



## **A Study of Classification of Stakeholders of R&D Management in Public Sector Research Laboratories in National Capital Region, India**

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### **Abstract**

Understanding the stakeholders and analyzing their interests helps in the better management of R&D projects. There is limited literature available about the various stakeholders involved in R&D laboratories and their classification. In this paper, authors attempted to study the stakeholders of R&D Management in public sector research laboratories in the National Capital Region (i.e. Delhi NCR) of India, involved in Life Science and Biotechnology research. The research employed a qualitative research design. The secondary data available on the websites of public sector research laboratories were curated and interviews are conducted by following the snowball sampling method and data is analyzed. As a result, a classification system is proposed.

Key word – Stakeholders, R&D Management, Public Sector Research Laboratories

### **Introduction**

R&D projects affect the interests of different stakeholders in different ways. Understanding the stakeholders and analyzing their interests helps in better management of R&D projects. (Elias et al, 2002). Stakeholder issues are important while managing R&D Projects (Coombs et al, 1998). There is limited management literature on stakeholder analysis in the context of Indian Lab's R&D Management specifically of the public sector which contributes a majority of R&D in India. Who is the stakeholder at a R&D Lab? This is should be cleared to all the internal and external stakeholder for better clarity of owners of the tasks and for effective communication as well as day to day operation. In this paper, the stakeholders of R&D management in Government research laboratories specifically involved in Biotechnology and Life Science research is studied. Government or Public Sector Research Laboratories holds

major importance as these laboratories were empowering the country's development, paving the way for great progress.

## **Literature Review**

Stakeholder identification and analysis are of immense importance for the success of any project. Freeman in his landmark book, *Strategic Management: A Stakeholder Approach* (1984) emphasized the stakeholder concept and later on in various management literature, the stakeholder approach and theories were highlighted (Donaldson and Preston, 1995). In R&D management also the importance of stakeholders is previously documented. Miller (1995) suggested the definition of stakeholder and also proposed to perform prototype tests with stakeholders as one of the steps in fourth-generation R&D. Tipping et al., (1995) explained that various R&D stakeholders have different interests and perspectives on the innovation process and they accommodated it in a Technology Value Pyramid model representing a hierarchy of managerial factors. Eckert (1996), emphasized that one of the steps that a research administrator should take is to assemble a team of stakeholders and communicate with them as needed to ensure good internal working relationships and processes. Stakeholder theory suggests that organizations must consider all groups and individuals who have an interest (or a stake) in what they do. Stakeholder theory can be applied at different levels – meaning that it can be used to explain not just how an organization as a whole operates but how departments of that organization function, which in turn is extremely helpful for any research. Benn et al. (2016) attempted to establish the organization's stakeholders and studied on how the senior management of an organization define and identify stakeholders. He explained a set of primary and secondary stakeholders that include some differences from current stakeholder theory.

In terms of the Indian R&D environment context, Niraj Kumar (2013) identified the key stakeholders as government ministries, government science and technology departments, in-house R&D by private companies – R&D center, alliances with public research institutions etc., contract research organizations, independent research institutes. Mohanty & Pathak (2020) also identified various stakeholders of R&D laboratories as Scientists, research scholars, suppliers, vendors etc and explained their current challenges at the organizational levels. Ayyar, S., & Jameel, S. (2019) also emphasized the requirement for the involvement of various stakeholders to promote India Research Management Initiative (IRMI) - an initiative for building research capacity in India. Kumari, B et al (2018) mentioned key stakeholders of the Indian publicly funded R&D organizations as management and researchers of the R&D organizations, funding organizations, and customers. Thus, in many

literatures, stakeholders were mentioned about the stakeholders but there is no detailed explanation about the various types of stakeholders and also there is no clear classification or categorization.

## **Research Methodology**

An initial attempt at the stakeholder analysis was based on a literature review and analysis of secondary data, which was used to guide a subsequent exploratory study, resulting in the final stakeholder list. The research utilized a qualitative multi-method, where the chosen research methods applied to the case study were participant observation, document analysis, and semi-structured interviews.

Participant observation provided the researchers with experiential and observational access to the actualities of the world of meaning (Alvesson and Sköldbberg 2017). The participants were selected based on snow ball method from various R&D laboratories and question were asked related to type of stakeholders they find in their organization. The identity of the participants were not recorded but their Designation, Qualification and Years of Experience was noted. Therefore, through participant observation, it was possible to realize and perceive the stakeholder context and identify the potentially essential stakeholders of R&D labs.

