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Survey Report on Ease of Doing R&D in India

Insights from Distinguished Academicians & Researchers

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INDIAN NATIONAL SCIENCE ACADEMY

Survey Report

on

Ease of Doing R&D in India

Insights from Distinguished Academicians & Researchers

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Survey Report on Ease of Doing R&D : Insights from Distinguished Academicians & Researchers

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The information presented in this report regarding initiatives and programmes is indicative in nature and does not claim to be exhaustive. The description of initiatives and programmes across various ministries is based on publicly available information compiled from multiple sources.

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सत्यमेव जयते

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India's trajectory towards Viksit Bharat and an emerging global innovation leader is anchored in the health of its R&D ecosystem. However, the progress made in building institutional capacity is often stifled by procedural inefficiencies that complicate research management. Overcoming these systemic challenges is no longer optional; it is the key to unlocking the full potential of Indian scientists and ensuring their work drives meaningful national transformation.

In this context, the report *"Survey Report on Ease of Doing R&D in India: Insights from Distinguished Academicians & Researchers"* assesses the Ease of Doing Research and Development in Indian R&D Institutions by employing a nationwide survey undertaken jointly by the Indian National Science Academy (INSA), National Academy of Sciences India (NASI), and NITI Aayog

A key contribution of this report lies in its evidence-based approach. The survey examines the challenges researchers encounter throughout the R&D lifecycle, focusing on funding, regulatory frameworks, and institutional environments. By analyzing respondent responses and feedback, this report identifies the root causes of procedural delays and inefficiencies. The data provides a clear understanding of existing inefficiencies, serving as the basis for the practical suggestions to revitalize the Indian STI ecosystem.

This report underscores that prioritizing EODR&D is essential for maximizing the impact of India's R&D ecosystem. It is a critical prerequisite for India's transformation into a global innovation leader. This report offers data-driven recommendations intended to support ongoing policy initiatives and provide a practical reference for decision-makers and the broader research community as they work to strengthen the STI ecosystem.

I would also like to place on record my appreciation for the contributions of all stakeholders who have participated in this exercise. The real value of this report will lie in how effectively its insights are translated into action, and I am confident that it will help shape a more responsive and enabling environment for research in India.

V.K. Saraswat

(Dr. V.K. Saraswat)

New Delhi
01.04.2026

स्वच्छ भारत
एक कदम स्वच्छता की ओर

भारतीय राष्ट्रीय विज्ञान अकादमी
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प्रोफेसर शेखर चिं. मांडे, अध्यक्ष
Prof. Shekhar C. Mande, President

India's journey towards becoming a knowledge-driven economy is closely intertwined with the strength and inclusiveness of its research and development (R&D) ecosystem. During my interactions with institutions across the country, from premier centres of excellence to emerging state universities, it is evident that while the spirit of scientific inquiry is widespread, the enabling conditions for research remain uneven.

The country has improved its ranking in the Global Innovation Index from 81st in 2015 to 38th in 2025, while scientific publications have increased nearly six-fold over the past decade, placing India among the top contributors globally. The rapid expansion of India's startup ecosystem, now the third largest in the world, further reflects the growing dynamism of its innovation landscape.

The report *"Survey Report on Ease of Doing R&D in India: Insights from Distinguished Academicians & Researchers"* is both timely and significant in this regard. By capturing the lived experiences of researchers across institutions, it highlights critical procedural, institutional, and systemic bottlenecks, while offering actionable suggestions to address them. In particular, simplifying regulatory processes, improving coordination across funding agencies, strengthening university-industry linkages, and investing in human capital will be essential for building a more responsive and effective R&D ecosystem.

As India aspires towards the vision of Viksit Bharat @ 2047, science and technology will play a central role in driving inclusive and sustainable development. Ensuring ease of doing R&D is not merely an administrative reform, it is a strategic imperative that will determine how effectively India can harness its demographic dividend, respond to emerging technological disruptions, and position itself in the global innovation landscape.

I commend the Indian National Science Academy (INSA) – Centre for Science, Technology and Innovation Policy (CSTIP) for undertaking this important initiative in collaboration with NITI Aayog.

I am confident that this report will contribute meaningfully to ongoing policy efforts and serve as a valuable guide for strengthening India's research ecosystem.

(Shekhar C. Mande)

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A vibrant and forward-looking research ecosystem is central to India's aspirations of sustained economic growth and societal transformation. Over the years, the country has built a strong foundation in science and technology, supported by a network of institutions, researchers, and evolving policy frameworks.

In this context, the report *""Survey Report on Ease of Doing R&D in India: Insights from Distinguished Academicians & Researchers"* offers a meaningful consolidation of perspectives from across the scientific community. It captures diverse experiences and reflects on ways to further enhance the overall research environment through improved coherence, responsiveness, and facilitation.

India's R&D landscape today is characterised by increasing interdisciplinarity, expanding collaborations, and a growing emphasis on translation of research into applications. Strengthening these trends through better alignment of processes, timely support systems, and continued institutional evolution will help sustain this momentum.

The role of institutions such as Indian National Science Academy (INSA), working alongside NITI Aayog, is particularly significant in bringing together knowledge, experience, and policy perspectives to inform constructive pathways forward.

As India moves ahead in its development trajectory, enabling research to be conducted with greater ease and effectiveness will remain an important priority. I am confident that this report will serve as a valuable resource in supporting ongoing efforts to further strengthen the country's research and innovation ecosystem.

(Ashutosh Sharma)

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GDP
ISRO
ISRO

Foreword

The advancement of science, technology, and innovation is intrinsically linked to the ease with which research and development (R&D) activities can be conducted within a country. In recent years, India has made significant strides in strengthening its R&D ecosystem; however, persistent structural, procedural, and institutional challenges continue to influence the efficiency and effectiveness of research endeavours.

It is in this context that we present this *Survey Report on Ease of Doing R&D in India.* The report is an effort to systematically capture the lived experiences, perceptions, and insights of academicians, researchers, and practitioners across the country. Drawing upon diverse inputs from distinguished stakeholders, it offers an evidence-based assessment of the current R&D landscape, identifying key bottlenecks as well as emerging opportunities.

The report complements the broader initiative undertaken by NITI Aayog on Ease of Doing R&D in India, which involved a series of regional consultative meetings across diverse geographies and institutional contexts, to identify key barriers and inform actionable recommendations. As part of this larger exercise, INSA and NASI conducted a structured survey drawing on inputs from participants of these regional consultations as well as Fellows of the academies. The report builds on these inputs, offering grounded, experience-based insights from the academic and research community, and thereby adds depth and granularity to the overall evidence base.

The findings highlight critical areas requiring attention, including administrative processes, funding mechanisms, regulatory frameworks, infrastructure support, and industry-academia collaboration. Importantly, they also reflect a set of interlinked challenges spanning funding, human resources, institutional processes, access to resources, and governance mechanisms. At the same time, the report acknowledges ongoing reforms and initiatives that signal a positive shift towards a more enabling and innovation-driven research environment.

As authors, we believe that improving the Ease of Doing R&D is not merely a procedural necessity but a strategic imperative for India's aspirations to become a global leader in science and technology. Addressing the structural constraints identified across such studies will be crucial to unlocking the full potential of India's scientific talent, accelerating the translation of knowledge into impact, and advancing the national vision of Viksit Bharat @2047.

We extend our sincere gratitude to all respondents and contributors whose valuable inputs have made this study possible. We also acknowledge the support of partner institutions and collaborators who have guided and enriched this effort.

We hope that this report serves as a valuable resource in shaping policies and practices that foster a more efficient, transparent, and conducive R&D ecosystem in India.

-Authors

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The authors also wish to acknowledge the valuable contributions of the scientists and researchers who participated in the pilot survey and provided thoughtful feedback to improve the readability, structure, and length of the questionnaire. Their engagement helped ensure that the survey instrument was both robust and respondent-friendly.

