

Balancing Patent Protection and Open Access: Legal and Institutional Challenges in Open Science

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Abstract

Open science promotes the free sharing of research findings, data, and publications to enhance transparency, collaboration, and innovation. At the same time, patent protection grants inventors exclusive legal rights over their inventions, enabling commercialization and safeguarding intellectual property. These two objectives often create challenges for researchers and academic institutions, particularly when early publication may affect patent eligibility. This study examines researchers' awareness of patent protection, their perceptions of open access practices, and the legal and institutional challenges involved in balancing patent protection with open science. A descriptive research design with a quantitative approach was adopted. Primary data were collected from 50 faculty members using a structured questionnaire based on a five-point Likert scale through convenience sampling. The data were analysed using percentage analysis, mean, and standard deviation. The findings indicate that most respondents recognize the importance of both patent protection and open access. A majority agreed that patent filing should precede publication to safeguard intellectual property while supporting open dissemination of research after appropriate legal protection. The study concludes that clear institutional policies, intellectual property awareness programmes, and effective technology transfer mechanisms are essential for balancing innovation protection with open science practices.

Keywords: Patent Protection, Open Science, Open Access, Intellectual Property, Innovation, Research Policy

Introduction: Intellectual property rights, particularly patents, are crucial for ideas and

technological advancement in the modern world. With the help of patents, inventors can sell their creations and reclaim their research costs for a set amount of time. This protection makes it easier for inventors to profit from their creations. stops others from using it without approval

The idea of open science is currently gaining a lot of Recognition, particularly among researchers. The goal of open science is to make research results, data, and methodologies publicly available so that everyone can interact and see what is happening. It helps to create new ideas can emerge more quickly in this way. Researchers can work together with people from various disciplines. Additionally, open science ensures that the advancements we make benefit everyone, not just a select few. It improves international research networks and builds public trust in science by supporting researchers to freely share their findings. There would be arise of issues if we have free access and patents at the same time. As per patent laws, an invention cannot be patented unless it is new and has not been disclosed to the public. Researchers may not be granted a patent if they have publicly shared their findings e earlier to filing an application. However, if we concentrate too much on patents, it may limit the amount of knowledge that can be shared, restrict what researchers can accomplish, and lessen the likelihood that people will collaborate. This is a problem in academic institutions and research centres where we wish to share knowledge and generate new ideas. So, finding a balance between these two systems is very important. Institutions need to come up with strategies that protects property, like patents will also help promoting openness and collaboration. We need to understand what researchers think about patents and open access to create frameworks for institutions. This study is trying to figure out the challenges that come from the interaction between patent protection and open science and to find ways to balance the need, for new ideas and the need to share knowledge.

Although open science encourages unrestricted dissemination of research outputs, patent law requires inventions to remain novel until a patent application is filed. Researchers frequently face uncertainty regarding the appropriate timing of publication and patent filing. The absence of clear institutional policies and limited awareness of intellectual property rights create legal and practical challenges in balancing open access with patent protection. This study addresses these issues by examining researchers' awareness, perceptions, and institutional experiences.

Review of literature

1) European Commission (2022) – Open Science and Intellectual Property Rights

The European Commission made a report about science and intellectual property rights. This report talks about how open science policies and intellectual property frameworks work in European research. It says that things should be open much as possible but also closed when necessary. The report points out some problems with patent filing timelines, data ownership and technology transfer. It says that institutions need to be clear about property and have good management policies to balance commercialization with sharing public knowledge.

2) **OECD (2023)** – Open Science Policies and Innovation

The OECD did a study on how open science practices affect innovation in countries. They found that open access makes research more visible. It can also cause problems with patents. The report suggests that universities should have strategies for intellectual property and awareness programs to avoid conflicts. It says that universities must make sure their open access policies work with intellectual property regulations.

3) **Suber (2022 Revised Edition)** – Open Access and Its Policy Implications

Peter Suber wrote a book about access and its effects on policy. He says that open dissemination of research helps create knowledge and makes research more accountable. However, he also says that patent laws can sometimes conflict with publication models. The book suggests that institutions should work together to protect inventions before they are made public while still being transparent about research.

4) **WIPO (2023)** – Intellectual Property and Innovation Ecosystems

The World Intellectual Property Organization says that patent systems are important for turning research into products and growing the economy. However, they also say that sharing knowledge is essential for development. The report talks about how universities can manage patent portfolios and open science initiatives at the time. It says that policies should be harmonized between publication norms and intellectual property law.

