

- **There are three different aspects which provide a particular behavior to the title:**

(i) types of the title

(ii) length of the title and

(iii) presence of specific markers.

- Articles with question-type titles are downloaded more but poorly cited compared to the descriptive or declarative titles. Declarative titles are downloaded and cited less than descriptive titles but difference is not much.

- As per analysis of Habibzadeh, longer titles are strongly associated with higher citation rates. Longer titles mainly include the study methodology and/or results in more detail, and so attracts more attention and citations.

- Titles containing a question mark, colon, and reference to a specific geographical region are associated with lower citation rates, also result-describing titles usually get citations than method-describing titles.

- Additionally, review articles and original articles usually receive more citations than short communication articles.

- At least two keywords in the title can increase the chance of finding and reading the article as well as get more citations.

- Keywords represent essential information as well as main content of the article, which are relevant to the area of research. Search engines, journal, digital libraries, and indexing services use keywords for categorization of the research topic and to direct the work to the relevant audience.

- Keywords are important to ensure that readers are aware about research articles and their content. If maximum number of allowable keywords are used, then the chance of the article being found increases and so does the probability of citation count of the article. Usage of new keywords should be minimal as such keywords may not be well known to the research community and so may lead to low visibility of the article.

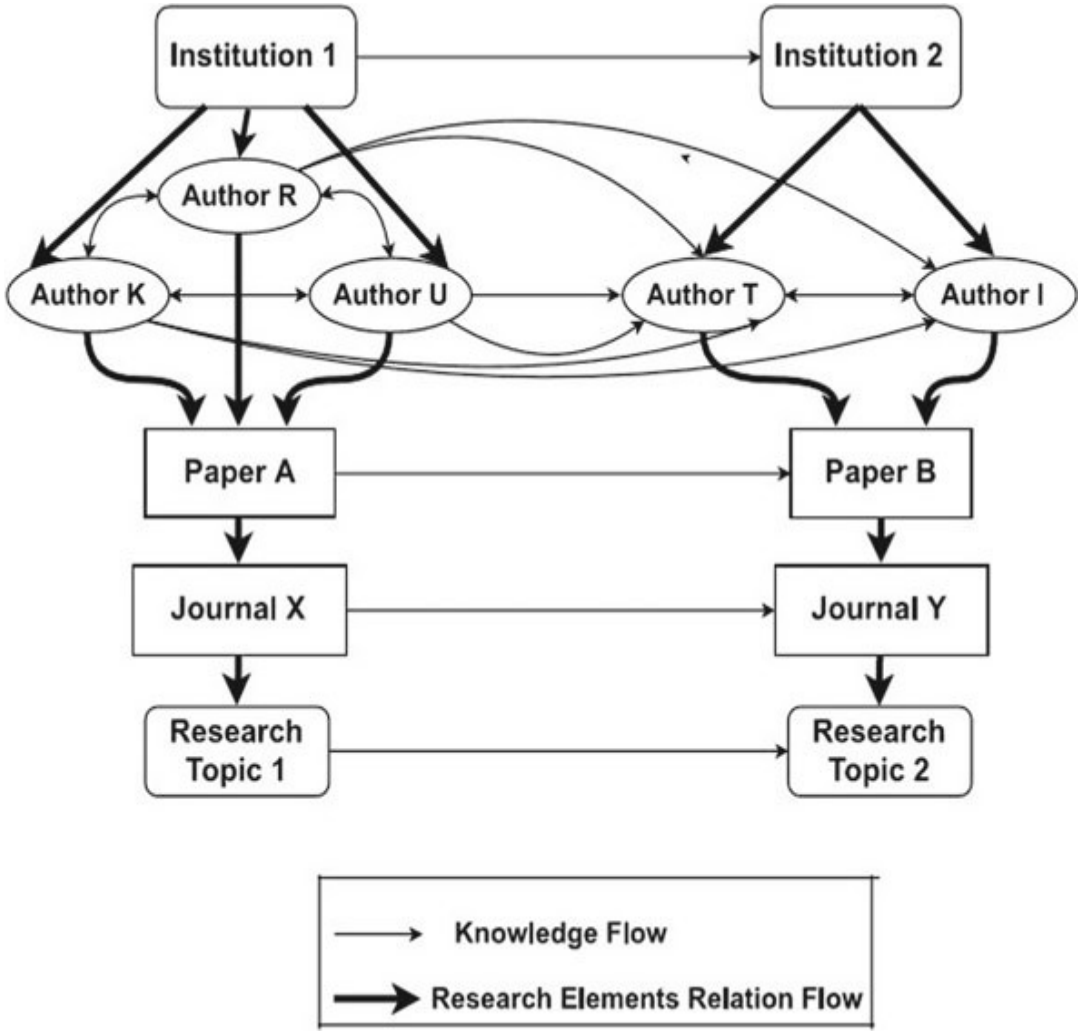
3.3 Knowledge Flow Through Citation

- Knowledge flows through verbal communications, books, documents, video, audio, and images, which plays a powerful role in research community in promoting the formulation of new knowledge.

- In engineering research, knowledge flow is primarily in the form of books, thesis, articles, patents, and reports. Citing a source is important for transmission of knowledge from previous work to an innovation.

- Production of knowledge can be related to the citation network.

- Knowledge flow happens between co-authors during research collaboration, among other researchers through their paper citation network, and also between institutions, departments, research fields or topics, and elements of research


Institution 1
Institution 2
Author R
Author K
Author U
Author T
Author I
Paper A
Paper B
Journal X
Journal Y
Research Topic 1
Research Topic 2
Knowledge Flow
Research Elements Relation Flow

- Figure 3.1 shows the relationship between citations, knowledge flow, and elements such as researchers, papers, journal publications or conferences, and institutions. If paper A is cited by paper B, then knowledge flows through citation networks across institutions.

- The complex interdisciplinary nature of research encourages scholars to cooperate with each other to grab more advantages through collaboration, thereby improving quality of the research.

- Sooryamoorthy examined the citation impact of the South African publications among different collaboration types, discipline and sectors, and observed that co-authored publications had more citations than single author paper and there was a positive co-relation between number of authors and the number of citations.

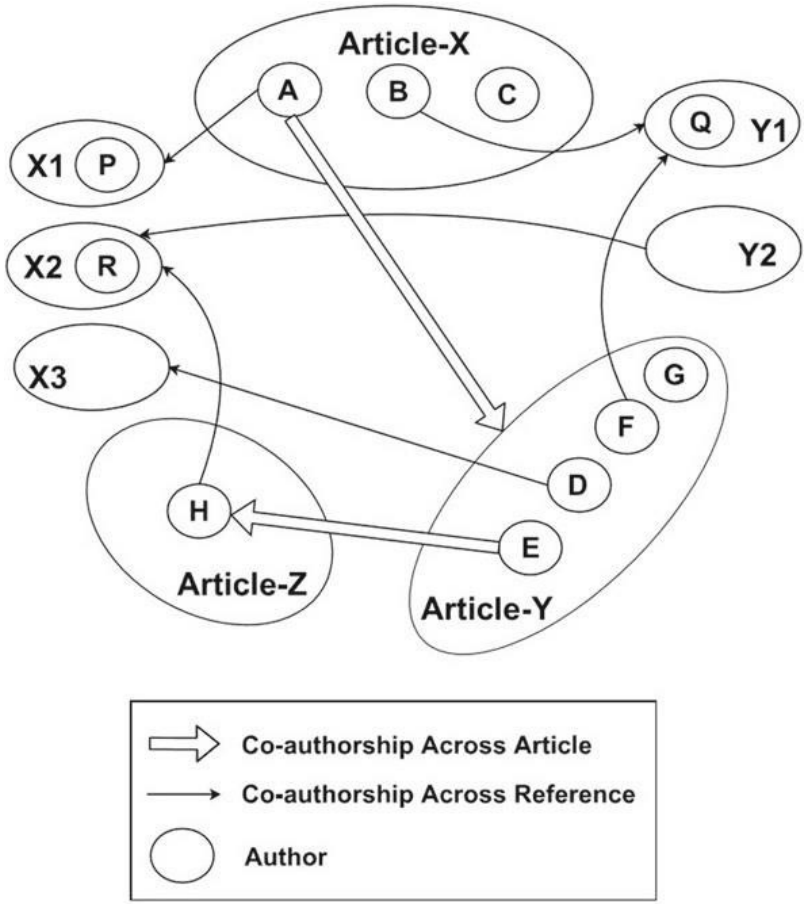


Fig. 3.2 Co-authorship network

- Figure 3.2 shows a relationship between co-authorship and different types of citations. Three articles (X, Y, and Z) and five references (X1, X2, X3, Y1, and Y2) of article X and Y, respectively, are considered. A, B, and C are authors of article X, and D, E, F, G, and also A are authors of article Y. Article Z has two authors H and E. References X1, X2, X3, Y1, and Y2 have authors (A, P), (H, R), (D), (Q, B, F), and (R), respectively.

- Based on co-authorship citation network, references X1 and Y1 are considered self-citation, reference X3 is a level-1 co-author citation because author of article Y is direct collaborator of author A, reference X2 is a level-1 co-author network because author A is collaborator of E who collaborated with H. We conclude that papers which frequently cite collaborators will also often cite collaborators of collaborators.Collaborations certainly impact citation counts.

3.3.1 Citing Datasets

Examples:

1. Historical Data, Sotavento (Wind Farm), Corunna, Spain (July 2016): [Accessed: 4 Oct, 2016] Retrieved from http://www.sotaventogalicia.com/en/real-time-data/historical
2. Deb, D (2016). [Personnel survey]. Unpublished raw data.

3.3.2 *Styles for Citations*

Citation styles differ primarily in the order, and syntax of information about references, depending on difference in priorities attributed to concision, readability, dates, authors, and publications. Some of the most common styles for citation (as well as other aspects of technical writing) used by engineers are as follows:

1. ASCE style (American Society of Civil Engineers)[2]

   (a) Reference list: This part is to be placed in the bibliography or references at the end of the article or report. A template with example for the same is given below:

Template for books:
Author Surname, Author Initial. (Year Published). Title. Publisher, City, Pages Used.

Example:
Wearstler, K., and Bogart, J. (2004). Modern glamour. Regan Books, NY.

Template for websites:
Author Credentials / Company Name (Year Published). 'Title'. http://Website URL (Oct. 10, 2013).

Example:
Blade cleaning services (2015): http://www.bladecleaning.com/problematica (29 Oct, 2016).

Template for journal publications:
Author Surname, Author Initial. (Year Published). 'Title'. Publication Title, Volume number(Issue number), Pages Used.

Example:
Johnston, L. (2014). "How an Inconvenient Truth Expanded The Climate Change Dialogue abd Reignited An Ethical Purpose in The United States". 1–160.

Template for journal publications:

Author Surname, Author Initial. (Year Published). 'Title'. Publication Title, Volume number(Issue number), Pages Used.

Example:

Johnston, L. (2014). "How an Inconvenient Truth Expanded The Climate Change Dialogue abd Reignited An Ethical Purpose in The United States". 1–160.

(b) In-text citation for journals or books: The following part is to be placed right after the reference to the source of the citation assignment:

Template

(Author Surname/Website URL Year Published)

Examples:

i. Citation is a very important part of technical writing. (Deb 2016)
ii. Engineers create devices to monitor mountains so that nearby inhabitants can be warned of impending eruptions. (Teachengineering.org 2014)

2. IEEE style (Institute of Electrical and Electronics Engineers)[3] IEEE style is standard for all IEEE journals and magazines, and is frequently used for papers and articles in the fields of electrical engineering and computer science. The IEEE style requires endnotes and that references be cited numerically in the text.

Those submitting to an IEEE publication should see guidelines for the specific journal or magazine and may also refer to the complete IEEE editorial style manual. Some examples of IEEE styles of citations for different types of sources are enumerated below:

Chapter in an edited book

[1] A. Rezi and M. Allam, "Techniques in array processing by means of transformations," in Control and Dynamic Systems, Vol. 69, Multidimensional Systems, C. T. Leondes, Ed. San Diego: Academic Press, 1995, pp. 133–180.

Acknowledgments and Attributions

- *Acknowledgment section is a place to provide a brief appreciation of the contribution of someone or an organization or funding body to the present work.* If no particular guideline is available for the intended publication, then it can be introduced at the end of the text or as a footnote.

- Acknowledgment is a common practice to recognize persons or agencies for being responsible in some form or other for completion of a publishable research outcome. Acknowledgment displays a relationship among people, agencies, institutions, and research.

- In some case, certain individuals may help in the research work but may not deserve to be included as authors. *As a sign of gratitude, such contributions should be acknowledged. Classification of acknowledgment into six different categories like moral, financial, editorial, institutional or technical, and conceptual support.*

- *Giving proper credit wherever it is due is very important and even if the contribution is minor, it should not be neglected.* A researcher should always recognize the proprietary interest of others. Whenever possible, author shall give name of persons who may be responsible, even if nominally, for designs, inventions, writings, or other accomplishments. Given the importance of work published, authorship is also important.
- In engineering research, *acknowledgments are meant for participating technicians, students, funding agency, grant number, institution, or anyone who provide scientific inputs, shared unpublished results, provided equipment, or participated in discussions.*

What Should Be Acknowledged?

- Every author should know that what should/should not be acknowledged. Author should acknowledge quotation, ideas, facts, paraphrasing, funding organization, oral discussion or support, laboratory, and computer work.

(i) Quotation: In technical writing such as in the field of engineering, quotes are used very rarely. Quotations are of two types:

(a) Direct quotations are used when author use actual words or sentences in the same order as the original one. Author should use quotation marks for the words or sentences with proper acknowledgment.

(b) Indirect quotation summarizes or paraphrases the actual quote. In such cases, it is important to acknowledge with proper name and date.

- (ii) *Authors should acknowledge people who give appropriate contribution in their research work. Non-research work contributions are not generally acknowledged in a scientific paper but it may be in a thesis.* Persons must be acknowledged by authors, who gave a scientific or technical guidance, take part in some discussions, or shared information to author. Authors should acknowledge assistants, students, or technicians, who helped experimentally and theoretically during the research work.

- (iii*) If the researcher received grant from a funding agency and if those funds were used in the work reported in the publication, then such support should always be acknowledged by providing full details of the funding program and grant number in the acknowledgment section.*
- The authors should also gratefully acknowledge use of the services and facilities of any center or organization with which they are not formally affiliated to [22].