The authors also acknowledge the help of Dr. Abhirup Nandy, Post Doctoral Fellow, Institute of Informatics and Communication, University of Delhi for his help. The authors acknowledge the assistance provided by Ms. Anandita Das and Mr. Shivansh Sharma, who interned with NITI Aayog and supported the study through meticulous data cleaning and preliminary processing. The authors also acknowledge the institutional support and facilitation provided by NITI Aayog and the Indian National Science Academy (INSA), which enabled the execution of this study. The authors further gratefully acknowledge Prof. Vinod K Singh, Chair Professor, Department of Chemistry, IIT Kanpur, and President, NASI, for his support and guidance, and the NASI team for their facilitation in circulating the survey and encouraging NASI members to actively participate in the survey exercise.

Finally, the authors express their sincere gratitude to all survey respondents for their time, participation, and good-faith engagement. Their responses have been central to articulating the challenges, constraints, and opportunities within the national R&D ecosystem, and form the core evidence base of this report.

Executive Summary

The Indian Science, Technology, and Innovation (STI) ecosystem has been going through a significant transformation over the past decade. New organisations and funding mechanisms, in the traditional as well as novel disciplines, have been introduced. Concurrently, the focus of STI activities has shifted towards positioning India as a major contributor to the global platforms. This change is reflected in the form of better rankings such as Global Innovation Index (GII), a steady growth in scientific publications, patent filings, number of startups etc. The contribution to and benefits from these changes however remain limited to selected regions and institutions. For instance, the research input and output in S&T is localised to certain regions and types of institutions, startups based in specific cities and disciplines have a higher chance of succeeding etc. This disparity in academic institutions reflects the gap in the potential versus the realised goals which can be attributed to factors such as accessibility to funds, researchers, infrastructure, knowledge exchange, partnerships with private organisations for R&D etc. Reports have also underlined challenges in administrative efficiency and institutional facilitation as important intrinsic factors limiting the ability of researchers in producing transformative work. The concept of Ease of Doing Research (EoDR) takes these into account and frames them into a coherent framework. The EODR framework is aimed at enabling India's innovation-led development agenda by tapping into the large resource pool of knowledge workers (i.e., researchers and academicians). Recent govt policy initiatives, such as the Anusandhan National Research Foundation (ANRF), the Research, Development and Innovation (RDI) Fund, the One Nation One Subscription (ONOS) initiative, and procurement-related reforms, reflect a growing national emphasis on strengthening the overall research ecosystem.

Within this context, the present report assesses the Ease of Doing Research in Indian R&D Institutions by employing a nationwide survey undertaken jointly by the Indian National Science Academy (INSA) and the NITI Aayog. The survey was rolled out though as outline questionnaire, targeted to capture inputs and suggestions from individual scientists and researchers. The respondents were either fellows of two academies (INSA and NASI), or the participants of Regional Consultative Meetings on EoDR organised by NITI Aayog. The survey included questions on challenges faced by researchers across different stages of the R&D lifecycle, namely, a) R&D funding, b) Regulatory Framework & Administrative Process, c) Institute Level Research Environment, and, d) Suggestions based on personal experiences of the respondents. A total of 878 responses were received. The responses were then analysed with a view to seek an understanding of the reasons behind delays and inefficiencies in the research processes. The findings of the survey have been compiled into this report, alongwith some actionable suggestions provided by researchers to improve the Indian STI ecosystem.

The major findings of the survey are presented in chapters 3 to 7, with individual chapters focusing on different aspects of EoDR. A detailed respondent profile covering the basic demography, disciplines, and research activity is presented in chapter 3. Thereafter, the preferences of respondents related to funded R&D projects is presented in chapter 4. The Respondents highlighted three interrelated aspects in context of R&D funding: the need to enhance the availability of government research funding to meet growing national demand; the opportunity to deepen industry and private-sector engagement in R&D, particularly by addressing concerns related to timelines and intellectual property arrangements; and the importance

of improving scholarship support for research scholars to enhance research productivity and attract high-quality talent.

The fifth chapter presents the findings w.r.t. the regulatory and administrative processes followed at the funding agency and the implementing institute. Respondents indicated that approvals, fund releases, procurement, and reporting take on average six to seven months in each step of the project cycle. There is perceived scope to enhance transparency in project allocation processes and to encourage a wider range of innovative and exploratory research ideas. In addition, the findings indicate that many researchers apply for new grants to continue ongoing work, rather than seeking extensions or alternative funding pathways, suggesting for opportunities to enable smoother continuation of promising research projects.

The sixth chapter covers the findings about the institutional level research environment. The responses indicate that access to knowledge resources is relatively strong across institutions. Whereas, the availability of research equipment, shared facilities, and commercialisation-oriented support services such as incubation centres, intellectual property facilitation, and technology transfer mechanisms, varies across institution types. The gaps are more visible in state universities when compared to centrally funded universities and national laboratories. The report also notes that procurement, operation, maintenance, and disposal of research equipment can benefit from greater clarity, consistency, and timeliness.

Respondents broadly expressed positive views regarding institutional support for R&D, particularly in administrative assistance, mobilisation of external resources, and public outreach. At the same time, the report highlights opportunities to further strengthen support through enhanced seed funding, more consistent sharing of overhead charges, reduced teaching and administrative load for researchers, and timely filling of vacancies. The availability of competent research scholars was identified as an area for improvement, closely linked to scholarship levels and timely disbursements. Collaboration patterns were found to be largely domestic, indicating potential to further encourage international and industry collaborations, supported by smoother travel approvals, timely reimbursements, and expanded mobility opportunities.

The seventh chapter presents a synthesis of the open-ended suggestions shared by the respondents for improving the R&D ecosystem based on their experiences, understanding, and opinions.

Overall, the report suggests that continued and coordinated efforts to improve the EoDR across funding mechanisms, administrative processes, institutional capacity, and human resource policies, can significantly strengthen India's research and innovation ecosystem. By building on recent reforms and addressing identified areas of improvement, India is well positioned to sustain its innovation momentum and ensure that R&D investments translate into inclusive, high-impact outcomes aligned with national development priorities.

Contents

Glossary

ANRF	Anusandhan National Research Foundation
ArcGIS	Geographic Information System by Esri (ArcGIS)
CIF	Central Instrumentation Facility
CSR	Corporate Social Responsibility
CSTIP	Centre for Science, Technology and Innovation Policy
DST	Department of Science and Technology
EMF	Extramural Funding
EoDR	Ease of Doing Research
EoDS	Ease of Doing Science
FAST India	Foundation for Advancing Science and Technology India
GDP	Gross Domestic Product
GeM	Government e-Marketplace
GII	Global Innovation Index
IAF	INSA Associate Fellows
IC	Incubation Centre
ICAR-NAARM	Indian Council for Agricultural Research–National Academy of Agricultural Research Management
IISc	Indian Institute of Science
IIT	Indian Institute of Technology
INSA	Indian National Science Academy
INYAS	Indian National Young Academy of Science
IPF	Intellectual Property Facilitation Centre
IISER	Indian Institute of Science Education and Research
IWA	INSA Women Associates
IYA	INSA Young Associates
MATLAB	MATrix LABoratory
NASI	National Academy of Sciences, India
NIRF	National Institutional Ranking Framework
NIT	National Institute of Technology
NITI Aayog	National Institution for Transforming India
NM-ICPS	National Mission on Interdisciplinary Cyber-Physical Systems

OECD	Organisation for Economic Co-operation and Development
OHC	Overhead Charges
ONOS	One Nation One Subscription
PDA	Professional Development Allowance
R&D	Research and Development
RDI	Research, Development and Innovation
RFP	Request for Proposal
S&T Division	Science and Technology Division
SME	Small and Medium Enterprise
SRIMAN	Scientific Research Infrastructure Sharing, Maintenance, and Networks
STI	Science, Technology and Innovation
TTC	Technology Transfer Cell
UC	Utilization Certificate

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CHAPTER-1

Introduction

Research and Development (R&D) is globally recognised as a foundational driver of long-term economic growth, technological advancement, and societal progress. By generating new knowledge, processes, and products, R&D enhances productivity, enables industrial upgrading, and expands economic output. Empirical evidence from cross-country and sub-national studies consistently demonstrates a strong positive relationship between sustained R&D investment and higher levels of Gross Domestic Product (GDP), improved living standards, and enhanced economic resilience. As a result, R&D has emerged as a central pillar of national development strategies across both advanced and emerging economies[1].