The analysis of several documents like annual reports, and website content was also crucial to better understand the case study context.

Semi-structured interviews were performed among individuals involved in R&D Management at different levels of the organization selected. These individuals are students, scientists, project managers and various members of the laboratories and outside laboratories. A total of 100 semi-structured interviews were conducted between Aug and Dec 2022. Each interview lasted between 15 and 40 min. Interviews were conducted telephonically. The researcher explained, in advance, the scope of the research study and the purpose of the interviews through a briefing document, which clarified the research scope, anonymity and confidentiality, and the critical stakeholder terms adopted by the study, to assure that the interviewees perceived these terms consistent with the researchers' understandings. Nevertheless, each interview started with an outline of the research objectives.

The notes taken during the interviews were analyzed and interviewees were asked to validate and possibly add information to these notes if they were willing to do so. Of the 100

interviewees, 64 have validated the notes, and five interviewees made essential additions to the notes.

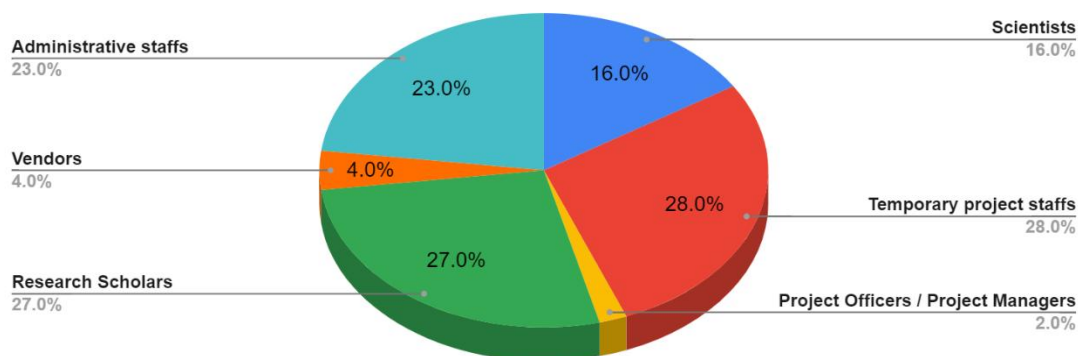
Qualitative content analysis was used for data analysis. This approach is commonly used when conducting qualitative studies for measuring the frequency of different concepts and themes and allowing, with caution, indications of significance (Vaismoradi et al. 2013). We followed the coding procedure suggested by Strauss and Corbin (1998). Data from the thirty interviews were revisited several times by the researchers. Given this process and the fact that all interviewees approved the interview notes produced, the qualitative results are considered reliable (Gray 2004). This process allowed researchers to identify various stakeholders and their nomenclature in various laboratories and we could able to categorize them based on their role in the laboratories.

## Results and Discussions

Public Sector R&D Laboratories are complex undertakings, which can involve multiple stakeholders. This is evident from the interviews conducted on the selected laboratories and the secondary data available on the websites of these laboratories. During the interview, it is observed that the current stakeholders who are already working in the laboratory for many months are unaware who are the correct stakeholders of the research project and overall research management. Hence it is observed that many challenges could have been avoided by the stakeholders if they could know who to reach. So it was more of a strategic issue, as there is no clear understanding of stakeholders.

## Data Analysis

The interview respondents comprised scientists, administrative staff, vendors, temporary project staff, research scholars and project officers or managers that are listed in Table 1, which also presents their key characteristics like Qualifications and years of experience of the respondents.



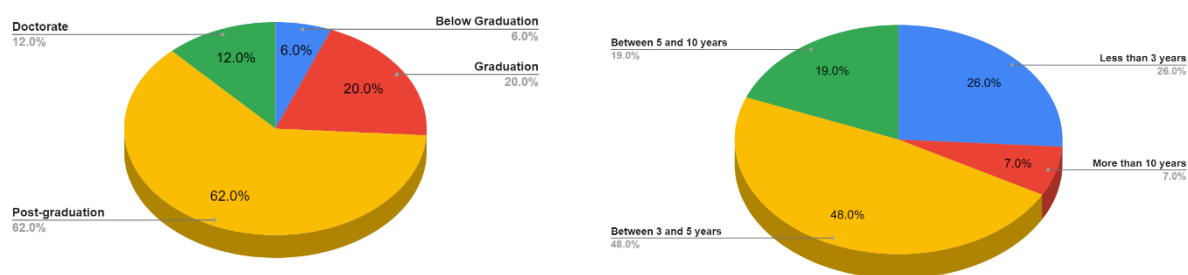


Fig 1: Respondents' categories and their key characteristics like Qualifications and years of experience.