Acknowledgments:

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iv. If the results were presented as an abstract in a journal, then there should be a suitable citation. If the results were presented as part of scientific meeting, symposium, or other gathering, then some relevant information should be provided. *At the very least, the name of the gathering and year should be cited. Other helpful items include the location of the gathering (city and state or country) and the full date of the occasion.*

- Acknowledgment is no longer simply a means of expressing gratitude. Funding agencies these days often require that their grant be acknowledged and explicitly state the exact information to be provided if the research work leads to a publication. The grantee is responsible for assuring that an acknowledgment of support is made in any publication (including websites) of any direct or indirect outcomes from the funded project.

- The format of required information is often explicitly stated in the terms and conditions of grants provided. Acknowledgments are also appropriate in technical presentations. *Failure to acknowledge funding may result in the discontinuation of current funding and/or ineligibility to receive future funding for a certain number of years or indefinitely*

Acknowledgments in Books/Dissertations

- A page of *acknowledgments is usually included at the beginning of a thesis/ dissertation immediately following the table of contents*. These acknowledgments are longer than the one or two sentence statements in journal papers or articles in conference proceedings. *These detailed acknowledgments enable the researcher to thank all those who have contributed in completion of the research work.*

Sample Acknowledgement in Thesis:

I wish to express my sincere appreciation to my supervisor Prof. Gang Tao for the useful comments, remarks and encouragement throughout this thesis work. Furthermore, I wish to express my thanks to Prof. Jacob Hammer for introducing me to the topic and for the support along the way. Also, I like to thank my peers in the Adaptive Control Lab such as Yu Liu and Shanshan Li, who have shared their precious time during many lively technical discussions. I would like to thank my family members who have supported me throughout this journey in many different ways.

Dedication or Acknowledgments?

- Dedication is almost never used in a journal paper, an article in a conference proceedings, or a patent, and it is used exclusively in larger documents like books, thesis, or dissertations.

- While acknowledgments are reserved for those who helped out with the book in some way or another (editing, moral support, etc), a *dedication is to whomever the author would like it to be dedicated to, whether it is the author's mother, the best friend, the pet dog, or Almighty God.*

- And yes, it is possible to dedicate something to someone while also mentioning them in the acknowledgments.

Summary

Citation is a specific form of attribution, but attribution itself can be done in many different ways. For engineers, citation is very useful to their careers due to the prevailing publish or perish environment. Proper citation and reference:

- Gives credit and respect to the original author(s).
- Allows readers to find the original source(s).
- Strengthens the credibility of your report. If a researcher does not cite the sources, it is plagiarism.

Plagiarism is using another person's ideas without giving credit or citation and is an intellectual theft. Plagiarism comes in varying degrees, and there are serious consequences for a researcher if caught plagiarizing. All academic and industrial research organizations have integrity and misconduct policies. Even past one's time at a research organization, evidence of plagiarism can affect the integrity and credibility and can also retrospectively make an earned degree null and void.

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CHAPTER – 1

INTRODUCTION TO INTELLECTUAL PROPERTY


Trade Marks
Patent
Industrial Design
Plant Variety
Intellectual Property
Trade Secret
Layout Design
Geographical Indication
Copyright


INTELLECTUAL PROPERTY
COPYRIGHTS
TRADEMARKS
PATENTS
TRADE SECRETS

	TRADEMARK	COPYRIGHT	PATENT
WHO IT SERVES	Brands	Authors	Inventors
PURPOSE	Distinguishes product or service from competitors	Protects original creative and/or intellectual work	Grants exclusive right to exploit an invention
EXAMPLES	Words, logos, slogans, colors	Music, art, photography	Medical devices, technnologies
TIME LIMIT	Indefinite	70-170 years	15-20 years

Difference		
Trademark	**Patent**	**Copyright**
Protection of unique name, slogans, logo that makes a brand distinct from other	Protection of inventions that are novel, original and has industrial utility.	Protection of original creative expressions like literary, artistic, dramatic works, etc.
TM ®	No mark to symbolically represent	©
Trade Marks Act, 1999	The Patents Act, 1970	The Copyright Act, 1957
Valid for 10 years, then can be renewed every 10 years perpetually	Validity for 20 years starting from the day the application is first made	Valid for life time of author + 60 years after his/her death.

COPYRIGHT

Protection is automatically granted to the author for their original, creative or intellectual work.

Works: Books, lectures, dramatic and musical works, cinematography, drawings, paintings, architecture, sculpture, photographs, illustrations, maps, plans sketches etc.

Rights: To distribute copies or phonorecords of the work to the public by sale or other transfer of ownership, or by rental, lease, or lending; To perform the work publicly in person or through audio transmission.

Validity: Registration not mandatory but recommended. Valid through the lifetime of the author and 60 years after his/her death. Owner has protection in most countries.

TRADEMARK

This is a brand element which distinguishes your goods and services from those of your competitors and other traders.

Marks: Word mark, a logo mark or a slogan, shapes, and unconventional marks like colours, sounds, gestures, animation, holograms etc are also registrable as a trademark.

Rights: Exclusive right to use the mark and prevent anyone from using it without permission. It also gives the owner the right to license, assign and sell the mark in return of some compensation.

Validity: 10 years which can be made perpetual, as along as renewed every 10 years. Should be applied separately in every country in which protection is required and has a market in.

PATENT

This concerns obtaining protection for new inventions that are new, original and useful.

Invention will be patented if: Novel or Original, has an Inventive step (non-obvious) and has some Industrial application.

Rights: Exclusive authority over the patented invention, right to exclude others and exploit the patent and earn from it.

Validity: Patent protection is territorial right and therefore it is effective only within the territory of India. Separate patents required to be filed for each country where protection is required. Patent is valid for period of 20 years after which it goes in public domain.

- Intellectual Property (IP) is a special category of property created by human intellect (mind) in the fields of arts, literature, science, trade, etc. Since IP is a novel creation of the mind, it is intangible (i.e. invisible and indivisible) in nature and differs from the tangible property, such as land, house, gold and car with which we are quite familiar.

- Intellectual Property Rights (IPR) are the privileges accorded to the creator/inventor (of IP) in conformance with the laws. These rights are given to the creator/inventor in exchange for revealing the process of creation/invention in the public domain.

- Broadly, IP comprises of two branches i.e. Copyrights and Related Rights‘ and Industrial Property Rights‘. Copyrights and Related Rights‘ refer to the creative expressions in the fields of literature and art, such as books, publications, architecture, music, wood/stone carvings, pictures, portrays, sculptures, films and computer-based softwares/databases.

- The Industrial Property Rights‘ refer to the Patents, Trademarks, Trade Services, Industrial Designs and Geographical Indications.

1.1. Role of IP in the Economic and Cultural Development of the Society

- Creativity being the keystone of progress, no civilized society can afford to ignore the basic requirement of encouraging the same.

- The economic and social development of a society is largely dependent on creativity.

- The protection provided by the IPR to the creators/innovators is in fact an act of incentivization for encouraging them to create more and motivates others to create new and novel things.

IP Governance

- Since IP is an integral component of human society, each and every nation has dedicated agencies for laying out the guidelines, implementation and enforcement of IP related matters.

- In India, many organizations/agencies deal with various aspects of IP. The governance of all categories of IP, except the Plant Variety and Farmers‘ Rights Act, is carried out by the Department for Promotion of Industry & Internal Trade (DPIIT).

- In order to create a hassle-free exchange of IP related activities amongst all the nations, it is imperative to have minimum standards of rules and regulations pertaining to all aspects of IP including rights, empowerment, exceptions, etc.

- To achieve this goal, the United Nations (UN) has established an organization called the World Intellectual Property Organization (WIPO). This agency is at the forefront of imparting knowledge about IP and governs international filing and registration of IP through various Conventions and Treaties like Paris Conventions, Patent Cooperation Treaty (PCT), Rome Convention, Berne Convention, etc.

IP as a Global Indicator of Innovation

- IP, especially patents, is considered as one of the important cogs(cost of goods sold) in assessing the innovation index of a nation. The global ranking organizations always have IP or a subset of IP as one of the parameters for understanding and grading the Science, Technology and Innovation (STI) ecosystem of a nation.

- For example, the Scimago (publically available online portal which ranks journals and countries based on the data taken from Scopus) 2020 report ranked India at 4th position in the parameter of a number of Research Publications‘, and 50th position in the parameter of Intellectual Property Rights‘. The global ranking can be improved by sensitizing the teaching and scientific communities about the importance of IP and creating infrastructure for the same in the institutes of higher learning.

Origin of IP

- Though there is no official record of the origin of IP, it is believed that a rudimentary form of IP was being practised around 500 Before the Common Era (BCE) in Sybaris, a state of Greece. The natives of Sybaris were granted a year‘s protection for using their intellect to create —any new improvement in luxury.
- A practical and pragmatic approach for IP governance started taking shape in medieval Europe. In 1623, Britain passed an Intellectual Property Legislation which entitled guilds (association of artisans or merchants) to create innovations and bring them to market for trade purposes. However, this legislation brought a lot of resentment amongst the public, and thus was replaced by the Statute of Monopolies‘, which gave the rights to the original creator/inventor for 14 years. Another legislation, Statute of Anne‘, was passed by the British parliament in 1710.

Patents

- The history of the Indian patent system dates back to the preindependence era of British rule. The first patent related legislation in India was Act VI of 1856, adapted from the British Patent Law of 1852. The objective of this legislation was to encourage the inventions of new and useful manufactures. The rights conferred to the inventor were termed as Exclusive Privileges‘. In 1859, certain amendments were made to the Act, such as:
- Grant of exclusive privileges to useful inventions.
- Increase of priority time from 6 months to 12 months.
- Exclusion of importers from the definition of the inventor.

The committee submitted a plethora of recommendations, including:

- Misuse of patents rights needs to be prevented.
- There must be a clear indication in the Act that food, medicine and surgical and curative devices should be made available to the masses at the cheapest rate by giving reasonable compensation to the owner of the patent.
- Amendments in Sections 22, 23 and 23A of the Patent and Design Act, 1911 on the lines of the UK Patent Act.

The second amendment to the 1970 Act was made through the Patents (Amendment) Act, 2002 (Act 38 of 2002). This Act introduced new Patent Rules, 2003, thus replacing the earlier Patents Rules, 1972. The major amendments were:

- The protection term of 20 years for all inventions from the date of filing.
- Scope of non-patentable inventions including Traditional Knowledge expanded.
- Disclosure of source and geographical origin of biological material made compulsory.
- Provisions concerning convention countries simplified.
- Establishment of Appellate Board.
- Compulsory license provisions strengthened.
- Simplification of procedures.
- Harmonization with Patent Cooperation Treaty (PCT) provisions.

With the rapidly changing scenario of IPR at a global level, a need was felt to further amend the Patent Act, 1970. The highlight of the Patents (Amendments) Act 2005 were:

- Product patent for inventions in all fields of technology.
- New forms of known substances excluded to prevent evergreening of the patent.
- Rationalization of the opposition procedure.
- Introduction of pre-grant opposition by representation.
- Introduction of post-grant opposition.
- Compulsory license for export purposes.
- Compulsory license for manufacture.
- Extension of grace period from 6 months to 12 months for filing a patent, if published in government exhibition.

1.5.3. Trademarks

The first statutory law related to Trademarks (TM) in India was the Trade Marks Act, 1940, which was carved out from the Trade Marks Act, 1938 of the UK. It was followed by the incorporation of provisions of TM stated in the Indian Penal Code, Criminal Procedure Code and the Sea Customs Act. Later on, Trade Marks Act, 1940 was rechristened as Trade and Merchandise Marks Act, 1958. Nearly four decades later, this Act was repealed by the Trade Marks Act, 1999. The need for this occurred to comply with the provisions of the TRIPS. It is the current governing law related to registered TM.

Geographical Indications

- India, as a member of WTO, enacted the Geographical Indications of Goods (Registration and Protection) Act, 1999. It came into force with effect from 15th September 2003. Geographical Indicat have been defined under Article 22 (1) of the WTO Agreement on TRIPS.

1.6. Major Amendments in IP Laws and Acts in India

In order to fill the gaps existing in the IP Laws and Acts and also to introduce new guidelines/directions based on the current scenario (socially and politically), each nation keeps on updating the concerned IP Laws and Acts. Some of the salient amendments made in Indian Laws and Acts on IPR are mentioned below:

1. Patents

- A patent is an *exclusive right granted for an innovation* that generally provides a new way of doing something or offers a new technical solution to a problem. The exclusive right legally protects the invention from being copied or reproduced by others. In return, the invention must be disclosed in an application in a manner sufficiently clear and complete to enable it to be replicated by a person with an ordinary level of skill in the relevant field.

- Invention is the creation of a new idea or concept.
- Innovation is the process of translating an invention into commercial entity or widespread use.

2.1.1. Conditions for Obtaining a Patent Protection

- There is a set criterion, as provided in Section 2(1)(j) of the Patents Act, 1970, which must be fulfilled for a product or a process to qualify for the grant of a patent. The criterion encompasses:

- **Novelty** - *Not part of 'State of the Art'*. The innovation claimed in the patent application is new and not known to anybody in the world. In other words, the innovation is a) not in the knowledge of the public, b) not published anywhere through any means of publication and c) not be claimed in any other specification by any other applicant.

- **Inventive step** - *Not obvious to the person (s) skilled in the art*. The innovation is a) a technical advancement over the existing knowledge, b) possesses economic significance and, c) not obvious to a person skilled in the concerned subject.

- **Capable of industrial application** - *For the benefit of society*. The invention is capable of being made or used in any industry.

2.1.2. To Patent or Not to Patent an Invention

- Once an invention has been developed, the inventor has to decide whether to exploit the invention for personal benefits as provided by the statutory laws of the country or put it in the public domain. By and large, the inventor prefers the former option. Only a miniscule of inventions are placed in the public domain without claiming any benefits. In the latter case, anybody can exploit the innovation for commercial or societal benefit without paying any money to the inventor.
- If the owner of an invention wishes to seek monetary gains, he can choose from either of the two options, i.e. patenting or Trade Secret. If the inventor is absolutely sure of maintaining the secrecy of invention for a very long period (maybe 100 years or more) and the probability of reverse engineering of the technology is nil or very low, then the **Trade Secret**‘ category is preferred. If the invention has a short life span or can be kept secret only for a small period of time (a couple of years or so) or the probability of reverse engineering is high once the invention is in the public domain, then the **patent**‘ category is preferred.