Beyond its contribution to aggregate economic growth, R&D plays a critical role in strengthening national and firm-level competitiveness. It enables faster innovation cycles, product differentiation, and movement into higher value-added segments of global value chains. Global benchmarks; such as R&D intensity, the Global Innovation Index (GII), and international competitiveness rankings, consistently show that countries with sustained and high levels of R&D expenditure, particularly leading member economies of the Organisation for Economic Co-operation and Development (OECD)[2], are among the most innovative and globally competitive. These economies typically combine robust public and private investment, dense researcher bases, strong university-industry linkages, and mature innovation institutions; creating virtuous cycles of innovation, productivity growth, and export competitiveness.

R&D supports structural transformation by facilitating the emergence of high-technology sectors, modernising traditional industries, and generating high-quality skilled employment. These dynamics contribute to increased investment, stronger export performance, and greater economic resilience in the face of global shocks. Recognising these benefits, governments worldwide, have prioritised R&D through a mix of public research funding, targeted investments in human capital, and fiscal as well as non-fiscal initiatives aimed at stimulating private-sector led innovation activities.

1 Muthusamy, J., & White, M.A. (1995). Does the global market exist for multinational corporations? Journal of Business Venturing, 10(6), 427–445.

2 Aristodemou, L., Appelt, S., van Beuzekom, B., & Galindo-Rueda, F. (2025). Assessing the relevance of R&D funding towards societal goals: Insights from new data sources and AI-assisted methods. OECD Science, Technology and Industry Working Papers, 2025(25).

In recent years, global economies put efforts to strengthen the effectiveness and efficiency of their R&D ecosystems. These efforts extend beyond increasing overall R&D investment to include strengthening institutional frameworks, reforming research governance, and redesigning innovation policies to better align research activities with economic and societal outcomes[3].

Many countries have established explicit targets to increase R&D intensity and strategically allocate public resources to stimulate private investment. This is often achieved through instruments such as competitive grants, matching funds, and mission-oriented programmes designed to crowd in private sector participation. Complementary instruments such as R&D tax credits, blended finance, and public-private innovation funds are increasingly used to de-risk business R&D, particularly for small and medium enterprises (SMEs) and startups[4].

Alongside financial measures, strengthening the human resource base for research, has become a key policy priority. Governments are expanding doctoral and postdoctoral training, modernising qualification frameworks, and promoting sector-specific and practice-oriented upskilling, to address persistent skill shortages in science and technology. International mobility schemes, joint doctoral programmes, and more open research career pathways are widely used to attract and retain global research talent.

Policies also increasingly emphasise closer collaboration between universities, public research organisations, and industry through joint R&D centres, centres of excellence, and public-private partnerships. At the same time, diffusion-oriented instruments, such as technology extension services, dedicated diffusion agencies, and open data platforms, are being adopted to ensure that existing technologies are effectively absorbed across firms and sectors, rather than remaining confined to a limited number of elite institutions[5].

1.1 India's Science, Technology, and Innovation Ecosystem

India's Science, Technology, and Innovation (STI) ecosystem has demonstrated notable progress across several key indicators over the past decade. India's rank in the Global Innovation Index improved significantly from 81st in 2015 to 38th in 2025[6], reflecting strengthened innovation capabilities and improved outputs. Scientific publication output increased substantially from approximately 34,000 publications in 2010, to nearly 195,000 publications in 2024, placing India third worldwide.[7] Patent activity has also accelerated, with filings rising sharply from 24,326 in 2020-21 to 68,176 in 2024-25[8]. India ranks among the top countries globally in terms of number of science and engineering Ph.D. awarded, with over 24,000 Ph.Ds awarded annually, and possesses one of the largest Science, Technology, Engineering, and Mathematics (STEM) workforces in the world.

3 Bonaglia, D. (2024). End of Year Edition–Against All Odds, Global R&D Has Grown Close to USD 3 Trillion in 2023. 18 December. URL: https://www. wipo. int/web/global-innovation-index/w/blogs/2024/end-of-year-edition.

4 OECD (2025), OECD Science, Technology and Innovation Outlook 2025: Driving Change in a Shifting Landscape, OECD Publishing, Paris, https://doi.org/10.1787/5fe57b90-en.

5 Centre for Policy Research. Suggestive roadmap: Strengthening R&D ecosystem through PPP. https://cpr.puchd.ac.in/wp-content/uploads/2021/03/Ch-4.pdf

6 India Brand Equity Foundation. (2025, September). India rises to 38th rank in the global innovation index. https://www.ibef.org/news/india-rises-to-38th-rank-in-global-innovation-index

7 Springer Nature. (2025, November). Global research pulse: India. https://stories.springernature.com/global-research-pulse-india/index.html

8 Press Information Bureau. (2025, November). India's leap in research and innovation [Press release]. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2186327

India's startup ecosystem has emerged as a major driver of the country's economic growth, and embodies the possibilities for a model for innovation-led growth. Ranked third globally, India hosts nearly 197,692 startups and over 100 unicorns, supported by rapid expansion in funding, investors, and incubation infrastructure[9]. Between 2016 and 2022 alone, startup funding increased fifteen-fold, the number of investors grew nine-fold, and incubators expanded seven-fold. These trends underscore the growing dynamism of India's innovation landscape and its capacity to translate scientific knowledge into entrepreneurial outcomes.

In this context, it may be noted that the Global Innovation Index classifies India as an "overperformer[10]," delivering innovation outputs that exceed expectations relative to its level of inputs, such as Gross Expenditure on R&D (GERD) and researcher density. With GERD at approximately 0.64 percent of GDP and FTE of around 262 per million population, India has demonstrated strong momentum in publications, patents, and startup creation[11]. While this performance reflects the depth of India's human capital and the growing vibrancy of its innovation ecosystem, it also indicates the need for higher inputs for sustained growth.

However, Research output remains concentrated in a limited number of institutions, including top-ranked Indian Institutes of Technology (IITs), the Indian Institute of Science (IISc), and a small group of central universities and national laboratories, which together account for a large share of publications and patents. Many state universities and regional institutions demonstrate low to moderate research productivity and remain under-integrated, or insufficiently connected, to the national research ecosystem. Concentration of outputs in selected institutions indicates a deeper structural imbalance, as advanced research infrastructure, doctoral and post-doctoral fellows, collaboration networks (including international exchange and partnerships), and access to competitive grants remain clustered in a few elite institutions.