**Table.1. Descriptive Analysis of Respondents**

Description - Current role	Number
Scientists	16
Project Officers / Project Managers	2
Administrative staffs	23
Temporary project staffs	28
Research Scholars	27
Vendors	4
<b>Qualification</b>	
Below Graduation	6
Graduation	20
Post-graduation	62
Doctorate	12
<b>Experience</b>	
Less than 3	26
Between 3 and 5	48
Between 5 and 10	19
More than 10	7

## Stakeholders of R&D Management

First, we have attempted to summarize all the stakeholders of the public sector laboratory and the research groups and then try to analyze the way to classify them. Table 1. Lists all possible stakeholders generally found in a public sector laboratory. In Table 2 Temporary Scientific and Technical Manpower positions in Public Research Laboratories are listed.



Fig 2: Major Stakeholders of R&D Management in a public sector laboratory

It is found that there are 5 major types of stakeholders generally found in public sector laboratories. They are Leaders of the laboratory (Directors or Administrators), Scientists, Support Staff, Research Scholars and other stakeholders. Many support staffs like Engineering, Civil, and Instrumentation Support staff are also part of the laboratory. In one of the laboratories, the internal staff are categorized as Scientific, Technical and Administrative. In other laboratories, the staff are categorized as Faculty, Scientists, Research Fellows, and Technical and Administrative.

**Table.1. Stakeholders of R&D Management in Public Sector Research Laboratories**

Category	Stakeholders
1 Leadership	Director / Executive Director
	Head, Administration/ Controller of Administration / Head, Services
	Head, Planning, Monitoring and Evaluation (PME)
	Head, Finance and Accounts
2. Scientists & Faculties	Young scientists (with a recent research career)
	Scientist (from different ranks e.g.Scientist D, Scientist E etc.)
	Scientist joined an Indian R&D lab after working abroad
	Sr. Scientists/ Principal Scientists/ Sr. Principal Scientist
	Outstanding Scientist / Distinguished Scientist / Retired Scientists / Emeritus scientists
	Professor / Senior Professor / Professor Of Eminence / Assistant Professor / Associate Professor
	Post-Doctoral Researchers
	Principal Investigator
	Scientists with Fellowships
	Data Scientist / Head Data Science
	Project Scientists (Project Scientist - I, II, III) / Research Scientist (Temporary)
3. Support Staffs	R&D Managers / Project Managers / Scientific Managers / Lab Managers / Data Manager / Quality Manager
	Project Officers / Project Coordinators / Management Assistant / Management Associate / Project Management Assistant
	Technical officers (Principal Technical Officer/ Sr. Technical Officer/ Technical Officers) / Section Officers/ support staffs
	Administrative staffs / Administrative officer

	Finance Staffs / Finance and Account Officers
	Project Monitoring Evaluation Staffs
	Store and Purchase Staffs
	HR & IT staffs
	Lab Assistant/technician / Technical Assistant / Senior Technical Assistant/ Scientific Administrative Assistants / Lab Technician
	Computer Operator/ Data Entry Officer / Data Entry Operator/ Data Management Supervisor /Assistant Data Manager / Programmer
	Project Associates (Principal Project Associate, Project Associate-I, II, Senior Project Associate) / Project Assistants / Senior Project Assistant/ Project Research Staffs / Other Scholars (Temporary) / Research Assistant
	Clinical Coordinator / Clinical Research Coordinator / Research Officer/ Clinical Research Officer / Senior Clinical Research Officer
	Field worker / Field Assistant/ Field Staffs / Field Coordinator / Field Supervisor
	Lab Attendant/ Messenger Boy / Multi-Tasking Staff / Documentation Assistant
	Engineering, Civil, Instrumentation Support staffs
4. Research Scholars	Ph.D. research students
	Junior Research Fellow (JRF) / Senior Research Fellow (SRF)
	Research Associates (Research Associate-I, Research Associate-II, Research Associate-III, Senior Research Associate)
	Short Term Trainees
5. Other Stakeholders	Research Committee
	Institutional Ethics Committee (IEC), Ethics Committees (ECs), Biosafety Committee
	Vendors and Suppliers
	Funding Agencies
	Advisors, Scientific Advisory Committee
	Research Collaborators