2.1.3. Rights Associated with Patents

- As per the Court of Law, a patent owner has the right to decide who may or may not use the patented invention. In other words, the patent protection provided by the law states that the invention cannot be commercially made, used, distributed, imported, or sold by others without the patent owner's consent.

- The patent owner may permit other parties to use the invention on mutually agreed terms. As a matter of fact, the patent rights are negative rights as the owner is restricting others from using the patent in any manner without his prior permission. The patent holder may choose to sue the infringing party to stop illegal use of the patent and also ask for compensation for the unauthorized use.

- Enforcement is the process of ensuring compliance with laws, regulations, rules, standards and social norms. Patent rights are usually enforced by the judicial courts. The Court of Law has the authority to stop patent infringement. However, the main responsibility for monitoring, identifying and taking action against infringers of a patent lies with the patent owner.

2.1.5. Inventions Eligible for Patenting

Patents may be granted for inventions/technologies in any field, ranging from a paper clip or ballpoint pen to a nanotechnology chip or a Harvard mouse (mouse with cancer genes).

It is a general belief that patents are awarded only to major scientific breakthroughs. But, it is not true. In fact, the majority of patents are granted to inventions displaying an improvement over the existing invention. For example, many patents can be awarded to a single molecule e.g. penicillins (an antibiotic that kills microbes) and its derivatives. The derivatives are made by making subtle changes in the structure of the penicillin resulting in new/improved properties, such as acid stability or temperature stability or killing a wide range of microbes (germs). The new antibiotic molecules, known as second, third or fourth generation penicillins can also be patented.

In our daily life, we use many patented items, such as toothbrush, toothpaste, shoes, pen, eyeglasses, textiles, mobile phones, wrist watch, bicycle, scooter, car, television, cold drinks, beverages and many more. It is not uncommon that many products contain several inventions (patents) e.g. the laptop computer involves hundreds of inventions working together. Similarly, cars, mobile phones and televisions have many patented components.

Non-Patentable Matters

- In the Patent Act, 1970, there are some exclusions (product and processes) that cannot be patented, such as:

- **Invention contrary to public morality** - a method for human cloning, a method for gambling.
- **Mere discovery** - finding a new micro-organism occurring freely in nature, laws of gravity.
- **Mere discovery of a new form of a known substance** - use of aspirin for heart treatment. Aspirin was patented for reducing fever and mild pains.
- **Frivolous invention** - dough supplemented with herbs, merely changing the taste of the dough, 100 years calendar, bus timetable.
- **Arrangement or rearrangement** - an umbrella fitted with a fan, a torch attached to a bucket.

- **Inventions falling within Section 20(1) of the Atomic Energy Act, 1962** - inventions relating to compounds of Uranium, Beryllium, Thorium, Plutonium, Radium, Graphite, Lithium and more as notified by the Central Government from time to time.
- **Literary, dramatic, musical, artistic work** - books, sculptures, drawings, paintings, computer programmes, mathematical calculations, online chatting method, method of teaching, method of learning a language as they are the subject matter of Copyright Act. 1957.
- **Topography of integrated circuits** - protection of layout designs of integrated circuits is provided separately under the Semiconductor Integrated Circuit Layout Designs Act, 2000.
- **Plants and animals** - plants and animals in whole or any part including seeds, varieties and species and essentially biological processes for the production or propagation of plants and animals are excluded from the scope of protection under patents.
- **Traditional knowledge** - an invention which in effect is traditional knowledge or which is an aggregation or duplication

2.1.7. Patent Infringements

Once the patent is granted to the applicant, he owns the right to use or exploit the invention in any capacity. If anyone uses the invention without the prior permission of the owner, that act will be considered an infringement of the invention. Infringements can be classified into two categories:

Direct Infringement - when a product is substantially close to any patented product or in a case where the marketing or commercial use of the invention is carried out without the permission of the owner of the invention.

Indirect Infringement - When some amount of deceit or accidental infringement happens without any intention of infringement.

If such an unlawful act has been committed, the patentee holds the right to sue the infringer through judicial intervention.

2.1.8. Avoid Public Disclosure of an Invention before Patenting

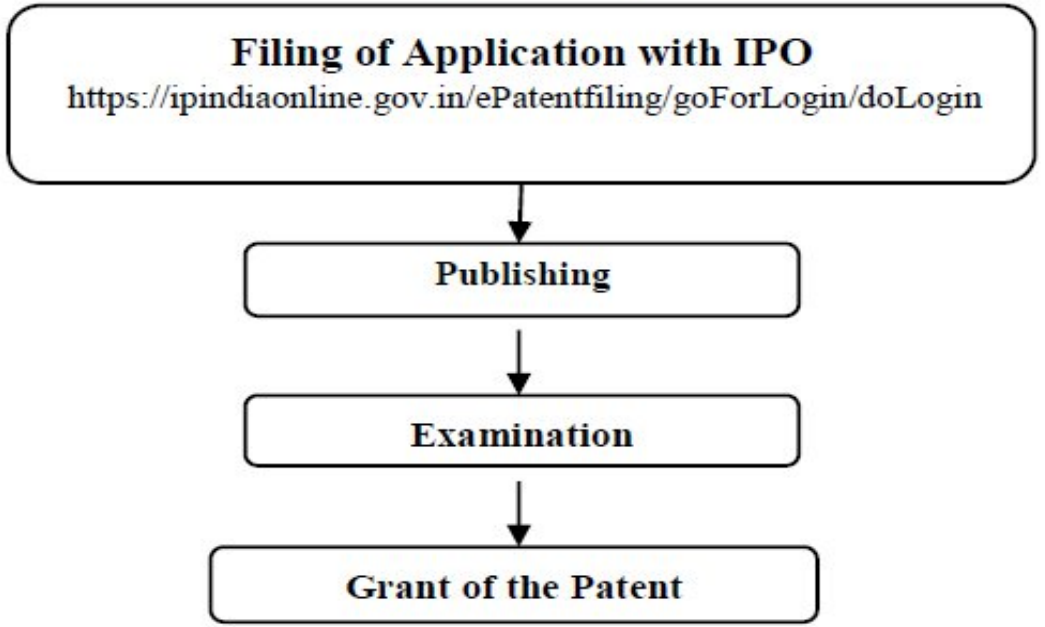
Generally, an invention that has been either published or publicly displayed cannot be patented, as the claimed invention will lose the 'Novelty' criterion. However, under certain circumstances, the Patents Act provides a grace period of 12 months for filing a patent application from the date of its publication in a journal or presentation in a reputed scientific society or exhibition.

Sometimes, disclosure of an invention before filing a patent application is unavoidable, e.g. selling your invention to a potential investor or a business partner who would like to know complete details of the invention in order to judge its commercial value. In such a case, it is advisable to sign a Non-Disclosure Agreement (NDA) or any other confidential agreement to safeguards your interest.

2.1.9. Process of Patenting

In India, the process of grant of a patent is a lengthy procedure that may take anywhere 3-4 years or more. The major steps involved in this process are listed in figure 2.1.

Figure 2.1: Flow chart of major steps involved in the grant of a patent.



2.1.9.1. Prior Art Search - Before an inventor embarks upon the patent filing process, he has to ensure that his invention is 'novel' as per the criterion for the grant of a patent. For this, he has to check whether or not his invention already exists in the public domain. For this, he needs to read patent documents and Non-Patent Literature (NPL), scientific journals/reports/magazines, etc. The information lying in the public domain in any form, either before the filing of the patent application or the priority date of the patent application claiming the invention, is termed as Prior Art.

Conducting a prior art search before filing the patent has advantages as it averts infringement, tracks research and development and provides access to detailed information on the invention. The prior art search is carried out on the parameters such as novelty, patentability, state of the art, infringement, validity and freedom to operate. The commonly used databases for prior art search fall in two categories i.e. Patents Databases and NPL.

Patents' Databases

- Indian Patent Advanced Search System (*InPASS*- http://ipindiaservices.gov.in/publicsearch/).
- Patentscope(*WIPO*- https://www.wipo.int/patentscope/en/).
- Espacenet(*EU*- https://worldwide.espacenet.com/patent/).
- USPTO(*USA*- https://www.uspto.gov/).
- Google Patents Advanced Search (*https://patents.google.com/advanced*).

Unpaid

- Orbit Intelligence (https://www.questel.com/business-intelligence-software/orbit-intelligence/).
- Derwent Innovation (https://clarivate.com/derwent/solutions/derwent-innovation/).
- PROQUEST (https://about.proquest.com/search/?searchKeyword=patent+).

Paid

Non-Patent Literature (NPL)

- **Scholarly publications:** Handbooks, Textbooks, Withdrawn Patents, Encyclopedias, Journals (IEEE, Research Gate, Springer, Wiley Online Library, etc.), Dissertations, NCBI's PubMed, Conference Proceedings, Technical Reports, Public Conferences, etc.
- **Industry/trade publications:** Industry reviews and public disclosures (Social media, YouTube, Books, Magazines, Datasheets, Blueprints, etc.).
- **Others**: Newspapers, Websites, Technology blogs, Researchers' websites, etc.

Although, majority of NPL data is available freely on the public forum, some of the journals are paid and can be accessed after paying the subscription. Major Patent Offices such as the United States Patent and Trademark Office's (USPTO), European Patent Office (EPO), Japan Patent Office (JPO), etc. are maintaining in-house NPL databases to make patents examination more effective.

2.1.9.2. Choice of Application to be Filed – Once a decision has been made to patent the invention, the next step is, what kind of application needs to be filed i.e. provisional patent application or complete (Final) patent application - generally, the provisional patent application is preferred for the following reasons:

- It is cheaper, takes less time, and involves fewer formalities.
- Any improvements made in the invention after the filing of the provisional application can be included in the final application. In other words, the provisional application does not require complete specifications of the inventions. The application can be filed even though some data is yet to be collected from pending experiments.
- A provisional application allows you to secure a priority date for the patent applied.

However, it is mandatory to file the complete patent application within one year of the filing of the provisional application; otherwise, the application stands rejected.

Figure 2.2: Form-1 (application for the grant of a patent).

"FORM 1 THE PATENTS ACT 1970 (39 of 1970) and THE PATENTS RULES, 2003 **APPLICATION FOR GRANT OF PATENT** (See section 7, 54 and 135 and sub-rule (1) of rule 20)	(FOR OFFICE USE ONLY)	
	Application No.	
	Filing date:	
	Amountof Feepaid:	
	CBR No:	
	Signature:	
1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)		
2. TYPE OF APPLICATION [Please tick (1) at the appropriate category]		

Ordinary ( )		Convention ( )		PCT-NP ( )	
Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )	Divisional ( )	Patent of Addition ( )

3A APPLICANT(S)			
Name in Full	Nationality	Countryof Residence	Address of the Applicant

			House No.	
			Street	
			City	
			State	
			Country	
			Pin code	

3B CATEGORY OF APPLICANT [Please tick ( ) at the appropriate category]			
Natural Person ( )	Other than Natural Person		
	Small Entity ( )	Start-up ( )	Others ( )

4. INVENTOR(S) [Please tick (1) at the appropriate category]		
Are all the inventor(s) same as the applicant(s) named above?	Yes ( )	No ( )
If "No", furnish the details of the inventor(s)		

Name in Full	Nationality	Country of Residence	Address of the Inventor	
			House No.	
			Street	
			City	
			State	
			Country	
			Pin code	

5. TITLE OF THE INVENTION		
6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	
	Name	
	Mobile No.	
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	
	Postal Address	
	Telephone No.	
	Mobile No.	
	Fax No.	
	E-mail ID	

8. IN CASE OF APPLICATION CLAIMLNG PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION					
Country	Application number	Filing date	Name of the applicant	Title of the invention	IPC (as classified in the convention country)

9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT CO-OPERATION TREATY (PCT)	
International application number	International filing date

10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF ORIGINAL (FIRST) APPLICATION	
Original (first) application No.	Date of filing of original (first) application

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT	
Main application/patent No.	Date of filing of main application

12. DECLARATIONS

(i) Declaration by the inventor(s)

(In case the applicant is an assignee: the inventors) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

I/We,the above named inventor(s) is/are the true & first inventor(s) for this Invention and declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s)

(ii) Declaration by the applicant(s) in the convention country

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country **may** sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/we, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative.

(a) Date

(b) Signature(s)

(c) Name(s) of the signatory

Source: http://www.ipindia.nic.in

Figure 2.3: Form-2 (provisional/complete specifications).

FORM 2
THE PATENT ACT 1970
(39 of 1970)
&
The Patents Rules, 2003
PROVISIONAL/COMPLETE SPECIFICATION
(See section 10 and rule 13)

1. TITLE OF THE INVENTION	
2. APPLICANT(S) (a) NAME: (b) NATIONALITY: (c) ADDRESS:	
3. PREAMBLE TO THE DESCRIPTION	
PROVISIONAL The following specification describes the invention.	**COMPLETE** The following specification particularly describes the invention and the manner in which it is to be performed.
4. DESCRIPTION (Description shall start from next page)	
5. CLAIMS (not applicable for provisional specification. Claims should start with the preamble — 'I/we claim' on separate page)	
6. DATE AND SIGNATURE (to be given at the end of last page of specification)	
7. ABSTRACT OF THE INVENTION (to be given along with complete specification on separate page)	

Note: -

* Repeat boxes in case of more than one entry.
* To be signed by the applicant(s) or by authorized registered patent agent.
* Name of the applicant should be given in full, family name in the beginning.
* Complete address of the applicant should be given stating the postal index no. /code, state and country.
* Strike out the column which is/are not applicable

Source: http://www.ipindia.nic.in

2.1.9.4 Jurisdiction of Filing Patent Application - India has four offices for filing patent applications (Table 2.1). The applications can be filed only in one of the offices based on the applicant's residence or domicile or place of business or origin of the invention. These are termed as jurisdictions to file patents.

Table 2.1: Jurisdiction to file a patent in India.