Translation from universities and research institutions does not meet expectations, as many promising research leads remain at the level of proof of concept. The spin-offs from universities are concentrated on a few reputed institutions. Even within these institutions, outcomes remain modest when assessed against the scale of research expenditure and patenting activity. The conversion rate from patents and research outputs to viable startups, licensed technologies, or scaled products remains limited. A large proportion of patents are either not commercialised or do not translate into sustained entrepreneurial ventures. Multiple funding schemes are visible, however, there is fragmentation, with multiple ministries and agencies operating parallel schemes with limited coordination. Although mission-oriented programmes have emerged, focussing on key strategic areas for bringing desired capability and competitiveness, continuity across funding cycles and stronger coordination and alignment across Ministries is needed to address the structural gaps[12]. At the same time, transformative shifts associated with Fourth Industrial Revolution

9 India Brand Equity Foundation. (2025, December 3). The Department for Promotion of Industry and Internal Trade recognises 1,97,692 startups under Startup India initiative. https://www.ibef.org/news/the-department-for-promotion-of-industry-and-internal-trade-recognises-1-97-692-startups-under-startup-india-initiative

10 World Intellectual Property Organization. (2025). Global Innovation Index 2025: Results. https://www.wipo.int/web-publications/global-innovation-index-2025/en/gii-2025-results.html

11 Department of Science and Technology. (2023, March). Research & development statistics at a glance 2022-23. Ministry of Science and Technology, Government of India. https://dst.gov.in/sites/default/files/Updated%20RD%20Statistics%20at%20a%20Glance%202022-23.pdf

12 V.K. Saraswat, V. K. Singh, S. Bhattacharya, A. Kanaujia, A. A. Sansukre, Tyagaraju B. M., A. Dharmajia, P. Chanana, T. Agarwal, S. Kaur, D. Narang, & N. Saroor (2025). *Pathways to progress: Analysis and insights into India's Innovation Story.* Published by NITI Aayog, New Delhi, India. ISBN: 978-81-967183-7-4.

technologies are reconfiguring production systems, skill requirements, and competitive dynamics, calling for new capability-building strategies and coordinated policy responses[13]. These technologies are highly science dependent and integration-intensive, requiring sustained investments in advanced skills, interdisciplinary R&D, digital infrastructure, and rapid translation capabilities to enable real-time adaptation and scale.

Private sector participation in R&D, at approximately 36% of total GERD, remains substantially lower than in leading innovation economies, where private sector contributions exceed 70%.[14] Addressing these imbalances is essential for sustaining India's innovation momentum and ensuring inclusive, system-wide research growth.

1.2 Ease of Doing R&D as a Critical Enabler

In this context, the effectiveness with which R&D is carried out, often referred to as the "Ease of Doing Research (EoDR)", has emerged as a critical determinant of research productivity and innovation outcomes. Ease of Doing Research can be understood from the innovation system perspective, which underscores how conducive the environment is across institutional, regulatory, infrastructural and policy dimensions. This includes effectively overcoming obstacles such as institutional regulations, infrastructural limitations, and excessive administrative oversight, to build a supportive ecosystem for research excellence. Such an ecosystem would provide access to funding, state-of-the-art infrastructure, and collaborative opportunities, while also offering essential systems, such as intellectual property management, well-equipped labs and testbeds, and institutional bodies for ethics review and compliance. However, change to a more efficient system is path dependent, shaped by historically embedded structures, incentive regimes, and accumulated practices, and thus what we call difficulty in doing research is itself 'path dependent'. Ease of doing research is not merely about shifting bottlenecks but about shifting system behaviour in the right direction. It recognizes that research does not happen in isolation, but depends on how the ecosystem supports research, translation, collaboration, and learning.

Recognising this, India has begun placing renewed emphasis on improving EoDR as part of its broader vision for innovation-led development. The Hon'ble Prime Minister underscored the importance of Ease of Doing Research at the 102nd Indian Science Congress, linking it directly to the national aspiration of *Viksit Bharat*. This focus is reflected in a series of recent and ongoing reforms, including the Anusandhan National Research Foundation (ANRF) Act, 2023; the Research, Development, and Innovation (RDI) Fund launched in November 2025; the One Nation One Subscription (ONOS) initiative for improved access to scholarly journals (2025–27); and procurement reforms announced in June 2025 (which raised financial thresholds and expanded the scope of global tender enquiries for high-value research equipment).

These reforms complement flagship national initiatives such as *Make in India*, *Atmanirbhar Bharat*, the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS), and the National Quantum Mission etc. Together, they reflect a growing recognition that simplifying administrative pathways, strengthening institutional support, and reducing procedural friction are essential for accelerating research and innovation.

13 Institute for Studies in Industrial Development (ISID), *Leveraging Industry 4.0 for India's Industrial Transformation*, Policy Brief No. 23-07 (New Delhi: ISID, 2023), https://isid.org.in/wp-content/uploads/2024/01/PB2307.pdf

14 https://www.pib.gov.in/PressReleasePage.aspx?PRID=2153547&reg=3&lang=2

Within this evolving policy landscape, the present report adopts a survey-based approach to systematically assess the Ease of Doing Research (EoDR) in India. This initiative has been jointly undertaken by the Indian National Science Academy and NITI Aayog, reflecting the globally recognized principle that national science academies act as trusted advisors to governments, while public policy think tanks play a pivotal role in shaping and guiding policy reforms.

1.3 Objectives

The EoDR survey exercise has following objectives:

1. To identify the challenges faced by researchers in carrying out research and development activities,
2. To quantify and characterize delays and administrative bottlenecks in the approval and processing of R&D projects, and
3. To invite suggestions from researchers aimed at strengthening and improving the research ecosystem in India.

The survey captures on-ground experiences of scientists and faculty members across diverse institutions, disciplines, and career stages. By identifying key challenges affecting EoDR, quantifying delays and inefficiencies in research processes, and documenting actionable, practitioner-led recommendations, the survey generates robust, evidence-based insights to inform and strengthen ongoing policy and institutional reforms. Insights from the survey provide empirical grounding particularly in relation to funding delays, procurement bottlenecks, infrastructure access, and inter-institutional collaboration.

The evidence generated through this survey can support funding agencies in refining grant management, monitoring, and disbursement mechanisms; inform procurement reforms aligned with platforms such as the Government e-Marketplace (GeM); and guide the design of more effective collaboration frameworks for academia–industry partnerships.

Ease of Doing Research has the potential to unlock India's full STI potential as the country advances towards the vision of *Viksit Bharat @2047*. India already demonstrates strengths across critical and emerging technologies, ranking among the top five globally in a significant number of priority technology domains. Addressing the procedural and institutional challenges identified through this survey by streamlining processes, enhancing private-sector participation, and broadening institutional engagement, can significantly amplify research outputs and innovation impact.

This survey report contributes to the evidence base required for designing responsive, efficient, and innovation-friendly interventions. Subsequent chapters present detailed survey findings and analyses, offering actionable insights to guide India's transition towards a globally competitive, inclusive, and self-reliant research ecosystem.


HYDROGEN H2

CHAPTER-2

Research Design

In order to comprehensively capture the experiences, opinions and perceptions of researchers across the country within a limited timeframe, a purposive sampling strategy was administered to collect data through a well-designed comprehensive questionnaire. Prior to the questionnaire development, a systematic literature review was undertaken to identify the factors which hinder scientists and academicians in undertaking R&D Projects. Further, insights from various stakeholder engagements undertaken by NITI Aayog were also incorporated. These inputs guided drafting of the questionnaire, which was subsequently pilot-tested with a select group of scientists and professors before being finalized and administered for data collection.

2.1 Literature Review

In undertaking an exercise of this significance, it was necessary to understand the landscape of existing literature on ease of doing research across national and international level. This step helped in avoiding any overlaps and also identified any gaps in contemporary understanding which could be filled by this report.

At the global level, Nature publishes annual surveys of Ph.D. Scholars[15] and Post-Doctoral Scholars[16], that examines the challenges faced by researchers across the countries. These surveys have consistently highlighted excessive workloads and inadequate funding as major hurdles for doing research. Additionally, the Vox magazine in 2016, reported qualitative insights from 270 scientists globally, highlighting deeper conceptual concerns about the practice of science itself[17], including funding constraints, the proliferation of poorly designed "too many studies", issues with peer-review systems and ineffective science communication. While these findings underscore universal challenges, they do not offer the context-specific and nuanced insights required by Indian policymakers to effectively address the Ease of Doing R&D (EoDR) in India.