	Consultants
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## Classification of Stakeholders of R&D Management

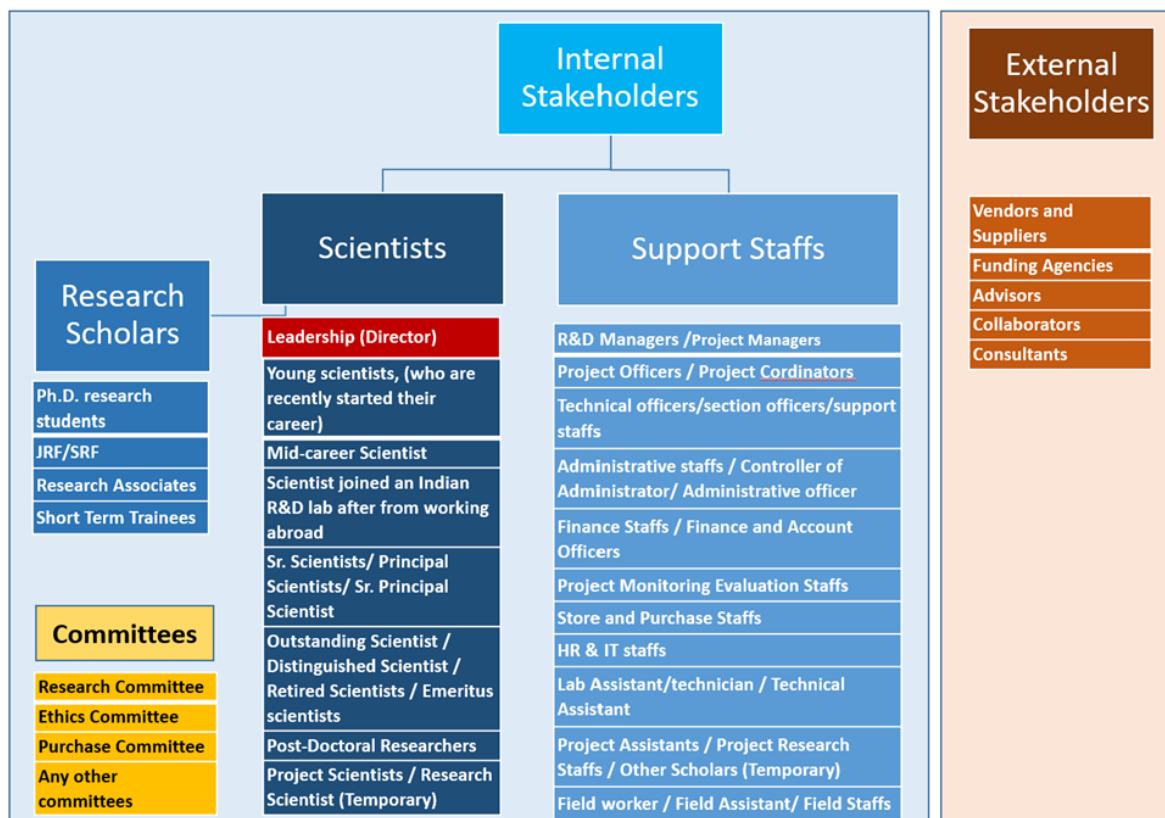
Based on the discussion, it is summarized that the stakeholders of R&D Management in a public sector laboratory can be classified based on either their role in the organizations, based on their relationship with the organization and, based on their tenure of the job.

- Classification based on role or designation** – There may be four categories based on role or designation, i.e., Scientists, Support Staff, Research Scholars and other stakeholders. The leadership or the Director is included in the Scientist category.