Region	States	Address
Northern	Haryana, Himachal Pradesh, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand, Delhi and the Union Territory of Chandigarh, Jammu and Kashmir and Ladakh.	Intellectual Property Office Building Plot No. 32, Sector 14, Dwarka, New Delhi-110078 **Phone:** 011-28032491 **Fax:** 011-28034301 **Email:** delhi-patent@nic.in
Southern	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana and the Union Territories of Pondicherry and Lakshadweep	patent Office Intellectual Property Building G.S.T. Road, Guindy, Chennai-600032 **Phone:** 044-22505242 **Fax:** 044-22502066 **Email:** chennai-patent@nic.in
Western	Maharashtra, Gujarat, Madhya Pradesh, Goa and Chhattisgarh and the Union Territories of Daman and Diu & Dadra and Nagar Haveli	BoudhikSampada Bhawan, Antop Hill,S. M. Road, Mumbai - 400 037. **Phone:** 022- 24153651, 24148165 **Fax:** 022-24130387 **Email:** mumbai-patent@nic.in
Rest of India	Remaining States	Intellectual Property Office Building, CP-2 Sector V, Salt Lake City Kolkata-700091 **Phone:** 033-23679101, 033-23671987 **Fax:** 033-23671988 **Email:** kolkata-patent@nic.in

Source: http://www.ipindia.nic.in/jurisdiction-of-patent-offices.htm

2.1.9.5. Publication – Once the patent application has been filed at the Regional Patent Office, the patent application is kept secret for 18 months in the Patent Office. After the expiry of 18 months (from the date of filing of the application or the priority claimed date, whichever is earlier), the application is published in the Official Journal of Patent Office (http://www.ipindia.nic.in/journal-patents.htm). The purpose of publishing the application is to inform the public about the invention. The publication of an application is a mandatory step.

2.1.9.6 Pre-grant Opposition - If anybody has an objection to the invention claimed in the patent application, he can challenge the application by approaching the Controller of Patents within 6 months from the date of publication. It is termed as Pre-grant Opposition. Depending on the outcome of the case, the patent application may be rejected or recommended for the next step, i.e. patent examination.

Although the patent application is kept secret for 18 months, but under special circumstances, this period can be reduced when the patentee/applicant plans to sell or license the patent or seek an investor). For this, the applicant has to fill a Form-9 and submit it to the Controller General.

Patentee: A person/ Organization who owns the patent (granted)

2.1.9.7 Examination - Patent examination is a critical step in the process of grant of a patent. All the important criteria (novel, inventive step, etc.) are scrutinized by the professionals depending on the content of the invention. Usually, the examiner raises certain queries/doubts which need to be addressed by the inventors. Once the examiner is satisfied with the answers received from the inventors, the application is recommended for the grant of a patent. It is pertinent to mention that a patent application is not examined automatically after clearing the publication stage. The applicant or his representative has to make a request for examination of the patent by filing Form-18A and submitting the same within 48 months from the date of filing of the application.

2.1.9.8. Grant of a Patent - After fulfilling all the requirements for the grant of a patent, including all objections/queries raised by the 'Patent Examiner' and the public at large, the patent is granted to the applicant. The granted patent is published in the Official Journal of the Patent Office. This journal is published every Friday and contains information related to patent applications published under section (u/s) 11A, post-grant publication, restoration of patent, notifications, list of non-working patents and public notices issued by the Patent Office.

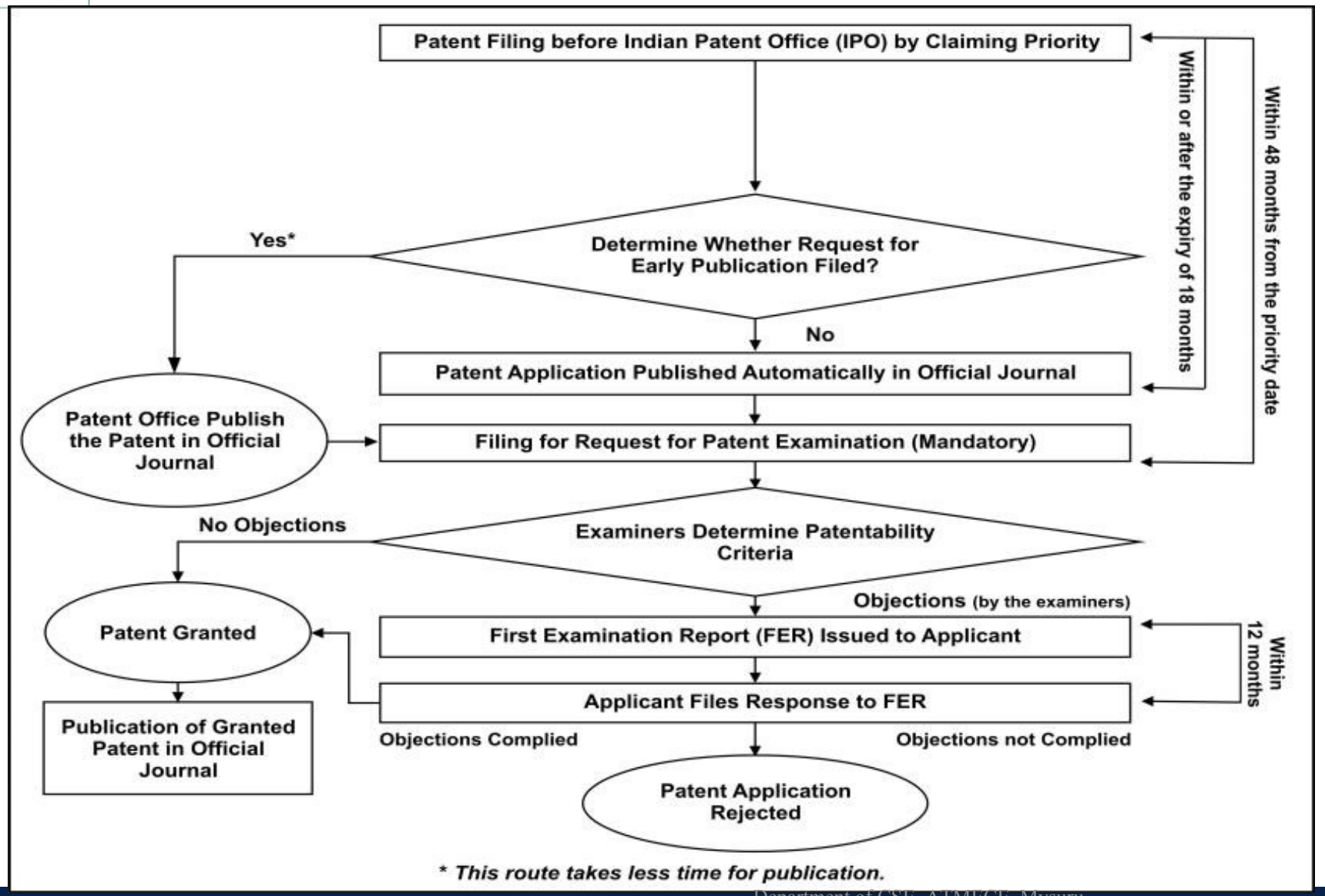


Figure 2.4: Flowchart for the process of filing a patent application.

2.1.9.9. Validity of Patent Protection - The patent protection is granted to an applicant for a limited period, generally 20 years, starting from the date of filing of the application. Once a patent is granted for an invention in India, the next vital step is to ensure that it is renewed annually by paying Patent Renewal Fee as per Section 53, Rule 80 of the Indian Patents Act, till the expiry of the patent grant period. Non-payment of Patent Renewal Fee might result in the cancellation of the patent.

In some countries, patent protection may be extended beyond 20 years. The extension aims to compensate for the time expended on the administrative approval procedure before products can be put on the market. The time taken for this procedure means that the patent owner may sometimes not be able to benefit from his right for a considerable period after the grant of the patent.

2.1.9.10. Post-grant Opposition - Once the patent has been granted by the Patent Office, it still can be challenged by anyone within one year from the date of publication of the grant of the patent. The granted patent can be challenged either via a Patent Office or in a Court of Law. These bodies may invalidate or revoke a patent upon a successful challenge by the interested party on the grounds mentioned below:

- The applicant for the patent wrongfully obtained the invention or any part of the invention.
- The invention claimed has been published before the priority date.
- The invention claimed was publicly known/used before the priority date.
- The invention claimed is obvious and does not involve an inventive step.
- The subject of the claim is not patentable as per Chapter II of the Patent Act, 1970.
- The details/specifications of the invention do not sufficiently and clearly describe the invention.

2.1.10. Commercialization of a Patent

The patent owner may grant permission to an individual/organization/industry to make, use, and sell his patented invention. This takes place according to agreed terms and conditions between the involving parties. A patent owner may grant a license to a third party for the reasons mentioned below:

- The patent owner has a decent job e.g. university professor and has no desire or aptitude to exploit the patent on his own.
- The patent owner may not have the necessary manufacturing facilities.
- The manufacturing facility is not able to meet the market demand.
- The patent owner wishes to concentrate on one geographic market; for other geographical markets, he may choose to license the patent rights.

Once the patent is granted, the patentee (person holding the rights to the patent) enjoys the exclusive rights to use the patented invention. Only the patentee has the right to licence or deal with the

The licensing of a patent can be exclusive or non-exclusive. In an **Exclusive Licence**, the patent is sold to only one individual/organization for a fixed time period. During this time period, no other person or entity can exploit the relevant IP except the named licensee. In **Non-Exclusive Licence**, a patentee can sell his patent rights to as many individuals/parties as he likes.

If the patentee is not able to commercialize his patent within three years from the date of the grant of a patent, any person may submit an application to the Controller of Patents for grant of **Compulsory Licensing** (of the patent), subject to the fulfilment of following conditions:

- Reasonable requirements of the public concerning the patented invention have not been satisfied.
- The patented invention is not available to the public at a reasonable price.
- The patented invention is not worked in the territory of India.

2.1.11. Need for a Patent Attorney/Agent

In general, applicants can prepare their patent applications and file them without assistance from a patent attorney. However, given the complexity of patent documents, it is advisable to seek legal assistance from a patent attorney/agent when drafting a patent application. Furthermore, the legislation of many countries requires that an applicant, whose ordinary residence or principal place of business is outside the country, be represented by an attorney or agent qualified in the country (which usually means an agent or attorney who resides and practices in that country).

2.1.12. Can a Worldwide Patent be Obtained

There is no such term as 'Universal Patent' or 'World Patent' or 'International Patent' as the patent rights are territorial. An application for a patent must be filed with a Patent Office of the country in which one wishes to seek patent protection. Unfortunately, this option becomes laborious, cumbersome, time-consuming and expensive if one wishes to file a patent application in many countries. To ease out this issue, many Regional Offices have been established which receive patent applications on behalf of a group of nations e.g. European Patent Office and African Regional Intellectual Property Organization. A single application is sufficient to cover many nations that are members of a particular regional office/organization. However, if one wishes to seek patent protection in several countries worldwide, it is preferred to file an international patent under the Patent Cooperation Treaty (PCT). The only condition is that the applicant's country should be a member of PCT. India, along with over 190 nations, is a member of PCT.

2.1.13. Do I Need First to File a Patent in India

Yes, in general, Indian residents are required to file the patent application first in India. Subsequently, they may file for patent protection in other countries. But for this, prior approval is needed from the Patent Office. However, this approval can be waived off under the following circumstances:

- The applicant is not an Indian resident.
- If 6 weeks have expired since the patent application was filed in India by an Indian resident.
- If two or more inventors are working on an invention in a foreign country and one of the inventors is an Indian resident. The invention does not have a potential market in India and hence does not wish to file the patent in India. In such a scenario, the Indian resident has to seek Foreign Filing Permission (FFP) from an Indian Patent Office.
- In case of international collaboration, if one part of the invention originated in India and the inventor is an Indian resident, he has to seek permission to file the patent outside India.
- If the invention is related to defense or atomic energy or utility model, the inventor/s needs to seek permission from the Indian Patent Office because inventions related to these domains are not the subject matter of patentability in India.

2.1.14. Patent Related Forms

There are over 30 patent-related forms. Some of them are mentioned below.

Table 2.2: List of important patent application forms.

Form No.	Title of Form
1	Application for a grant of a patent
2	Provisional/Complete specifications
7	Notice of opposition on grant of a patent
7A	For filing a representation opposing grant of a patent
17	Application for compulsory license
18	Request for examination of the application for patent
21	Request for termination of compulsory license
22	Application for registration of patent agent
27	Statement regarding the working of the patented invention on a commercial scale in India
30	Miscellaneous form to be used when no other form is prescribed

Source: http://www.ipindia.nic.in/writereaddata/Portal/IPORule/1_70_1_The-Patents-Rules-2003-Updated-till-23-June-2017.pdf

Table 2.3: Fee for obtaining a patent via electronic filing.

Item	Natural person/ startup (₹)	Small entity alone or with a natural person /startup (₹)	Others alone or with natural person/ startup/ small entity (₹)
Provisional/Complete Specifications	1,600	4,000	8,000
Request for Early Publication	2,500	6,250	12,500
Request for Examination	4,000	10,000	20,000
Express Request For Examination	5,600	14,000	28,000
Renewal Fees (Annually)			
3^{rd} to 6^{th} Year	800	2,000	4,000
6^{th} to 10^{th} Year	2,400	6,000	12,000
11^{th} to 15^{th} Year	4,800	12,000	24,000
16^{th} to 20^{th} year	8,000	20,000	40,000

Source: http://www.ipindia.nic.in/writereaddata/Portal/IPOFormUpload/ 1_11_1/ Fees.pdf

2.1.16. Types of Patent Applications

- **Provisional Application** - A patent application filed when the invention is not fully finalized and some part of the invention is still under experimentation. Such type of application helps to obtain the priority date for the invention.
- **Ordinary Application** - A patent application filed with complete specifications and claims but without claiming any priority date.
- **PCT Application** - An international application filed in accordance with PCT. A single application can be filed to seek patent protection and claim priority in all the member countries of PCT.