In the Indian context, there is a noticeable shortage of empirical studies specifically aimed at identifying the challenges faced by researchers. Two notable studies include the Ease of Doing Research (EoDR): A

15 Je, O., & Ct, T. (2019). PhD poll reveals fear and joy, contentment and anguish. *Nature*, *575*, 403-406.
16 Mo, M. I. G. U. E. L. (2020). Postdocs under pressure: 'Can I even do this any more?'. *Nature*, *587*, 689-692.
17 Belluz, J., Plumer, B., & Resnick, B. (2016). The 7 biggest problems facing science, according to 270 scientists. *Vox, Sept. 7th. http://www. vox. com/2016/7/14/12016710/science-challeges-research-funding-peer-review-process.*

Methodological Framework for Agricultural Research Organizations[18], by ICAR-National Academy of Agricultural Research Management (ICAR-NAARM) in 2021, and the Ease of Doing Science (EoDS) Index[19] developed by Foundation for Advancing Science and Technology (FAST India) in 2023. Beyond these initiatives, existing studies tend to focus on related aspects of the research ecosystem rather than systematically examining the operational and institutional challenges experienced by researchers.

The EoDS Index 2023 has broken the ease of doing research into five factors – i) Ease of raising funds, ii) Ease of utilisation of funds, iii) Ease of collaboration, iv) Ease of commercialisation of research, and v) Availability of institutional people and resources. Respondents rated each dimension on a five-point scale, benchmarked against their experiences outside India, with further disaggregation to identify specific challenges within each dimension.

The study highlighted key challenges related to the availability and utilization of research funds in India, particularly for early-career researchers, as well as difficulties in collaborating with international researchers and industry partners. While the study provided a useful starting point for further research on Ease of Doing Research (EoDR), its findings require validation and further expansion, given the limited sample size of 140 respondents and the composite scoring of multiple factors. Additionally, the study had a narrow scope of sampling in terms of disciplines covered (Engineering and Science's only) and the type of institutions covered (top 10 institutes of NIRF 2022 Rankings). Hence, there is a need to further expand the scope of this study.

Whereas Krishnan et al. (2021)[20], presented a framework to assess how easy it is for researchers to conduct research in agricultural institutions using 22 indicators across five parameters, which together provide a comprehensive list of factors that could be considered for the assessment of EoDR. The study identifies important factors such as access to funds, administrative procedures, infrastructure, approvals, and institutional support. It uses a scoring method to measure these aspects and highlight problem areas. The aim is to identify bottlenecks and suggest improvements to make research processes smoother and more efficient.

Coming towards other empirical studies done in India, a study has been undertaken by Agashe et. al., (2022)[21] to understand career obstacles faced by young independent researchers below 45 years of age. They identified issues related to limited career opportunities and advancement, through their survey which was filled by 854 participants, across the country. However, most of the issues highlighted regarding EoDR like lack of funding, regulatory issues and others were sourced from the respondents' opinions with limited quantified responses. Similarly, Chatterjee *et al.* (2025)[22] conducted a study to understand the landscape of postdoctoral

18 Krishnan, P., Ananthan, PS., Soam, S. K., Prasad, R., Srinivasarao, Ch., 2021. Ease of Doing Research (EoDR): A Methodological Framework for Agricultural Research Organizations, Indian Council of Agricultural Research (ICAR), New Delhi. p30.

19 Aggarwal, Varun; Kaur, Harleen; Misra, Kaustubh; and Seshadri, Anjana (2023), Ease of Doing Science Index 2023, Measuring performance of top Indian research institutions, *FAST India Report*.

20 Krishnan, P., Ananthan, PS., Soam, SK., Prasad, R., Srinivasarao, Ch., 2021. Ease of Doing Research (EoDR): A Methodological Framework for Agricultural Research Organizations, Indian Council of Agricultural Research (ICAR), New Delhi. p30.

21 Agashe, D., Maheshwary, S., Pattanaik, J. K., Prakash, J., Bhatt, P., Arya, S. S., Devi, P. et al. (2022). Career challenges for young independent researchers in India. *Curr Sci*, *122*(02), 135-143.

22 Chatterjee, S., Chakravorty, N., Devi, P., Dhaka, R. S., Dutta, A., Maheswary, S., Roy Chaudhuri, C. et al. (2025). The landscape of postdoctoral research in India: opportunities, challenges, and recommendations. *Proceedings of the Indian National Science Academy*, 1-12.

research in India, based on responses from 189 postdoctoral scholars. This study focused on identifying the career preferences and available opportunities in India, with minimal focus on EoDR specifically.

In conclusion, there is a clear need for an empirical study on Ease of Doing R&D (EoDR) in India that provides a comprehensive and detailed picture of the R&D landscape from the researcher's perspective, while reflecting diversity in terms of gender, discipline, nature of research undertaken, and the type of institution to which they belong. The present study represents an important first step in this direction.

2.2 Questionnaire Design

The S&T Division, NITI Aayog invited inputs from the leadership of leading institutions across the country in early 2025 to provide feedback on Ease of Doing Research (EoDR), which informed the development of the preliminary questionnaire. This first iteration of the questionnaire was further enhanced by adding questions modelled on the EoDR framework proposed by Krishnan *et al* (2021). Although the framework was specifically created to assess the institutional level factors affecting agricultural research, it served as a good starting point to prepare the questionnaire as it covered parameters such as human resource strategy, research infrastructure, research leadership, research governance and research culture, which are broadly relevant for institutions of other disciplines as well.

This questionnaire was subsequently refined through in-depth consultations between the INSA-CSTIP Team and S&T Division, NITI Aayog. For further refinement, selected representatives from different institutions were invited to provide feedback on the preliminary questionnaire, which was revised accordingly. The questionnaire was further improved after conducting a pilot study, as discussed in a later section.

2.3 Pilot Study

The preliminary questionnaire, was circulated to 28 scientists[23] associated with INSA, for their comments on clarity, readability of questions, and the overall length of questionnaire. Diversity across gender, age, discipline, and type of institution of the scientists was carefully considered during the design process. The pilot questionnaire was hosted on Microsoft forms and tested for visibility and layout in personal computers, laptop and mobile phones. The survey link remained active for one week to gather an adequate number of responses, resulting in a total of 12 responses. Some researchers recommended the inclusion of additional questions, while others suggested removing items that were not directly relevant to Ease of Doing Research (EoDR). These inputs were incorporated, wherever feasible, to further refine the questionnaire in terms of clarity and length.

2.4 Survey

The final questionnaire comprised five sections, covering basic respondent details, key factors such as funding, regulatory framework, and the institutional research environment, as well as suggestions/remarks from the respondents. **Figure 2.1** depicts the major themes covered in the questionnaire. Due to the comprehensive nature of the questionnaire, it included 44 questions, with a few nested questions based on the respondent's responses. Most of the questions were multiple-choice, with a few open-ended questions

23 The scientists were selected to ensure diversity in terms of gender, age, discipline and type of institution

included, and one question required respondents to rank the factors hindering research. The questionnaire was hosted on the Microsoft Forms platform, as it ensured consistent visibility and accessibility across personal computers, laptops, and mobile phones, as confirmed during the pilot testing. **Figure 2.2**, gives an overview of the research methodology followed for this study.