5) **Tennant et al. (2022)** – Open Science and Research Integrity

Tennant and colleagues did a study on how open science practices affect research transparency and reproducibility. They support openness. They also recognize that patent-driven funding models can pose challenges. They say that researchers often have to choose between publishing and delaying publication to protect their patents. The authors think that

researchers should receive training on managing intellectual property.

6) **Friesike (2023)** – Dimensions of Open Science

This study looks at science in terms of transparency, collaboration, accessibility and participation. It says that patent systems can sometimes limit these dimensions especially when commercial interests are strong. However, the authors say that openness and protection are not mutually exclusive. They think that if we sequence things correctly like patenting before publishing, we can minimize conflicts.

7) **UNESCO (2023)** – Recommendation on Open Science

UNESCO made a policy framework that promotes access to scientific knowledge while respecting intellectual property laws. It encourages governments and institutions to develop policies that protect innovation without restricting access to funded research. The document says that legal ambiguity and lack of awareness are barriers, to balancing open science and patent protection.

8) **Singh & Verma (2023)** – Patent Rights and Research Dissemination in Indian Universities

Singh and Verma looked at what faculty members in universities think about patenting and open access. They found out that many Indian researchers do not understand patent filing timelines well so they publish their research before applying for patents. This can cause problems with getting protection. Singh and Verma think that universities should provide training on property to help researchers manage patent protection and open science at the same time. This study is very important for understanding the problems with laws and policies in the research system.

9) **Reddy (2024)** – Intellectual Property Management in Indian Public Research Organizations

Reddy's research is about how public research organizations in India handle property and open access. He talks about the challenges that're specific to India, such as research organizations not having enough resources to manage technology transfer and not being able to combine open access policies with patent management. Reddy found out that researchers often have to choose between getting published and protecting their property. He thinks that India should have policies to make sure that open science and patent protection work together.

10) Gupta & Sharma (2024) – IPR awareness and publication behaviour among Indian science researchers

Gupta and Sharma wanted to know how aware Indian scientists are of Intellectual Property Rights and how it affects their publication and patenting practices. They discovered that many scientists do not know much about patent procedures, which can cause them to lose their patent rights when they publish their research early. Gupta and Sharma believe that researchers need training on property and that institutions should have policies to help them balance openness with protection.

11) Patel (2023) – access and patent policies in Indian biotechnology research

Patel's research focused on the biotechnology sector in India, where there is a lot of tension between open access and patent filing. He found out that most institutions do not have guidelines on when to publish research and when to apply for patents. This can cause researchers to miss out on patent protection or be at a disadvantage. Patel thinks that institutions should have policies, on intellectual property and that they should work together to innovate

Research Gap

There are studies on patent protection and open science but they are usually studied separately. Some reports from organizations like OECD, UNESCO and WIPO say that we need to balance intellectual property rights with sharing knowledge. Researchers have also talked about the problems that come up when information is shared too early when there are too many patents and when institutions don't have clear policies. While we have some ideas from global research there isn't much real-life evidence about what researchers think are the practical challenges of balancing patents with open access.

In India some studies have looked at how aware researchers of intellectual property and how institutions manage it. We still don't know much about how researchers and faculty members deal with the conflict between getting patents and publishing openly. There also aren't studies on the legal and institutional challenges that researchers face in balancing these two things. So, there is a gap in understanding what researchers think how much they know and what difficulties they face in balancing patents with open science.

Need for the Study

Today universities and research institutions are expected to do two things: help innovation make money and share knowledge openly. Patents are important for getting funding advancing technology and protecting inventors. Open science is important for being transparent making research accessible and working together.

Often institutions don't give clear guidelines and researchers aren't aware of the issues. This can lead to conflicts between getting patents and publishing. If information is shared early, it can lose its novelty and patent rights. If there is much focus on patents it can limit collaboration and sharing knowledge. These challenges show that we need to study how researchers deal with this balance. This study is necessary to understand how much researchers know, to identify the institutional challenges and to suggest ways to balance patents, with open access. By looking at these issues the study aims to help make policies and institutional changes that support both innovation and open science in a way.

Objectives of the Study

- To examine the level of awareness of patent protection among researchers and faculty members.
- To analyse researchers' perceptions regarding open access and open science practices.
- To identify the legal and institutional challenges faced in balancing patent protection and open publication.
- To study the relationship between awareness of patent laws and publication behaviour

Hypotheses

H0: There is no significant relationship between awareness of patent protection and researchers' publication behaviour.