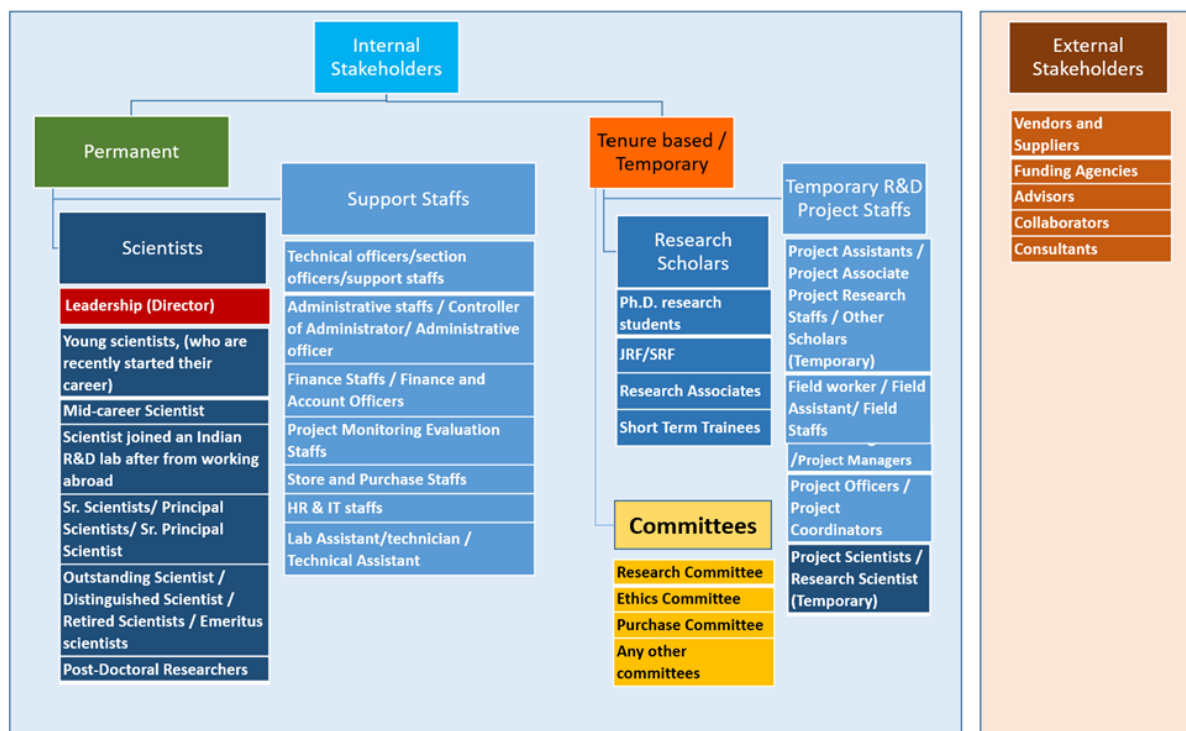


- Classification based on their relationship with the laboratory** – The stakeholders can also be divided into Internal Stakeholders and External stakeholders, based on their relationship with the laboratory. The Internal stakeholders would be Scientists, Support Staff, Research Scholars and Committees who are part of the laboratories and the External stakeholders would be External to the laboratories. The External stakeholders are vendors, suppliers, funding agencies, Advisors, Research

Collaborators, and Consultants etc. Sometimes in the Committees, the external members may participate based on the requirements and rules of the organization or funding agencies.



3. **Classification based on the tenure of the job** – The stakeholders can also be classified based on their tenure of the job i.e. Permanent, Tenure or Project based and Temporary. The Scientists and Support staffs who have been recruited for permanent positions in the laboratories are of the Permanent category. The research scholars join the lab for a limited period of time for their PhD Thesis work. Similarly, Laboratories hire many Project based/Temporary staff to support the ongoing research falls under the Temporary category. External stakeholders may not necessarily be categorized as permanent or temporary. The Government research agency that funds the laboratory falls under a Permanent stakeholder while funding agencies of temporary projects may be temporary stakeholders. Vendors, suppliers, collaborators, and Consultants may be falls under Tenure based or Temporary stakeholders.



## Conclusion

The role of research laboratories is rapidly evolving and expanding, and these laboratories must update their managerial analysis of stakeholders to date just as every other growing institution to cope with current challenges and the rapid changes within various research groups. Stakeholder analysis and understanding should be a must step in the R&D management process not only for existing project staff but also for newly recruited project staff. Identification and engagement of all possible stakeholders who might play some role in research management are very crucial. First, we have attempted to summarize all the stakeholders of the public sector laboratory and the research groups and then try to analyze how to classify them. The Stakeholder Engagement Matrix of a particular R&D laboratory and of a particular research project is required to identify stakeholders to be engaged, including their levels of influence, and specify the mode and dates of engagement for each key stakeholder throughout the life of the study. By this researchers not only get to learn the landscape of stakeholders and contextual factors that might influence decision-making, but they also devise how to address various issues. The research output is only limited to Government Research Laboratories and to of Biotechnology and/or Life Science sector only.

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