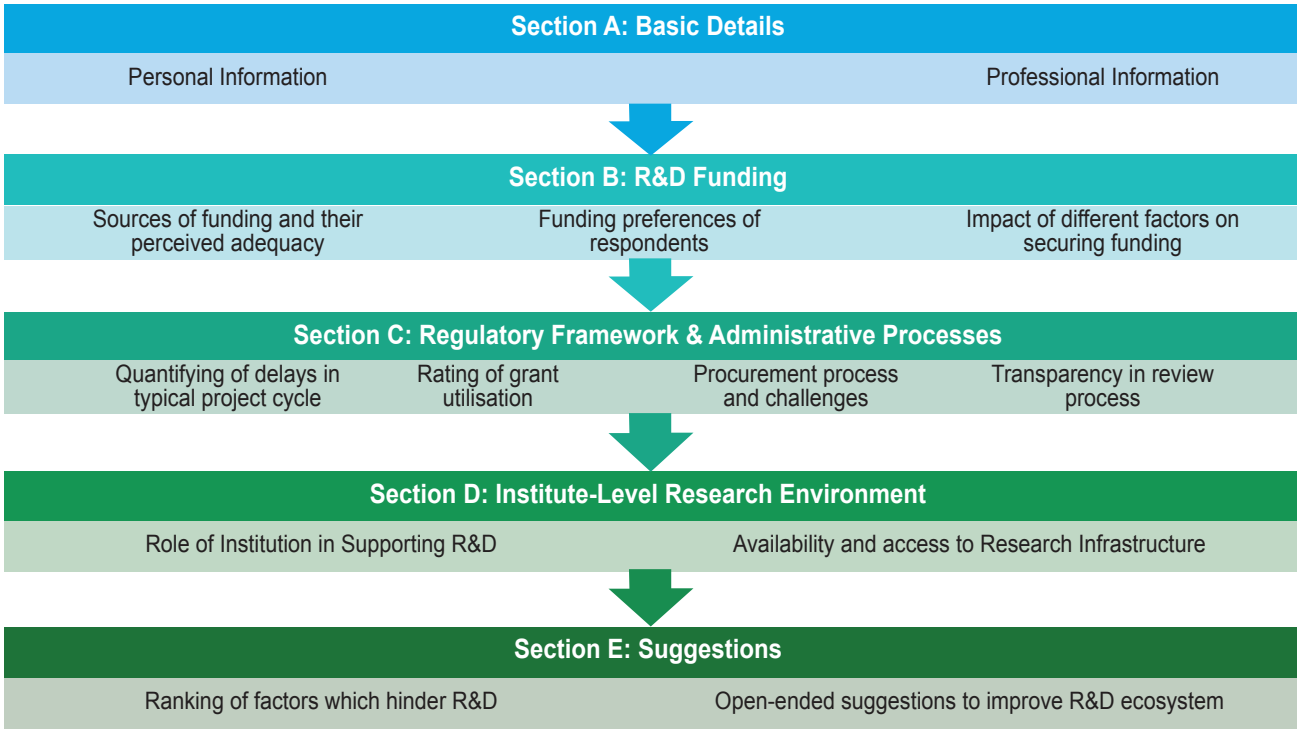


Figure 2.1: Questionnaire Design

Purposive sampling was employed to ensure coverage of scientists across various types of institutions, discipline, nature of research and demographic characteristics such as gender and age. This method was chosen to ensure that the sample included respondents with relevant expertise, institutional diversity, and necessary research experience to meaningfully address the objectives of the study within a given timeframe. The final questionnaire was circulated widely amongst the fellows of Indian National Science Academy (INSA), New Delhi and National Academy of Sciences (NASI), Prayagraj to ensure a wider coverage of prominent scientists and researchers in the country along with adequate geographical representation and inclusion of diverse types of institutions. As the average age of Fellows of these prominent academies is above 60 years, the questionnaire was also circulated amongst members of the Indian National Young Academy of Science (INYAS), INSA Young Associates (IYA), INSA Associate Fellows (IAF), and INSA Women Associates (IWA) of Indian National Science Academy (INSA), whose members are typically below 40 years (INYAS and IYA) and 50 years (IAF) at the time of induction, to ensure adequate representation of early and mid-career researchers.[24] This was also shared with the participants of the Regional Consultative Meetings on Ease of Doing R&D (EoDR), primarily directors/heads/Vice Chancellors of higher education and research institutions across the country. These meetings were organized by NITI Aayog[25]. All the respondents were requested and encouraged to circulate the questionnaire among their colleagues. The

24 All of these distinct categories would be considered as part of INSA, for ensuring simplicity and clarity in reporting

25 The meetings were organized at Lucknow, Dehradun, Jammu, Delhi, Ahmedabad, Hyderabad, Guwahati and Thiruvananthapuram.

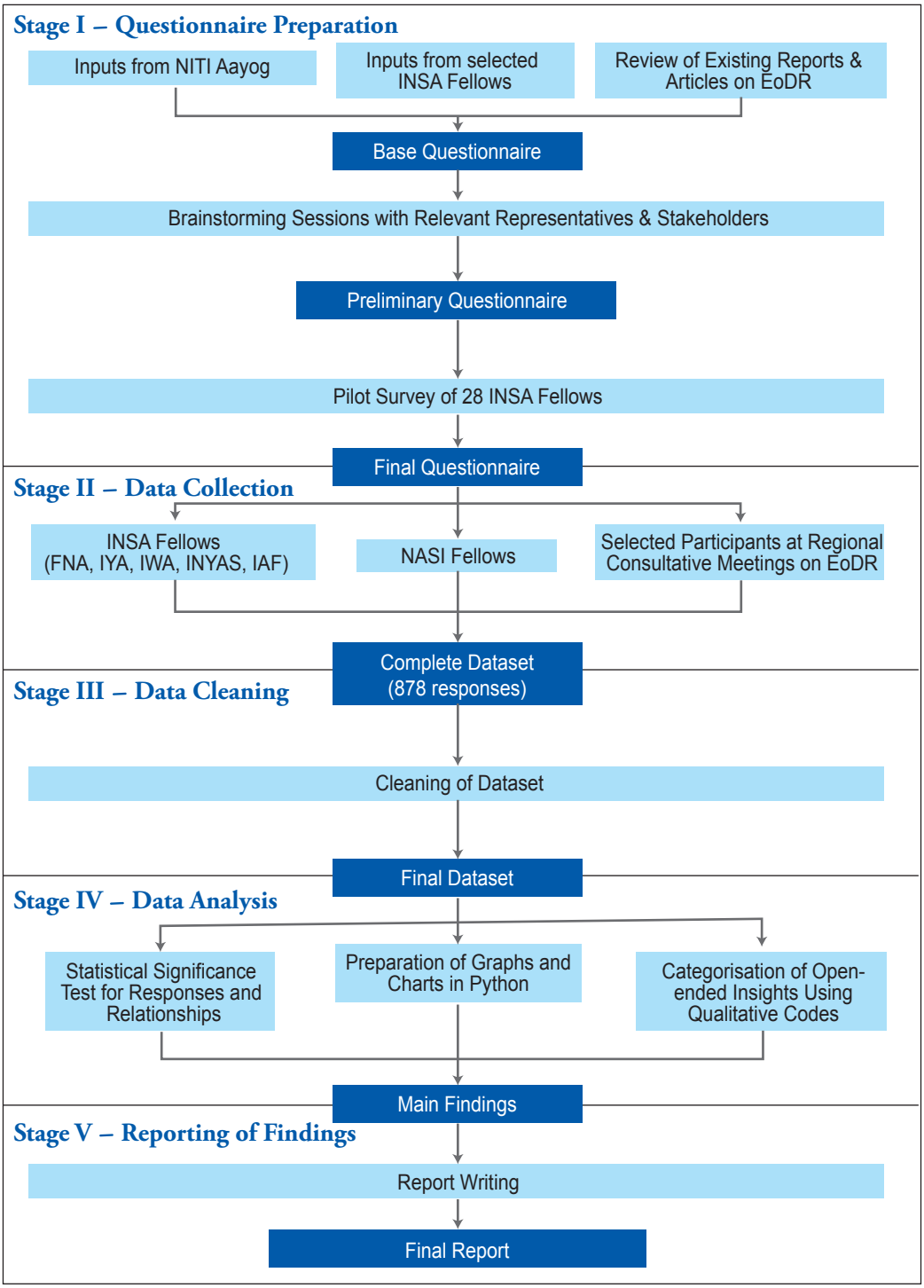


Figure 2.2: Schematic Diagram of Research Methodology

questionnaire was live from the end of July 2025 to mid-November 2025, and a total of 878 responses were received, despite its in-depth and comprehensive nature.