- **Divisional Application** - When an application claims more than one invention, the applicant on his own or to meet the official objection on the ground of plurality may divide the application and file two or more applications. This application divided out of the parent one is known as a Divisional Application. The priority date for all the divisional applications will be the same as that of the main (the Parent) Application (Ante-dating).
- **Patent of Addition Application** - When an invention is a slight modification of the earlier invention for which the patentee has already applied for or has obtained a patent, the applicant can go for 'Patent of Addition', if the modification in the invention is new. Benefit - There is no need to pay a separate renewal fee for the 'Patent of Addition', during the term of the main patent. It expires along with the main patent.
- **Convention Application** - If a patent application has been filed in the Indian Patent Office, and the applicant wishes to file the same invention in the one or more Convention countries (e.g. Paris Convention) by claiming the same priority date on which application was filed in India, such an application is known as Convention Application. The applicant has to file Convention Application within 12 months from the date of filing in India to claim the same priority date.

2.1.17. Commonly Used Terms in Patenting

There are certain terms that are commonly used in the field of patenting, as listed in table 2.4.

Table 2.4: Commonly used terms in the domain of patenting.

S. No.	Term	Definition
1.	Inventor	Creator of an invention
2.	Applicant	Organization/individual/industry that files a patent application or applies for a patent
3.	Patentee	A person/organization who owns the patent (granted)
4.	Licensee	Organization/individual/industry which obtains a license of the patent from the Patentee for commercialization purpose

5.	Assignee	A person in whose name patent has been assigned legally
6.	In force	The applicant is paying the annuity (renewal fee) for the patent to keep it alive (Active Patent)
7.	Working of a Patent	The selling of a patent to an individual/party for commercial exploitation is called as working of a patent
8.	Patent Specification	Patent specification is a written description of the invention and the way of representation and process of making and using the same
9.	Priority Right	A 'Priority Right' or 'Right of Priority' is a time-limited right, activated by the first filing of an application for a patent
10.	Priority Date	The claimed date on which the first application for the invention is filed
11.	Patent Claims	Claims can be defined as the scope of the protection conferred by a patent, or the protection sought in a patent application. The purpose of the claims is to define which subject matter is protected by the patent
12.	National Phase Application	An application filed to obtain patents in different countries simultaneously based on a single International/PCT application
13.	Patent Revocation	The revocation means cancellation of the patent due to certain reasons, such as lack of patentability or wrongfully obtaining a patent
14.	Restoration of Patent	Once a patent has been ceased (e.g. due to non-payment of the fee) it can be restored within a permitted period by paying the requisite fee

2.1.18. National Bodies Dealing with Patent Affairs

There are many departments/organizations/bodies dealing with various aspects of patents, namely, the Indian Patent Office (IPO), Department for Promotion for Industry and Internal Trade (DPIIT); Technology Information, Forecasting and Assessment Council (TIFAC) and National Research Development Corporation (NRDC). Above mentioned organizations are discussed in detail in chapter 5.

2.1.19. Utility Models

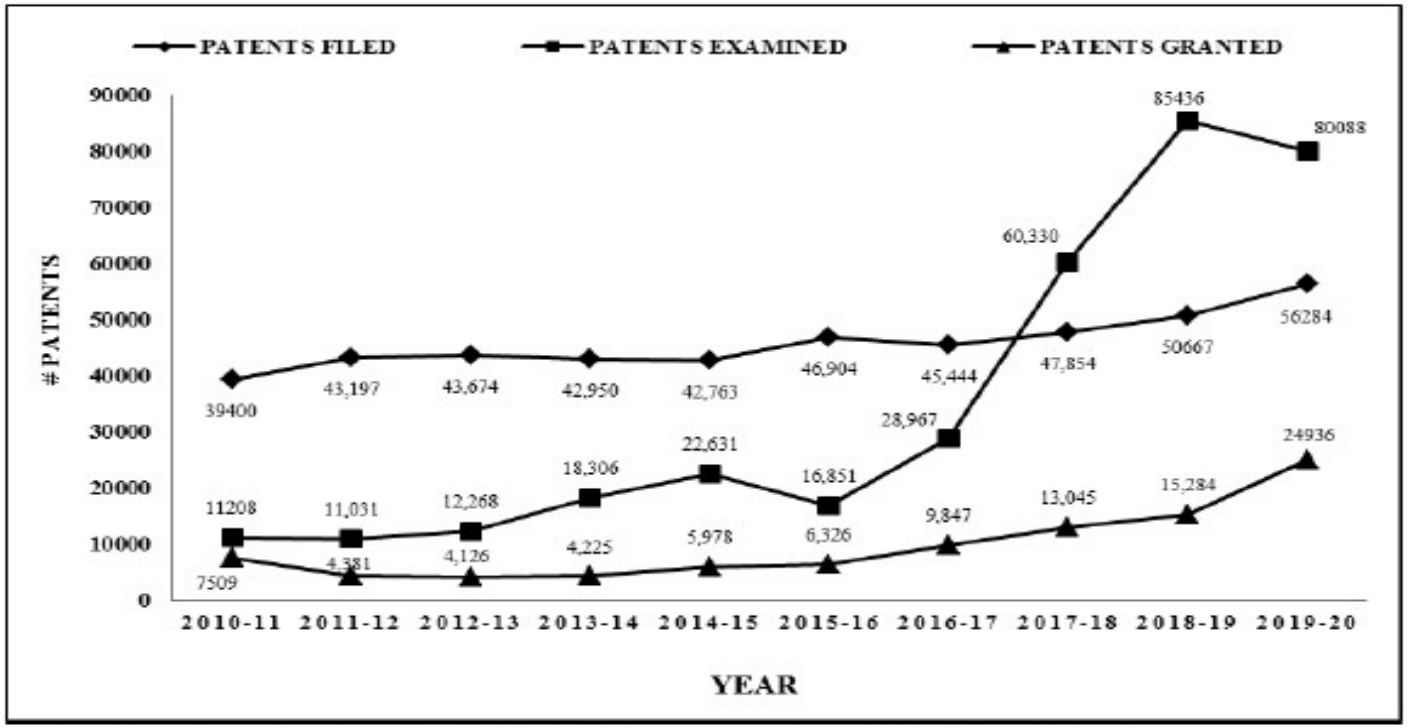
In many cases, a new invention involves an incremental improvement over the existing products, but this technical improvement is not sufficient enough to pass the stringent criterion of 'Novelty' and 'Non-obviousness' set aside for the grant of a patent. Such small innovations can still be legally protected in some countries and termed as **'Utility Models'** or **'Petty Patents'** or **'Innovation Patents'.** In this case, the criterion of 'Novelty' and 'Non-obviousness' are diluted or relinquished. But the requirement of industrial application or utility is the same as that for patents.

Utility Model is a helpful tool for Micro, Small and Medium Enterprises (MSME) since the grant of a 'Utility Model' is usually less rigorous and involves minimal cost. MSMEs do not have deep pockets to carry out intensive R&D leading to the grant of patents. But their innovations are good enough for improving their products/processes and bringing more financial rewards. Such inventions pass the requirements set aside for Utility Models but not for patents. The life of the Utility Model is less as compared to the patents. It varies from 7-15 years in different countries.

Nearly 80 countries, including France, Germany, Japan, South Korea, China, Finland, Russian Federation and Spain, provide protection for Utility Models under their IPR laws. India till date does not recognize utility patents. If these small patents are recognised under IP protection in India, it will catapult the number of patents (filed and granted) on annual basis.

examiners. The number of patent examined rose to 80,088 in 2019-20 as compared to 11,208 in 2010-11.

Figure 2.5: Patents profile (India) for the period 2010-20.



Source: Annual Reports, Office of CGPDTM, Mumbai (2011-20) (https://dipp.gov.in/sites/default/files/annualReport-English2020-21.pdf)

Module 4

Copyrights and Related Rights

Module-4(5 Hours)

Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases.

Trademarks: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.

2.2 Copyrights and Related Rights ©

'Copyrights' refer to the legal rights provided by law to the original creator of the work in the fields of literature and computer software. The 'Related Rights' encompass the author's work in the fields of dramatics, sound recording, film/video recordings, paintings, architecture, etc. Copyrights and Related Rights are one of the categories of IP and governed by the Copyright Act, 1957 of India. This Act provides rights of reproduction, communication to the masses, adaptation and translation of the work.

The words 'author' and 'work' need to be understood from the perspective of Copyrights. The term **'author'** refers to an individual who develops the content (of work). The author can be a writer (literary work), computer programmer (software), composer (musical work), producer (cinema films, sound recording), photographer (photos). The term **'work'** is a task undertaken in the fields of literature, dramas, music, artistic, cinematograph film and sound recording.

2.2.1. Classes of Copyrights

In India, following classes of Copyrights exist:

- **Literature:** Books, Essays, Research articles, Oral speeches, Lectures, Compilations, Computer programme, Software, Databases.
- **Dramatics:** Screenplays, Dramas.
- **Sound Recordings:** Recording of sounds regardless of the medium on which such recording is made e.g. a Phonogram and a CD-ROM.
- **Artistic:** Drawing, Painting, Logo, Map, Chart, Photographs, Work of Architecture, Engravings, and Craftsmanship.
- **Musical:** Musical notations, excluding any words or any action intended to be sung, spoken or performed with the music. A musical work need not be written down to enjoy Copyright protection.
- **Cinematograph Films:** 'Cinematograph Film' is a visual recording performed by any medium, formed through a process

and includes a sound recording. For example, Motion Pictures, TV Programmes, Visual Recording, Sound Recording, etc.

2.2.2. Criteria for Copyright

To qualify for Copyright protection, a work must exist in some **physical (or tangible)** form. The duration of the existence of the physical form may vary from a very short period to many years. Virtually any form of expression which can be viewed or listened to is eligible to qualify as Copyright. Even hurriedly scribbled notes for an impromptu speech are considered copyrightable material.

The Copyright work has to be expressed by the creator in his frame of thought. In other words, the work has to be **original** i.e. the author created it from independent thinking void of duplication. This type of work is termed as an Original Work of Authorship (OWA). It may appear similar to already existing works but should not be the same. The original work may lack quality or quantity or aesthetic merit or all these parameters; still, it will pass the test of copyrightable work.

In addition to originality for the work, Copyright protection also requires at least some **creative effort** on the part of the author. There is no minimum limit for the extent of creativeness. It is a subjective matter. The minimal level of creativity needed for Copyright protection depends on the judgment of the evaluator (adjudicated by the Office of Registrar of Copyright). As an example, mere changing the dimensions of a book will not be granted Copyright protection. Similarly, an address book of alphabetically arranged telephone numbers does not qualify for Copyright protection as it involves a straightforward alphabetical listing of phone numbers rather than a creative selection of listings.

2.2.3. Ownership of Copyright

The Copyright laws clearly state the ownership of Copyright.

- The person who created the work is considered as the first (original) holder (owner) of the Copyright.
- In case the author is an employee and has been contracted to do the work by a proprietor (of the company/firm/society /organization, etc.), the owner of the Copyright shall be the proprietor.

- The government will be the primary owner of the government work in the absence of any kind of arrangement.
- The person delivering a speech is the first owner of the Copyright.

To obtain permission to use copyrighted material, a request for the same should be made to the legal owner (of the copyrighted material), which could be the original author, the legal heir (in case of the death of the author), publisher, etc. The request must mention the following:

- Title, author and/or editor, and edition.
- Precise material to be used.
- The number of copies.
- The purpose of the material e.g. educational, research, etc.
- Form of distribution e.g. hard copy to classroom, posted on the internet.
- Whether the material is to be sold e.g. as part of a course pack.

2.2.4. Copyrights of the Author

The Copyrights of the creator/author are legally protected under Section 14 of the Copyright Act, 1957. The content (i.e. work) created by the author cannot be used or published by anyone without the author's consent. Copyrights provide exclusive rights to the author in the areas of publication, distribution, and usage. A Copyright owner enjoys two types of rights i.e. **Economic Rights** (or Proprietary Rights) and **Moral Rights** (or Personal Rights).

Economic Rights are associated with financial benefits accruing from the sale of copyrights. As per the Act, Copyright owners can authorize or prohibit:

- Reproduction of the work in any form, including printed publications or sound recordings.
- Distribution of copies of the work.
- Public performance of the work.
- Broadcasting/communicating the work to the public.

- Translating the work into other languages.
- Adaptation of the work, such as converting a novel into a screenplay.

Moral Rights include 'Right of Paternity' and 'Right of Integrity'. The 'Right of Paternity' - even if the Copyright has been licensed to another party, the original author of the work retains the right to claim authorship i.e. the name of the author/s will remain even though Copyrights have been transferred to another party e.g. a book publisher. The 'Right of Integrity'- the original author has the right to prevent misuse of the work e.g. alterations/additions/ deletions in work resulting in misrepresentation of the said work or harming the honor and reputation of the author.

It is pertinent to mention that for a work, there can be more than one rights holders, for instance, a musical sound recording has many rights holders, such as the lyricist, music composer, singer, musicians and sound recorders.

2.2.5. Copyright Infringements

As per the Copyrights Acts, 1957, the following acts are regarded as an infringement of Copyrights:

- Making copies for sale or hire or selling or letting them for hire without permission.
- Permitting any place for the performance of owned work (in public) where such performance constitutes an infringement of Copyright.
- Distributing infringing copies for trade or to such an extent to affect the interest of the owner of the Copyright prejudicially.
- Public exhibition of infringing copies for trade purposes.
- Importation of infringing copies.
- Translating a work without the permission of the owner.

2.2.7. Copyright Infringement is a Criminal Offence

According to Section 63 of the Copyright Act, 1957, if any person knowingly infringes the Copyright, he qualifies for the criminal offence. The punishment awarded for the infringement (of Copyright) is imprisonment for six months with the minimum fine of ₹ 50,000/-. In case of a second and subsequent conviction, the minimum punishment is imprisonment for one year and a fine of ₹ 1,00,000. There is a dedicated IP division to deal with Copyright cases. Also, there is a Copyright Board constituted by the Central Government in 1958 to adjudicate certain claims about Copyright.

2.2.8. Copyright Infringement is a Cognizable Offence

A police officer (rank of a sub-inspector or higher) can confiscate the infringed Copyright material without issuing a warrant and produce the same in the court of law.

2.2.9. Fair Use Doctrine

Any person not possessing a valid license from the owner of the Copyright is not entitled to exploit the said work. However, Section 52 of the Copyright Act, 1957, provides for certain exceptions to the infringement of Copyright. As per the rule of law, Copyrighted materials cannot be used by anybody without the proper consent of the legal owners (of the Copyright).