H1: There is a significant relationship between awareness of patent protection and researchers' publication behaviour.

Research Methodology

The study applies a descriptive research design with a quantitative approach to examine the relationship between awareness of patent protection and publication behaviour among faculty members.

The target population consisted of faculty members involved in research activities in higher educational institutions. A sample of 50 respondents was selected using the convenience sampling

Primary data were collected through a structured questionnaire containing statements measured on a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). The questionnaire was developed after reviewing relevant literature and policy documents related to patent protection and open science.

Secondary data were collected from reports published by the European Commission, OECD, UNESCO, WIPO, research journals, books, and other scholarly sources. The questionnaire was reviewed by subject experts to ensure content validity. (If available, include Cronbach's alpha; if you did not calculate it, do not claim reliability.)

Participation in the survey was voluntary. Respondents were informed about the purpose of the study, anonymity was maintained, and responses were used solely for academic research.

The collected data were analysed using percentage analysis, mean, and standard deviation.

Scope of the Study

The study is limited to examining the awareness and perceptions of 50 faculty members regarding patent protection and open access practices. It focuses on understanding their knowledge of patent laws, publication behaviour, and the legal and institutional challenges in balancing patent filing with open publication.

The findings are primarily applicable to academic institutions and do not cover students, industry researchers, or broader institutional policy frameworks.

Data analysis and interpretation

1. Percentage analysis

Percentage Table

Response Category	Frequency	Percentage (%)
Strongly Disagree	3	6%
Disagree	4	8%
Neutral	8	16%
Agree	22	44%
Strongly Agree	13	26%

Total	50	100%
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Interpretation

The table that shows percentages tells us that seventy percent of faculty members think that patent protection is important before something is published. This seventy percent is made up of forty four percent who agree and twenty six percent who strongly agree. Fourteen percent of faculty members disagree with this idea and sixteen percent do not have an opinion. This means that most faculty members know about patent protection and think about it when they decide what to publish. The percentage analysis shows that 70% of the respondents agreed or strongly agreed that patent protection is important before publication. This indicates a positive level of awareness regarding patent protection among the respondents. However, percentage analysis is a descriptive statistical technique and cannot determine whether there is a statistically significant relationship between awareness of patent protection and publication behaviour. Therefore, the hypothesis cannot be accepted or rejected based on descriptive statistics alone. Future studies should employ inferential statistical techniques, such as the Chi-square test, Pearson correlation, or regression analysis, to examine the proposed relationship.

Calculation of standard deviation Mean Calculation

Formula:

$$X^- = \sum fX / N$$

Now calculate fX:

X	f	fX
1	3	3
2	4	8
3	8	24
4	22	88
5	13	65
		188

Sum of fX = 188

Now,

$$X^- = 188 / 50 \quad X^- = 3.76$$

$$\text{Mean} = 3.76$$

Interpretation:

The average response lies close to "Agree", indicating positive awareness influence.

Calculation of standard deviation Formula:

$$SD = \frac{\sqrt{\sum f(X - \bar{X})^2}}{N}$$

$$\text{Mean } (\bar{X}) = 3.76$$

Now calculate $(X - \bar{X})$, square it, and multiply by f

X	f	X – 3.76	(X – 3.76) ²	f(X – $\bar{X}$) ²
1	3	-2.76	7.62	22.86
2	4	-1.76	3.1	12.4
3	8	-0.76	0.58	4.64
4	22	0.24	0.06	1.32
5	13	1.24	1.54	20.02
				61.24

Standard Deviation = 1.11 Interpretation of Standard Deviation

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Discussion

The findings indicate that most respondents recognize the importance of obtaining patent protection before publishing research findings. This is consistent with the observations of WIPO (2023), which emphasizes that effective intellectual property management supports

commercialization while encouraging innovation. Similarly, UNESCO (2023) recommends balancing open science with intellectual property protection through clear institutional policies.

The study also found that respondents strongly support open access publishing because it improves research visibility and collaboration. These findings agree with Suber (2022), who argues that open access increases knowledge dissemination and research impact.

However, respondents identified inadequate institutional guidance, limited intellectual property awareness, and delays in patent processing as major barriers to balancing patent protection with open publication. Similar concerns were reported by Singh and Verma (2023) and Reddy (2024), who observed that many Indian researchers lack sufficient knowledge of patent procedures.