The survey data collected was then cleaned for any inconsistencies or formatting issues using Microsoft Excel, R and Python. Graphs were generated for each question, and statistical analyses were conducted to identify significant relationships between certain responses and the characteristics of the respondents. Only statistically significant relationships have been reported wherever appropriate.

CHAPTER-3

Respondents' Characteristics

As mentioned earlier, a total 878 responses were received from the survey floated to INSA, NASI and Regional Consultations Meetings. A total of 185, 196 and 497 responses were collected from NASI, INSA and participants of Regional Consultative Meetings respectively. In cases where capturing a large portion of population is difficult, the representativeness of the sample matters, which was ensured in the data collected, by purposively sharing the questionnaire with INSA, NASI and Regional Consultative Meeting invitees to ensure representation in terms of region, age, gender, type of institution, discipline and nature of research. As premier Science Academies of India, INSA[26] and NASI[27] ensure that not only the top scientists become their Fellows but they also ensure diversity in terms of discipline, region, nature of research and type of institution. Additionally, INSA has pioneered initiatives like INYAS[28], IYA & IAF[29] and IWA[30] to ensure greater diversity in terms of age and gender. Similarly, the Regional and Consultative Meetings organized by NITI Aayog had diversity in terms of age, gender, discipline, region and type of institution. Hence, the sample was constituent of participants representing a diverse range of demographic andm professional characteristics.

3.1 Gender Distribution

In terms of gender, the sample constituted 24.5% women and 75.5% men **(Figure 3.1)**[31], while the remaining respondents chose not to disclose their gender.

26 Indian National Science Academy. (2025). *Regulations*. Retrieved October 23, 2025, from https://insaindia.res.in/regulations/

27 The National Academy of Sciences, India. (2025). *Regulations*. Retrieved October 23, 2025, from https://nasi.org.in/regulations/

28 Indian National Young Academy of Science. (2025). *Become a Member*. Retrieved October 23, 2025, from https://inyas.in/become-a-member/

29 Indian National Science Academy. (2025). *INSA Associate Fellows*. Retrieved October 23, 2025, from https://insaindia.res.in/insa-associate-fellows/

30 Indian National Science Academy. (2025). *INSA Women Associates*. Retrieved October 23, 2025, from https://insaindia.res.in/insa-women-associate/

31 Some of the numbers in figures might not add up to 100, due to rounding off.

3.2 Age Profile

A majority of participants were 45 years or above, accounting for 57.7% of the sample. This was followed by respondents who were between the ages of 35 to 45 years, being 34.2% of the sample, with the remaining 8.1% below 35 years of age as shown in **Figure 3.2**. This indicates that the majority of the respondents of the survey have considerable experience in the R&D ecosystem, lending credibility and robustness to their responses, which in turn enhances the reliability of the insights drawn from this survey.

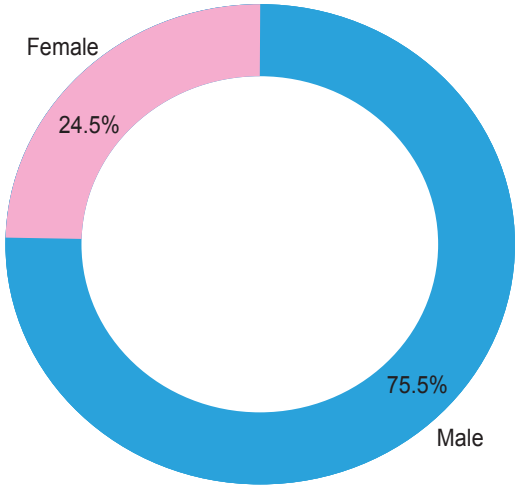


Figure 3.1 Gender Composition

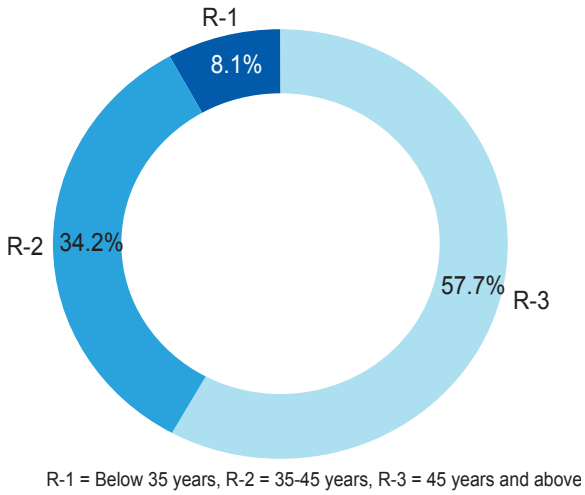


Figure 3.2 Age Group Composition

3.3 Career Profile

The sample included researchers across various designations ranging from Assistant Professor or equivalent to Professor or equivalent positions. The sample had 38.1% researchers who were working as a Professor or Scientist G or H, followed by 19.4% who were Associate Professor or Scientist E or F and 27.5% as Assistant Professor or Scientist B, C or D with the remaining respondents categorizing their designations as others as shown in **Figure 3.3.**

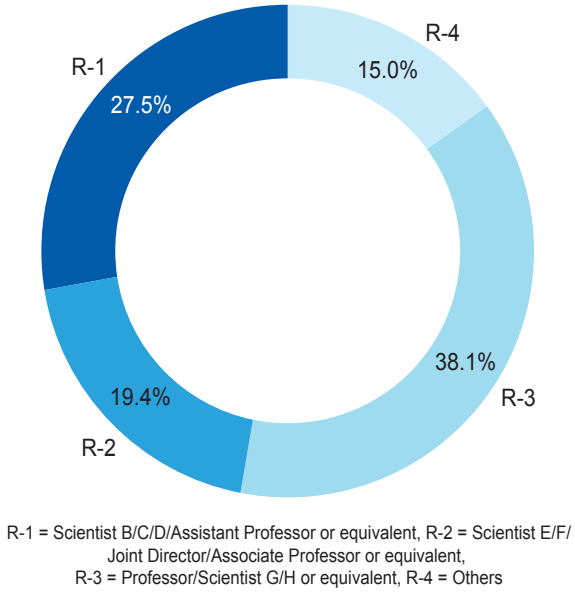


Figure 3.3 Distribution of Designation

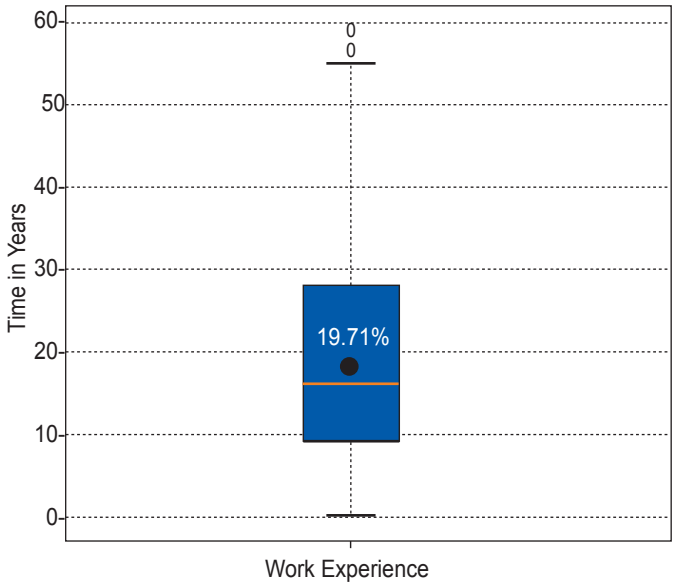


Figure 3.4 Work Experience in Years

Additionally, it can be seen from **Figure 3.4** that the average work experience for the respondents is 19.71 years, ranging from respondents who are just starting out their careers to respondents who have upto 60 years of experience in R&D. This again emphasises the diversity of respondents for the survey.