However, limited use of Copyrighted materials for teaching and research purposes is legally permitted, under 'The Fair Use Doctrine', which comprises of the four-part test:

- **The character of the use** - use of the work is purely educational, non-profit and personal.
- **Nature of the work** - The use of work is factual in nature and not imaginative.

- **Amount of the portion to be used -** permission is not needed if only a small portion of Copyright protected material is to be used. However, this parameter is debatable now.
- **Impact of use on the value of the Copyrighted material** - If a small portion of the work is copied and is not affecting the author's economic and moral rights, it will be excused from the infringement.

2.2.10. Copyrights and Internet

The twenty-first century is an era of digitization. The Copyrighted data is quickly transmitted via the internet. This method of data transmission has brought amendments to the existing Copyright laws. One should be careful of Copyright/fair use principles when downloading material from the internet. There is growing concern about the ability to pull Copyrighted material from the internet without permission. Note that material may have been placed on the internet without the author's permission.

In general, posting material on the internet by the Copyright owner gives an internet user the right to use that material for his personal use, but he cannot use the work for commercial purposes. Electronic distribution of a Copyrighted work should mention the statement that "*This work is protected by Copyright laws and is provided for educational instruction only. Any infringing use may be subject to disciplinary action and/or civil or criminal liability as provided by law*".

As per Section 2(o) of the Copyright Act, 1957, 'Literary Work' includes computer programmes, tables and compilations, including computer databases. It is mandatory to supply 'Source Code' and 'Object Code' along with the application for registration of Copyright.

2.2.11. Non-Copyright Work

The works not under the jurisdiction of Copyrights are as follows:

- The ideas, concepts, and principles themselves cannot be protected under Copyright, only the form in which they are expressed can be copyrighted.
- Facts, such as scientific or historical discoveries, are not copyright protected. Any fact a person discovers in the course of research cannot be Copyright protected. For example, an author of a book on 'Buddhism' takes ten-fifteen years to gather all the necessary materials and information for his work. At a great expense, the author travels to various museums, libraries and excavations sites. However, after the book is published, anyone is free to use the underlying facts, provided they express the information on their own.
- Copyright does not protect titles, names, slogans, short phrases, short word combinations, methods, or factual information.
- Certificates are not considered as Copyrightable subject matter as there is not much scope for creativity.
- Digitally created works and Copyrighted works transformed into a digital format and placed on the internet are Copyright protected.
- The Copyright registration for a website, as a whole, is not possible. However, different components/rudiments of a website

can be granted Copyright registration e.g. computer programmes/software, compilations including computer databases ('literary works'); photographs, paintings, diagram, map, chart or plan ('artistic works'); and works consisting of music including graphical notation of such work ('musical works'). However, a separate application for each component of work has to be filed for seeking Copyright registration.

- A computer or mobile App qualifies for Copyright registration. An Application is a complete, self-contained computer program that is designed to perform a specific task. An App usually has dynamic content and is designed for user interaction. It may be used directly or indirectly in a computer or handheld electronic device.
- If someone swipes your picture/song/video from the internet and uses it for their purposes, it is a Copyright infringement. By the way - the same is true if *you* nick some else's material for your purposes.

2.2.12. Copyright Registration

It is not necessary to register a work to claim Copyright. Once a work is created via any medium, the work receives automatic Copyright safety. In other words, there is no formal request to be submitted to the office of the Copyright, for acquiring Copyright. Copyright registration does not confer any rights. It is merely a *prima facie* proof of an entry in respect of the work in the Copyright register maintained by the Registrar of Copyrights. The certificate of registration serves as *prima facie* evidence in a court in cases of disputes relating to ownership or creation of Copyright, financial matters, transfer of rights, etc. It is advisable that the author of the work registers for Copyright for better legal protection. In India, Copyrights matters, including Copyright registration, are administered under the Copyright Act, 1957 and Copyrights Rule, 2013. Below mentioned are prominent forms for copyright registration (https://copyright.gov.in/).

FORM – XIV

Application for Registration of Copyright

To

The Registrar of Copyrights,
Copyright Office,
BoudhikSampada Bhawan, Plot No. 32,
Sector 14, Dwarka, New Delhi-110078
Phone: 011-28032496

Sir,

In accordance with section 45 of the Copyright Act, 1957 (14 of 1957), I hereby apply for registration of Copyright and request that entries may be made in the Register of Copyrights as in the enclosed statement of Particulars' sent herewith.
I also send herewith duly completed the statement of further particulars relating to the work.
In accordance with rule 70 of the Copyright Rules, 2012, I have sent by pre-paid registered post copies of this letter and of the enclosed statement(s) to the other parties concerned, as shown below:

Names and addresses of the parties	Date of Dispatch
1	2

The prescribed fee has been paid, as per details below:
Communications on this subject may be addressed to:
I hereby declare that to the best of my knowledge and belief, no person, other than to whom a notice has been sent as per paragraph 2 above has any claim or interest or dispute to my Copyright of this work or to its use by me.
I hereby verify that the particulars given in this Form and the Statement of Particulars and
Statement of Further Particulars are true to the best of my knowledge, belief and information and nothing has been concealed therefrom.
List of enclosures:

Yours faithfully

(Signature of the Applicant)
Place: .....
Date: .....

Source: https://copyright.gov.in/frmDownloadPage.aspx

STATEMENT OF PARTICULARS

S.No.	Attributes	Details
1.	Registration number (*To be filled in the Copyright Office*)	
2.	Name, phone, email, address and nationality of the applicant	
3.	Nature of the applicant's interest in the Copyright of the work	
4.	Class and description of the work	
5.	Title of the work	
6.	Language of the work	
7.	Name, address and nationality of the author and, if the author is deceased, the date of his decease	
8.	Whether work is published or unpublished	
9.	Year and country of first publication and name, address and nationality of the publishers	
10.	Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publisher	

11.	Names, address and nationalities of the owners of the various rights comprising the Copyright in the work and the extent of rights held by each, together with particulars of assignment and licenses, if any	
12.	Names, addresses and nationalities of other persons, if any, authorized to assign or license the rights comprising the Copyright	
13.	If the work is an "artistic work", the location of the original work, including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown)	
14.	If the work is an 'artistic work' which is used or is capable of being used in relation to any goods or services, the application shall include a certificate from the Registrar of Trade Marks in terms of the proviso to sub-section (1) of section 45 of the Copyright Act, 1957.]	
15.	If the work is an "artistic work" whether it is registered under the Designs Act 2000. If yes give details.	
16.	If the work is an "artistic work" capable of being registered as a design under the Designs Act 2000, whether it has been applied to an article though an industrial process and , if yes, the number of times it is reproduced.	
17.	Remarks, if any	
Place:(Signature of the Applicant) Date:		

Source: https://copyright.gov.in/frmDownloadPage.aspx

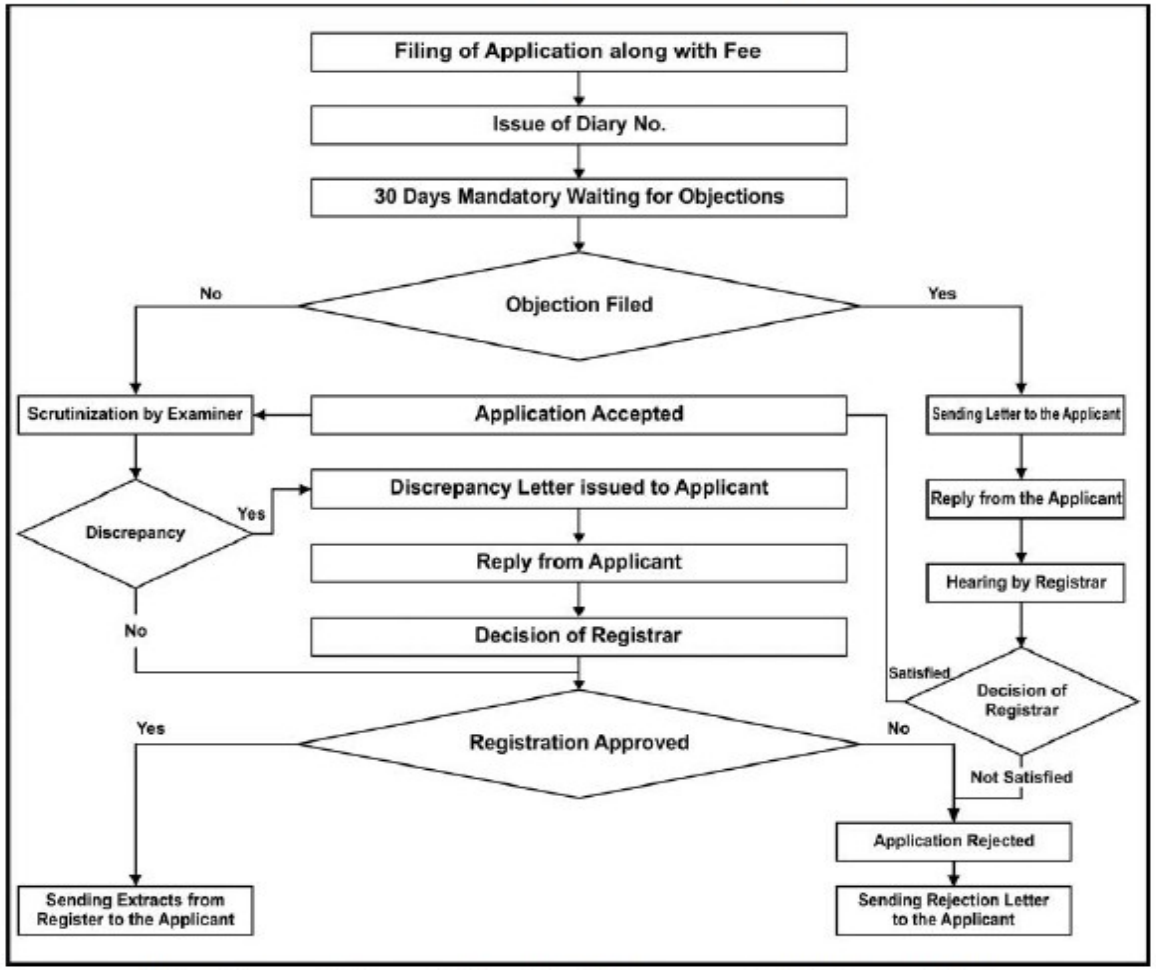
STATEMENT OF FURTHER PARTICULARS

(For Literary, including Software, Dramatic, Musical and Artistic Works only)

S.No.	Attributes	Details
1.	Is the work to be registered	
	a) An original work?	
	b) Translation of a work in the public domain?	
	c) A translation of a work in which Copyright subsists?	
	d) An adaptation of a work in the public domain?	
	e) An adaptation of a work in which Copyright subsists?	
2.	If the work is a translation or adaptation of a work in which Copyright subsists:	
	a) Title of the original work.	
	b) Language of the original work.	
	c) Name, address and nationality of the author of the original work and, if the author is deceased, the date of his decease.	
	d) Name, address and nationality of the publisher, if any, of the original work.	
	e) Particulars of the authorization for a translation or adaptation including the name, address and nationality of the party authorizing.	
3.	Remarks, if any.	
Place: (Signature of the Applicant) Date:		

Source: https://copyright.gov.in/frmDownloadPage.aspx

Figure 2.6: Flow chart for the process of Copyright registration.



Source: https://copyright.gov.in/frmWorkFlow.aspx *(slightly modified)*

Table 2.5: Important forms pertaining to Copyrights.

S. No.	Name of Form	Form No.
1.	Application form for registration of Copyright	Form-XIV
2.	Application form for registration of changes in particulars of Copyright	Form-XV
3.	Registration of a Copyright Society	Form-VIII
4.	Application form for the relinquishment of Copyright	Form-I

Source: http://Copyright.gov.in/frmformsDownload.aspx

2.2.14. Fee Structure

For each work, a separate application form needs to be submitted, along with the requisite fee. The fee is not reimbursable in case the application for registration is rejected.

Table 2.6: Fee structure for Copyrights.

Attribute	Fee (₹)
For an application for registration or Copyright Literary, Dramatic, Musical or Artistic work	500/- per work
For an application for registration of Copyright in a Cinematograph Film	5,000/-
For an application for registration of Copyright in a Sound Recording	2,000/-
Provided that in respect of a Literary or Artistic work which is used or is capable of being used in relation to any goods or services	2,000/-
Making any change in Literary, Dramatic, Musical or Artistic work	200/-
Provided that in respect of a Literary or Artistic work which is used or is capable of being used in relation to any goods or services	1,000/-

For an application for registration of change in particulars of Copyright entered in the Register of Copyrights in respect of Cinematograph Film	2,000/-
For an application for registration of changes in particulars of Copyright entered in the Register of Copyrights in respect of Sound Recording	1,000/-
For an application for prevention of importation of infringing copies per place of entry	1,200/-

Source: http://Copyright.gov.in/frmFeeDetailsShow.aspx

2.2.15. Copyright Symbol

It is not necessary to place the Copyright symbol © with your name and 'year created' near your published or printed materials - but if you do, it's easier to nail someone for infringement on your Copyright if you go to court. The important things which may be mentioned as a Copyright mark on Copyright creation are:

- The Copyright symbol © (the letter C in a circle), or the word. 'Copyright', or the abbreviation 'Copr.'
- In the case of compilations or derivative works incorporating previously published material, the year with the date of the first publication of the compilation or derivative work should be mentioned. The year date may be omitted for pictorial, graphic, sculptural work, greeting cards, postcards, stationery, jewellery, dolls and toys.
- The name or the abbreviation by which the name can be recognized of the owner of the Copyright, or a generally known alternative designation of the owner can be mentioned.
- The elements for sound recordings generally require the same three elements, except the symbol is ℗ (the letter P in a circle) instead.