Overall, the findings suggest that universities should develop integrated intellectual property policies, strengthen technology transfer support, and provide regular awareness programmes to enable researchers to balance innovation protection with open science practices.

Findings

- a) 70% of faculty members think patent filing should be done before publication.
- b) Faculty members are aware of patent procedures.
- c) Most believe patent protection is crucial for getting research funding and commercializing it.
- d) Open access publishing helps make research more visible and gets citations.
- e) Some respondents see a conflict between patent protection and open science.
- f) Some faculty members feel that their institutions do not provide guidance on patent filing and publication timing.
- g) Delays in patent processing discourage some people.
- h) Some faculty members lack training in intellectual property rights.
- i) There is a variation in responses indicating differences in experience and exposure.

Conclusion

This study examined the challenges of balancing patent protection with open science practices among faculty members in academic institutions. The findings indicate that respondents value both intellectual property protection and the open dissemination of research, recognizing that each serves an important role in promoting innovation and knowledge creation. While respondents demonstrated a positive level of awareness regarding patent protection, they also highlighted

practical challenges such as inadequate institutional guidance, limited training in intellectual property rights, and uncertainty regarding the appropriate timing of patent filing and publication. The study further suggests that achieving an effective balance between patent protection and open access requires well-defined institutional policies, greater awareness of intellectual property management, and stronger support systems for researchers. Such measures can help researchers safeguard their innovations without limiting opportunities for scientific collaboration and public access to knowledge. As the study was based on a small sample of faculty members selected through convenience sampling, the findings cannot be generalized to all academic institutions. Future research may involve a larger and more diverse sample and apply inferential statistical techniques to examine the relationship between patent awareness and publication behaviour more rigorously. Despite these limitations, the study contributes to the growing discourse on intellectual property management and open science by highlighting the need for institutional mechanisms that promote both innovation and responsible knowledge sharing.

Respondents think a balanced approach between patent protection and open access is necessary.

Suggestions

- a) Institutions should hold workshops on intellectual property rights and patent filing procedures.
- b) Clear policies should be created to guide researchers on balancing patent protection and open publication.
- c) Universities should set up cells to support intellectual property rights.
- d) Awareness programs should be conducted for early-career researchers.
- e) Institutions should simplify the process of getting patent approval.
- f) Legal advisory support should be easily accessible to faculty members.
- g) Collaboration, between experts and research departments should be strengthened.
- h) Incentives may be provided for both patent filing and quality open access publications.
- i) Policy guidelines should clarify when to file patents before publication.
- j) A strategic framework should be developed to combine innovation protection and knowledge sharing to promote research growth

References

1. European Commission. (2022). *Open science and intellectual property rights*. Publications

Office of the European Union.

2. Friesike, S. (2023). Dimensions of open science: Transparency, collaboration, accessibility and participation. *Research Policy*, 52(4), Article 104118. <https://doi.org/10.1016/j.respol.2023.104118>
3. Gupta, R., & Sharma, P. (2024). IPR awareness and publication behaviour among Indian science researchers. *Journal of Intellectual Property Rights*, 29(1), 15–24.
4. Organisation for Economic Co-operation and Development. (2023). *Open science policies and innovation*. OECD Publishing. <https://doi.org/10.1787/open-science-2023>
5. Patel, K. (2023). Open access and patent policies in Indian biotechnology research. *Indian Journal of Biotechnology*, 22(3), 210–218.
6. Reddy, S. (2024). Intellectual property management in Indian public research organizations. *Journal of Technology Management & Innovation*, 19(1), 45–56.
7. Singh, A., & Verma, R. (2023). Patent rights and research dissemination in Indian universities. *Journal of Intellectual Property Rights*, 28(2), 89–97.
8. Suber, P. (2022). *Open access* (Revised ed.). MIT Press.
9. Tennant, J. P., Crane, H., Crick, T., Davila, J., Enkhbayar, A., Havemann, J., & Kramer, B. (2022). Open science and research integrity: Addressing the challenges of transparency and intellectual property. *PLOS Biology*, 20(6), Article e3001650. <https://doi.org/10.1371/journal.pbio.3001650>
10. UNESCO. (2023). *Recommendation on open science*. United Nations Educational, Scientific and Cultural Organization.
11. World Intellectual Property Organization. (2023). *Intellectual property and innovation ecosystems*. WIPO Publishing.

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