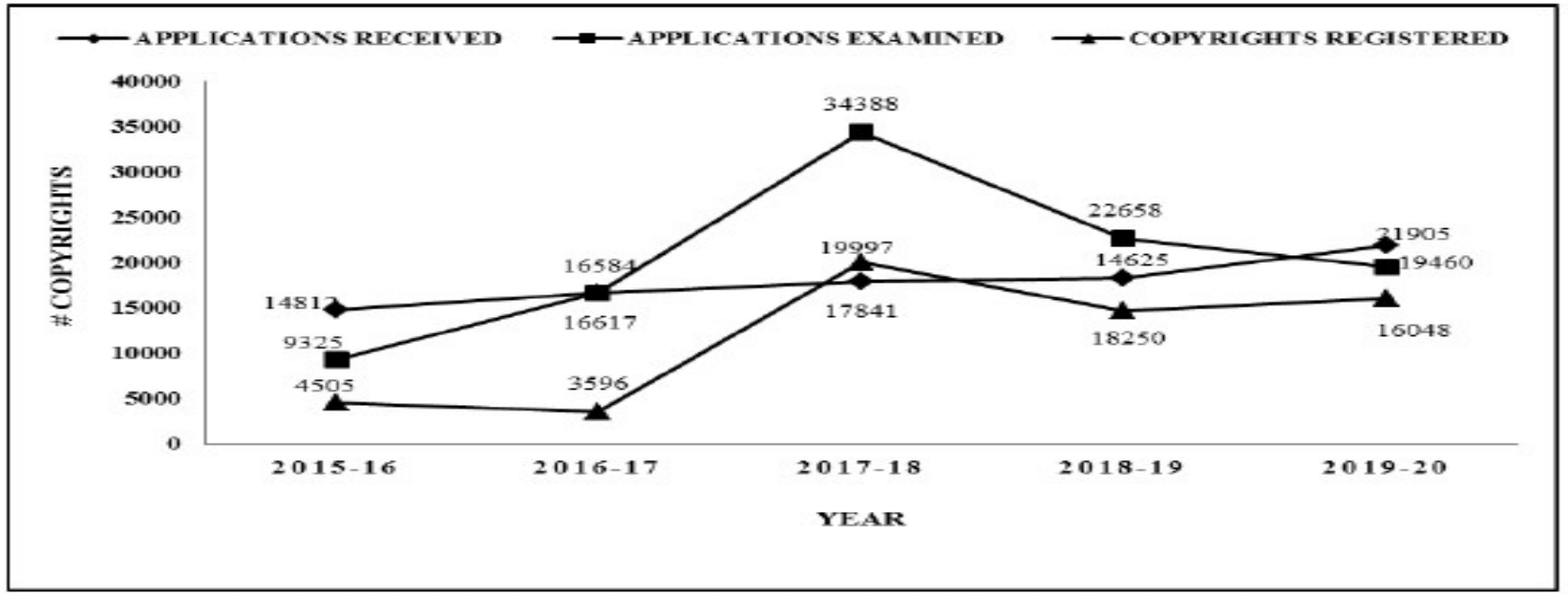
2.2.16. Validity of Copyright

In general, the validity of Copyright is for 60 years. This period starts either from the year after the death of the author (in case of literature, dramatic, musical and artistic works) or from the date of publication of the work (in case of cinematograph films, sound recordings, photographs, posthumous publications, works of government and works of international organisations).

2.2.17. Copyright Profile of India

A comparative five years (2015-20) study revealed a gradual increase in the number Copyright applications in the first four years of the study, with a maximum number of applications (21,905) recorded in the 2019-20 period (Fig. 2.7). The number of applications examined was maximum (34,388) in 2017-18. However, it tapered down to 22,658 in 2018-19 and 19,460 in 2019-20. A similar trend was observed in the number of Copyright registrations, with a peak (19,997) observed in 2017-18.

Figure 2.7: Copyrights profile (India) for the period 2015-20.



Source: Annual Reports, Office of CGPDTM, Mumbai (2011-20) (https://dipp.gov.in/sites/default/files/annualReport-English2020-21.pdf)

2.2.18. Copyright and the word 'Publish'

A work is considered published when it is in the public domain on an unrestricted basis. For example, a person writes an article called 'Life in Himalayas' and distributes it to a few individuals and/or societies/organizations with a restriction *not to disclose* the contents of the article. 'Life in Himalayas' has not been "published"

in the Copyright sense. If the author removes the condition of non-disclosure or posts of this article on the internet (i.e. public domain), it would be considered as published. It is to be noted that both published and unpublished works can be registered under Copyright.

2.2.19. Transfer of Copyrights to a Publisher

The original authors of the Copyrighted work may not have the wherewithal to widely publicise their work. Usually, they transfer their rights to publishers for financial benefits, which could be a one-time lump sum amount or royalties or a combination of the two. However, transferring Copyrights unconditionally to the publishers (or anybody else) may have some repercussions for the owner of the Copyright. A publisher may prevent author/s from displaying their articles on the institute's websites. The new owner of Copyright may not even allow the author to revise his work. In other instances, a publisher might print an insufficient number of hard copies and also does not show interest in uploading the soft copy of the work on the internet. Hence, one must be careful in signing an agreement with the publishers. The author may not transfer all the legal rights bestowed upon him as an author. An agreement may be signed permitting only the print and sale of hard copies by the publishers while retaining digital rights for the said work. An author may also put a time limit for the printing and sale of the books/articles, etc.

Before the digital era, authors used to rely completely on publishers for the dissemination of their work. However, in the internet era, the dependency on publishers has almost diminished. The author is in a position to bypass the publishers and bring his work in to the public domain. But this freedom cannot be enjoyed by those who are already under the publishing contract.

Even though the author has completely and exclusively licensed out his work, the Copyright Act has a provision under **'termination of transfer'** to reclaim his Copyright. Under this provision, certain Copyright agreements can be terminated after 35 years of the agreement. This statutory termination right applies even though it is not incorporated in the agreement. It is strongly advised that authors must apply their mind while signing the Copyright agreement.

2.2.20. Copyrights and the Word 'Adaptation'

In the world of Copyright, the word 'Adaptation' signifies the creation of a similar work based upon contemporary work. The Copyright Act defines the following actions as adaptations:

a) Transformation of a dramatic work into a non-dramatic work.

b) Changing a literary or artistic work into a drama.

c) Re-arrangement of a literary or dramatic work.

d) Depiction through pictures of a literary or dramatic work.

e) The making of a cinematograph film of a literary or dramatic or musical work.

2.2.21. Copyrights and the Word 'Indian Work'

'Indian work' means a literary, dramatic or musical work provided

- The author of the work is an Indian citizen.
- The work is first published in India.
- In the case of an unpublished work, at the time of the making of the work, the author of the work was a citizen of India.

2.2.22. Joint Authorship

'Work of Joint Authorship' means a work produced by the collaboration of two or more authors in which the contribution of one author is not distinct from the contribution of the other author or authors.

2.2.23. Copyright Society

Many a time, authors and other owners of Copyrights are either unable or lose track of all the uses of their work, including the collection of royalties, infringement issues, etc. To overcome these hurdles, Copyright Societies have cropped up. As per Section 33 of the Copyright Act, 1957, a Copyright Society is a registered collective administration society formed by authors and other owners of the Copyright. Society can perform the following functions:

- Keep track of all the rights and infringements related to their clients.

- Issue licences in respect of the rights administered by the society.
- Collect fees in pursuance of such licences.
- Distribute such fees among owners of Copyright after making deductions for the administrative expenses.

A Copyright Society can be formed by a group of seven or more copyright holders. The term of registration of a Copyright Society is for five years. The registered Copyright Societies in India are:

- Society for Copyright Regulation of Indian Producers for Film and Television (SCRIPT) 135 Continental Building, Dr. A.B. Road, Worli, Mumbai 400 018, (for cinematograph and television films).
- The Indian Performing Right Society Limited (IPRSL), 208, Golden Chambers, 2nd Floor, New Andheri Link Road, Andheri (W), Mumbai- 400 058 (for musical works).
- Phonographic Performance Limited (PPL) Flame Proof Equipment Building, B.39, Off New Link Road, Andheri (West), Mumbai 400 053 (for sound recordings).

2.2.24. Copyright Board

The Copyright Board is a regulatory body constituted by the government, to perform judicial functions as per the Copyright Act of India. The Board comprises of a Chairman and members (2-14) to arbitrate on Copyright cases. The Chairman of the Board is of the level of a judge of a High Court. As per the Act, the Board has the power to:

- Hear appeals against the orders of the Registrar of Copyrights.
- Hear applications for rectification of entries in the Register of Copyrights.
- Adjudicate upon disputes on the assignment of Copyrights.
- Grant compulsory licences to publish or republish works (in certain circumstances).
- Grant compulsory licence to produce and publish a translation of a literary or dramatic work in any language after seven years from the first publication of the work.

- Hear and decide disputes as to whether a work has been published or about the date of publication or the term of Copyright of a work in another country.
- Fix rates of royalties in respect of sound recordings under the cover-version provision.
- Fix the resale share right in original copies of a painting, a sculpture or a drawing and original manuscripts of a literary or dramatic or musical work.

2.2.25. Copyright Enforcement Advisory Council (CEAC)

In 1991, the Government set up a CEAC to review the progress of enforcement of the Copyright Act periodically and advise the Government regarding measures for improving the enforcement of the Act. The term of the CEAC is three years. The CEAC is reconstituted periodically after the expiry of the term.

2.2.26. International Copyright Agreements, Conventions and Treaties

Any creative work is not protected and enforced automatically worldwide because Copyright laws are territorial by nature i.e. Laws are valid only in the country in which they have been created. To secure protection to Indian works in foreign countries, the author needs to apply separately to each country or through dedicated international 'Conventions on Copyright and Neighbouring (related) Rights', provided a country is a member of such Conventions. India is a member of the following Conventions:

- Berne Convention for the Protection of Literary and Artistic Works, 1886. (https://www.wipo.int/treaties/en/ip/berne/).
- Universal Copyright Convention, 1952. (http://www.unesco.org/new/en/culture/themes/creativity/creative-industries/copyright/universal-copyright-convention/).
- Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, 1961. (https://www.wipo.int/treaties/en/ip/rome/).
- Multilateral Convention for the Avoidance of Double Taxation of Copyright Royalties, 1979. (https://treaties.un.org/doc/Treaties/1979/12/19791213%2009-

00%20AM/Ch_XXVIII_01_ap.pdf).

- Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, 1995. (https://www.wto.org/english/tratop_e/trips_e/intel2_e.htm).

In India, Copyrights of foreign authors, whose countries are members of the Berne Convention for the Protection of Literary and Artistic Works (1888), Universal Copyright Convention (1952) and the TRIPS Agreement (1995) are protected through the International Copyright Order.

2.2.27. Interesting Copyrights Cases

David* vs. *Macaques, Indonesia, 2011 - In 2011, a UK-based photographer David Slater put his camera on a tripod in the wildlife sanctuary to click the photograph of Macaques monkeys. The Macaques were very curious about the equipment and they found the flashlight fascinating. One monkey clicked a selfie photograph which became very famous and legally controversial on the matter of Copyright. Theoretically, the monkey is the holder of Copyright as he clicked the photo. Practically, David Slater was the claimant of the Copyright. The dispute entered judicial quarters between People for the Ethical Treatment of Animals (PETA) and David Slater. Now, the settlement has been concluded. The photographer i.e. David Slater withholds the Copyright of the picture for having a substantial contribution, but he would pay 25% of the royalty share to the wildlife sanctuary where the monkey lives (https://www. wipo.int/ wipo_magazine/en/2018/01/article_0007.html).

'Happy birthday to you' case law - According to the Guinness World Records, 1998, it is the most recognized song in the English language. The melody of 'Happy Birthday to You' originates from the song 'Good Morning to All', which has traditionally been attributed to American Sisters, namely Patty Smith Hill and Mildred J. Hill, in 1893. The sisters composed the melody of 'Good Morning to All' to make it more interesting for the children. In 1935, Summy Company registered the Copyright on the Piano Setting on the Song. In 1999 Warner/Chappell acquired the company and started taking royalty for the happy birthday song and earned a huge amount. After mediation by the Federal court, Warner Music, through its publishing subsidiary Warner/Chappell, agreed to pay the settlement

to a class of 'thousands of people and entities' who had paid licensing fees to use the song since 1949 because only the melody was registered and not the lyrics. Now the song is in the public domain.

Amitabh Bachchan to lose Copyrights over his father's works in 2063 - Father of renowned actor Mr. Amitabh Bachchan, (late) Shree Harivansh Rai Bachchan was a noted poet and Hindi writer. His most famous work was *Madhushaala* (1935). He was the recipient of the Sahitya Akademi award and the Padma Bhushan. He also did Hindi translations of Shakespeare's *Macbeth* and *Othello*. He passed away on 18th January 2003, at the age of 95. As per the Copyright Act, 1957, the rights over his work will be completed in the year 2063 (rights remain with the author for his lifetime plus 60 years).

2.3 Trademark

In simple language, a Trademark (or Trade Mark) is a unique symbol which is capable of identifying as well as differentiating products or services of one organization from those of others. The word 'Mark' stands for a sign, design, phrase, slogan, symbol, name, numeral, devise, or a combination of these. Essentially, the Trademark is anything that identifies a brand to a common consumer.

2.3.1. Eligibility Criteria

For goods/services to be legally classified as Trademark, they need to pass the following conditions:

- **Distinctiveness** - The goods and services for which the protection is sought should possess enough uniqueness to identify it as a Trademark. It must be capable of identifying the source of goods or services in the target market.
- **Descriptiveness** - The Trademark should not be describing the description of the concerned goods or services. Descriptive marks are unlikely to be protected under Trademark law. However, descriptive words may be registered if they acquire "secondary meaning", such as the brand name 'Apple' is used by a USA based multinational company that manufactures electronic gadgets.
- **Similarity to the prior marks** - The mark should be unique and should not be having similarity to the existing marks.

2.3.2. Who Can Apply for a Trademark

Any person who is a proprietor of the Trademark is eligible to apply for registration of Trademark. The mark can be filed collectively by two or more applicants and for that purpose, support documents need to be submitted. An organization or association can file for the collective mark and the same can be used by its members. The most appropriate example for this mark is the 'Reliance' symbol, which indicates all products falling under the organization.


IKEA
Levi's
COFFEE
BOSCH
Mercedes-Benz
LACOSTE
Nestlé
RedBull
BURGER KING
Heineken
NIVEA
pepsi
Dr.Oetker
MOTOR HARLEY-DAVIDSON CYCLES
SONY
adidas
Canon
BAYER
C&A
900 × 600

2.3.3. Acts and Laws

In India, Trademarks are governed under The Trademarks Act, 1999 (http://www.ipindia.nic.in/writereaddata/Portal/IPOAct/1_43_1_trade-marks-act.pdf).The Trademark rules are governed by Trademarks Rules, 2002, (http://www.ipindia.nic.in/writeread data/Portal/IPO Rule/1_56_1_1_59_1_tmr_rules_2002_1_.pdf). The Acts and Rules have been amended from time to time. The latest amendments were done in 2010 and 2017 for Trademarks Acts and Trademarks, respectively.The administration of matters pertaining to Trademarks is carried out by the Office of CGDPDTM, GoI.

2.3.4. Designation of Trademark Symbols

TM	Represents that the Trademark is unregistered. This mark can be used for promoting the goods of the company.
SM	Represents that the Trademark is unregistered. This mark can be used for promoting brand services.
R	Represents a registered Trademark/Service. The applicant of the registered Trademark is its legal owner.

2.3.5. Classification of Trademarks

Goods and Services under Trademarks are classified as per the 'Nice Agreement' (1957) administered by WIPO. A total of 149 countries (84 state parties who are signatory to the Agreement and 65 additional states who are following this classification for the Trademarks) and others (African Intellectual Property Organization, African Regional IP Organization and Trademark Office of European Union) are using the same Trademark classification.

Trademark classification comprises of 45 classes, out of which 34 are for goods and 11 are for services. (http://euipo.europa.eu/ec2/static/html/nice-general-remarks-en.html;jsessionid=8FBC790A663FAC9092ACCDD9ED1AC65E.ec2t1). Two examples of the classes are:

Class 1 is for Chemicals for use in industry, science and photography, agriculture, horticulture and forestry; Unprocessed artificial resins, unprocessed plastics; Fire extinguishing and fire prevention compositions; Tempering and soldering preparations; Substances for tanning animal skins and hides; Adhesives for use in industry; Putties and other paste fillers; Compost, manures,

fertilizers; Biological preparations for use in industry and science.

Class 45 is for legal services; Security services for the physical protection of tangible property and individuals; Personal and social services rendered by others to meet the individuals' needs.

2.3.6. Registration of a Trademark is Not Compulsory

Although, registration of a Trademark is not compulsory, registration provides certain advantages to the proprietor of the Trademark, such as:

- **Legal Protection** – prevents the exploitation of the Registering Trademark by other companies/organizations/individuals, without proper authorization by the legal owner/s of the Trademark. In case of legal suits, a registered Trademark can serve as a potent evidence of the lawful proprietorship of the Trademark.
- **Exclusive Right** - grants the Trademark owner full rights to use it in any lawful manner to promote his business.
- **Brand Recognition** - products/ services are identified by their logo, which helps create brand value over time. A strong brand is a huge pull for new customers and an anchor for existing customers. Registering a Trademark early and using it will create goodwill and generate more business for the brand owner.
- **Asset Creation** - registered Trademark is an intangible property of the organization. It can be used for enhancing the business of

the company as well as drawing new clients and retaining old one by the account of brand identification.

To find out more about Registered Trademarks in India, one may look at http://www.ipindia.nic.in/writereaddata/Portal/ Images/ pdf/well-known-trademarks-updated-newone.pdf.

2.3.7. Validity of Trademark

In India, a registered Trademark is valid for 10 years. The period can be extended every 10 years, perpetually. As per the Indian Trademarks Act, the renewal request is to be filed in the form 'TM-R' within one year before the expiry of the last registration of the mark.

2.3.8. Types of Trademark Registered in India

Trademark can be a word that must be able to speak, spell and remember. It is highly recommended that one should choose the Trademark like invented word, created words, and unique geographical name. One should refrain from Trademarks like common geographical name, common personal name and the praising words which describe the quality of goods, such as best, perfect, super, etc. To ensure all these characteristics in a Trademark, it is suggested to conduct a market survey to ensure if a similar mark is used in the market. Following are some examples of the registerable Trademarks:

- Any name including personal or surname of the applicant or predecessor in business or the signature of the person e.g. the Trademark 'BAJAJ' is named after industrialist Mr. Jamnalal Bajaj.

- A word having no relevance to the product/services e.g. Trademark 'INDIA GATE' is being used for food grains and allied products.
- Letters or numerals or any combination thereof e.g. 'YAHOO' is the abbreviation of the phrase 'Yet Another Hierarchical Officious Oracle'. It has now become a worldwide famous Trademark.

Table 2.7: Some of the famous examples of Trademarks.

S. No.	Type of the Mark	Mark	Company/Firm
1.	Distinctive General Word	'Apple'	IT Company
2.	Fanciful Designation	'Kodak'	Photograph Film
3.	Distinctive Personal Names	'Ford'	Automotive
4.	Device	'Udhaar'	Financial Technology
5.	Number	'4711'	Perfume
6.	Picture	Allegator	Knitwear Manufacturing
7.	Slogan	Drink it to believe it	Soft Drinks

Note: Trademark Registry will object to yet to be registered Trademark if it is similar in looks or sound to the ones already registered e.g. a keyword like Ford can have the following terms that are similar sounding: Foard, Phord, Fordd, Forrd. In case one wishes to carry out a search (identical as well as similarity), one may use the free government portal http://ipindiaservices.gov.in/tmrpublicsearch/frmmain.aspx.

2.3.9. Trademark Registry

In India, the operations of Trademarks are carried out from five cities i.e. Delhi, Mumbai, Ahmadabad, Kolkata, and Chennai. Each city has been assigned a bunch of states (Table 2.8). The businesses located in a particular state can only use the services of the assigned Trademark Registration Office. In the case of foreign applicants, jurisdiction is based on the location of the office of the applicant's agent or attorney.

Table 2.8: Territorial jurisdiction of Trademark registration offices.

S. No.	Office Location	States
1.	Mumbai	Maharashtra, Madhya Pradesh, Chhattisgarh and Goa.
2.	Ahmedabad	Gujarat and Rajasthan and Union Territories of Daman, Diu, Dadra and Nagar Haveli.
3.	Kolkata	Arunachal Pradesh, Assam, Bihar, Orissa, West Bengal, Manipur, Mizoram, Meghalaya, Sikkim, Tripura, Jharkhand and Union Territories of Nagaland, Andaman & Nicobar Islands.
4.	New Delhi	Jammu & Kashmir, Punjab, Haryana, Uttar Pradesh, Himachal Pradesh, Uttarakhand, Delhi and Union Territory of Chandigarh.
5.	Chennai	Andhra Pradesh, Telangana, Kerala, Tamilnadu, Karnataka and Union Territories of Pondicherry and Lakshadweep Island.

Source: http://www.ipindia.nic.in/trade-marks.htm

2.3.10. Process for Trademarks Registration

To seek Trademark registration, the proprietor of the Trademark has to fill an application. The proprietor may choose to hire an agent to fill and submit the application on his behalf. Before applying, the applicant needs to conduct a prior art search to ensure the registration criteria.

2.3.10.1. Prior Art Search - Prior to applying for Trademark registration, it is always prudent to check whether the intended Trademark is already registered or not. Also, it is ascertained whether the intended Trademark is not similar to the ones already registered. The requisite search can be carried out using various web portals, such as:

- Public search for Trademarks by CGPDTM (https://ipindiaservices.gov.in/tmrpublicsearch/frmmain.aspx).
- WIPO's Global Brand Database

(https://www3.wipo.int/branddb/en/).

- Trademark Electronic Search System (TESS). (http://tmsearch.uspto.gov/bin/gate.exe?f=tess&state=4805:za847u.1.1)
- MARKARIA Trademark Search Engine (https://trademark-search.marcaria.com/en/asia/india-trademark-search).
- VAKIL Search (https://vakilsearch.com/trademark-search/trademarks?search=bajaj).

Once the 'prior art search' is over and the applicant is convinced about the distinctiveness of the Trademark, he can proceed to fill the application form for registration (TM-A). The application is filed at the Trademarks Office subject to the jurisdiction of the applicant. The steps involved in the registration process are as follows:

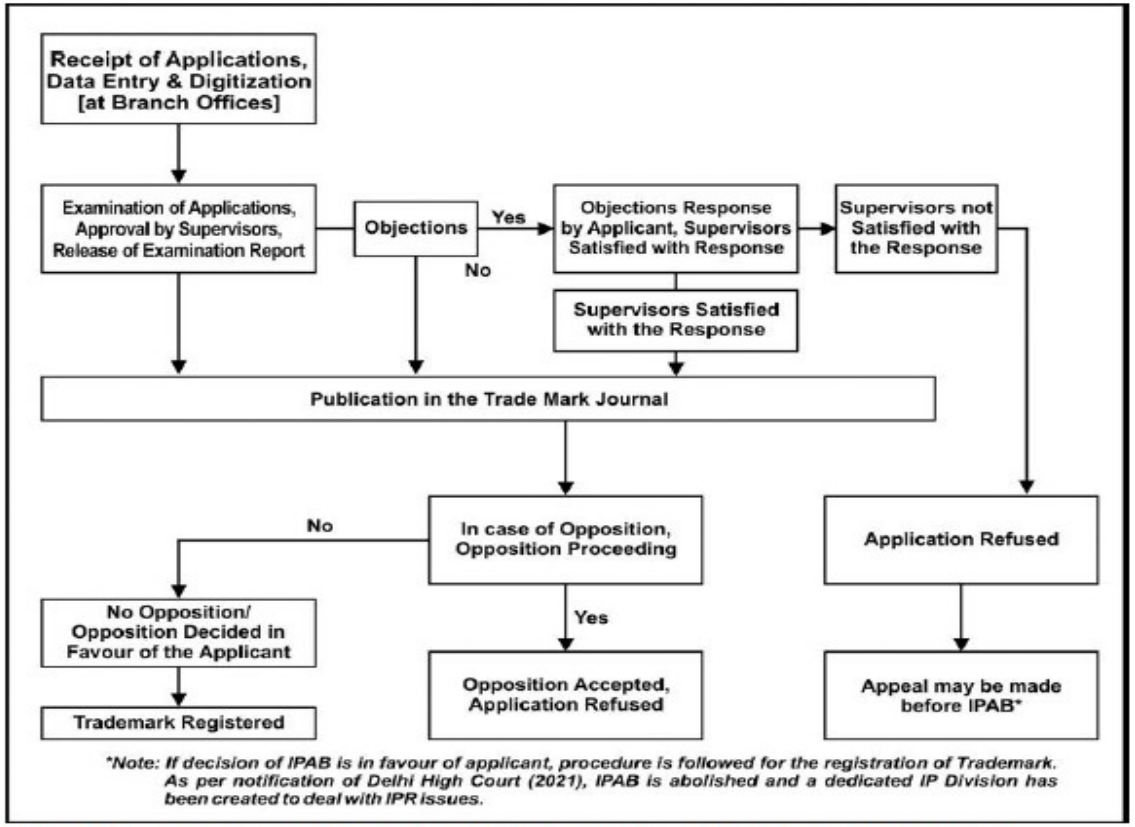
- After the prior art search has been conducted, the applicant can apply for the registration on his own or with the help of a certified agent.
- The application is assigned an application number within a few days. The same can be tracked online at https://ipindiaonline.gov.in/tmrpublicsearch/frmmain.aspx.

- The application is scrutinized by a professional examiner. If everything is in order, the particulars of the application are published in the official Trademark journal (http://www.ipindia.nic.in/journal-tm.htm). Otherwise, he will send the objections to the applicant for rectification. Based on the satisfactory response, the examiner would recommend the revised application to be published in the journal. If the application is rejected, the applicant may approach the Intellectual Property Division to challenge the rejection of an application by the examiner.

- Once the Trademark is published in the official journal, the public has an opportunity to file an objection, if any, within 90 days. After hearing both the parties, the officer decides whether to proceed further for the grant of Trademark or disallow the grant of Trademark. In case of unfavourable outcome, the applicant has the right to contest the decision in front of the IPAB.

- Once the application has successfully completed all formalities, a Trademark registration certificate is issued in the name of the applicant.

Figure 2.8: Flow chart for the process of Trademark registration.



Source: http://www.ipindia.nic.in/workflow-chart.htm *(slightly modified)*

One should keep in mind that while filing an application for the registration of a Trademark, an English translation of the non-English words has to be provided. If the applicant wishes to claim the priority from an earlier-filed application, he has to provide details like application number, filing date, country and goods/services of that application.

Table 2.9: Fee and forms related to Trademarks.

Entry No.	Contents	Amount (₹)		Form No.
		Physical Filing	E-filing	
1.	Where the applicant is an Individual / Start-up/Small Enterprise.	5,000	4,500	TM-A
	In all other cases.	10,000	9,000	
2.	Opposition/Application for Rectification of the Register/Counter statement / Refusal or invalidation of a Trademark.	3,000	2,700	TM-O
3.	For renewal of registration of a Trademark.	10,000	9,000	TM-R
4.	On application to register a subsequent proprietor in case of assignment or transfer for each Trademark.	10,000	9,000	TM-P
5.	Application for registration of Registered User/Variation of Registered User/Cancellation of Registered Users and Notice of intention to intervene in proceeding in cancellation/variation.	5,000	4,500	TM-U
6.	Request for search and issue of the certificate.	10,000	9,000	TM-C
7.	Application/Request for any miscellaneous function in respect of a Trademark Application/ Opposition/Rectification.	1000	9,000	TM-M
8.	On application for registration of a person as a Trademark agent.	5,000	4,500	TM-G

Source: http://www.ipindia.nic.in/form-and-fees-tm.htm

2.3.14. Famous Case Law:

Coca-Cola Company vs. Bisleri International Pvt. Ltd.

'MAAZA', a popular mango fruit drink in India, is a registered Trademark of an Indian company, Bisleri International Pvt. Ltd. The company transferred the rights (formulation, IPR and goodwill, etc.) to a beverage company, Coca-Cola, for the Indian Territory. However, in 2008, the Bisleri Company applied for registration of Trademark 'Maaza' in Turkey and started exporting the product with the mark 'MAAZA'. This was unacceptable to the Coca-Cola Company and thus filed a petition for permanent injunction and damages for passing-off and infringement of the Trademark.

It was argued on behalf of Plaintiff (Coca-Cola Company) that as the mark 'Maaza' concerning the Indian market was assigned to Coca-Cola, and manufacture of the product with such mark, whether for sale in India or for export, would be considered as an infringement. After hearing both the parties, the court finally granted an interim injunction against the defendant (Bisleri) from using the Trademark MAAZA in India as well as for the export market, which was held to be an infringement of Trademark.

Thank you