3.4 Disciplinary Distribution

Most of the respondents were researchers working in the Life Sciences as their primary discipline contributing 24.5% of responses, followed by Engineering & Technology (16.1%), Chemical Sciences and Physical Sciences, with 11% and 10.1% respectively. Researchers from other disciplines like Earth sciences, Agriculture, Medical, Mathematical and Social sciences constituted the rest ~40% of the respondent population, each representing 5% to 7% of the sample (**Figure 3.5**).

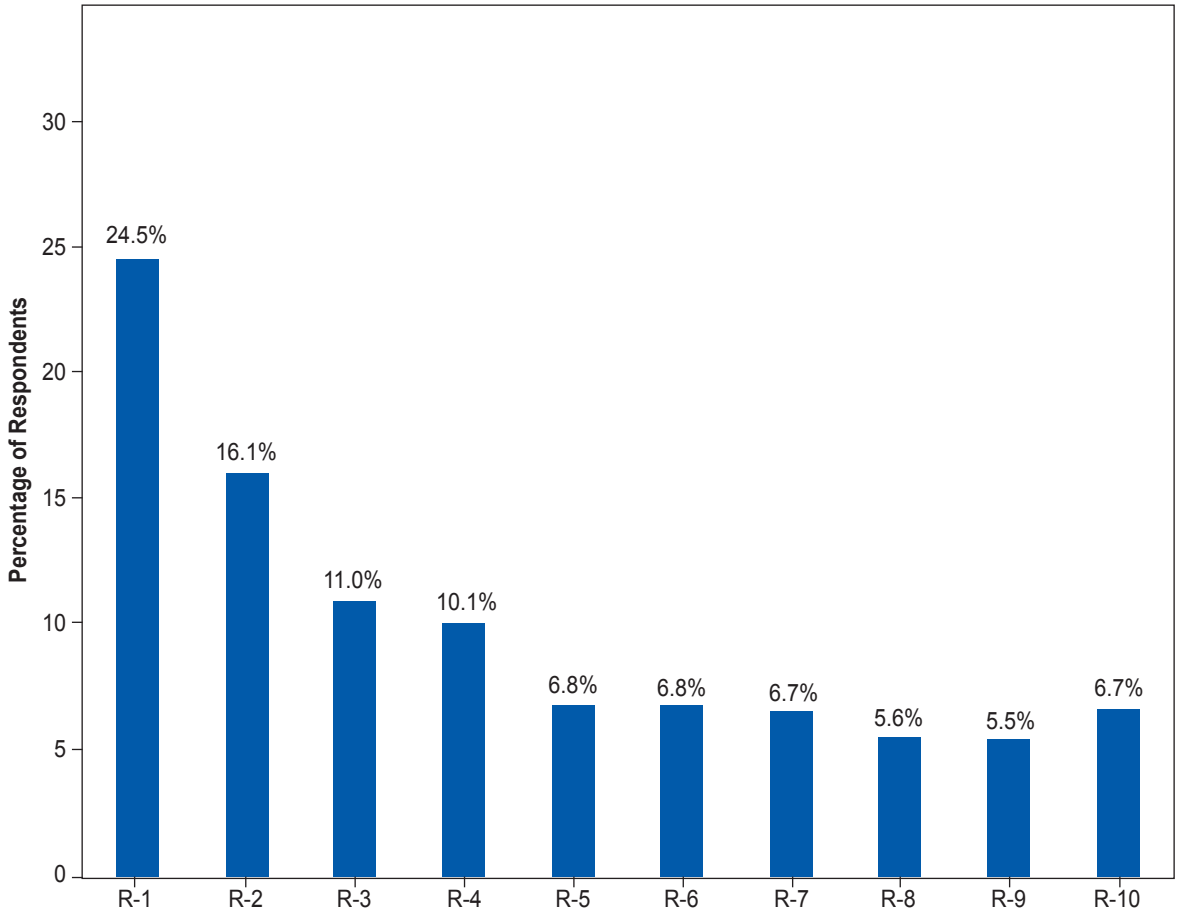


Figure 3.5 Distribution of Discipline

3.5 Nature of Research

Apart from disciplinary diversity, the sample also had diversity of respondents based on the nature of research they undertook. Most of the respondents primarily undertook basic and fundamental research at 46.5% of the sample, followed by 39.5% of the respondents who primarily partook in applied research in their discipline. Around 9.4% of the respondents focused on translational research with the remaining 4.5% primarily focusing on the combination of these as shown in **Figure 3.6.**

3.6 Institution Profile

Most of the respondents in the survey belonged to central organisations with 36.8% of the respondents belonging to central R&D laboratories and 36.1% of the respondents belonging to central universities **(Figure 3.7).** The category of central universities also included institutes of national importance such as IITs, IISERs, NITs, IISc etc. In contrast, only 1% of the respondents belonged to state level R&D laboratories and organisations and 12.7% of the respondents were from state universities. Additionally, 6.3% of the respondents belonged to Non-Government R&D Institutions and 0.7% of the respondents belonged to international collaborative centres.

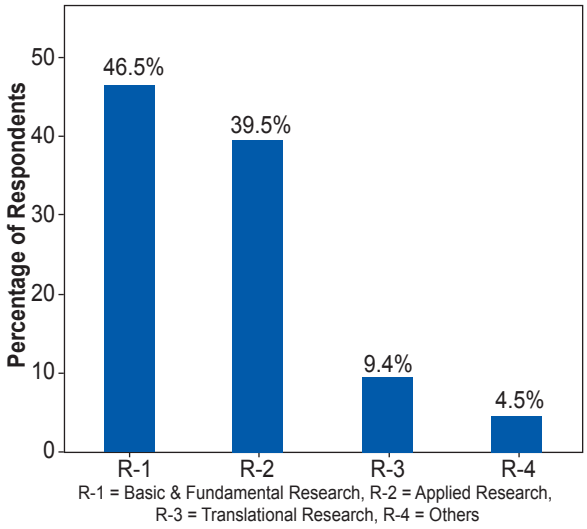


Figure 3.6 Nature of Research

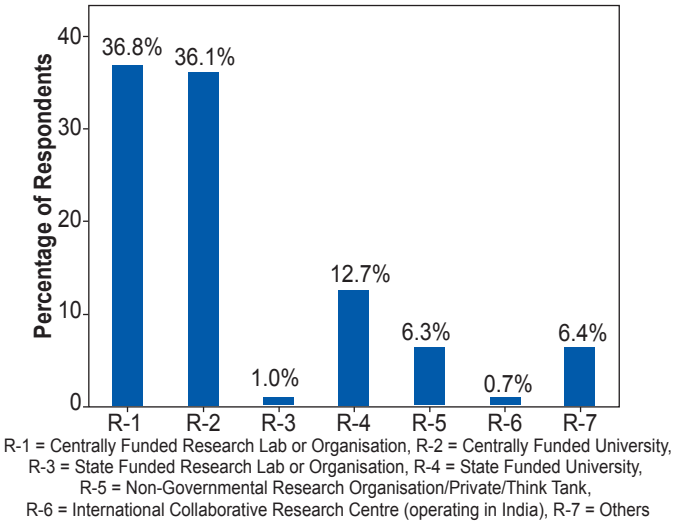


Figure 3.7 Type of Institutions

3.7 Research Experience

This section explores the level of research experience of the respondents by analysing the number of proposals submitted, projects sanctioned and pending decisions, if any, on any of their submissions. As can be seen from **Figure 3.8,** on average, a respondent has submitted five proposals to different funding agencies. While a few respondents have not submitted any proposal, some submitted as many as 22 R&D proposals. On average, each respondent submitted around five proposals, of which approximately three were approved. A few respondents received approval for as many as 11 projects. Furthermore, the average number of pending decisions per respondent is less than one, with a maximum of two, reflecting a relatively swift resolution process for the proposals.

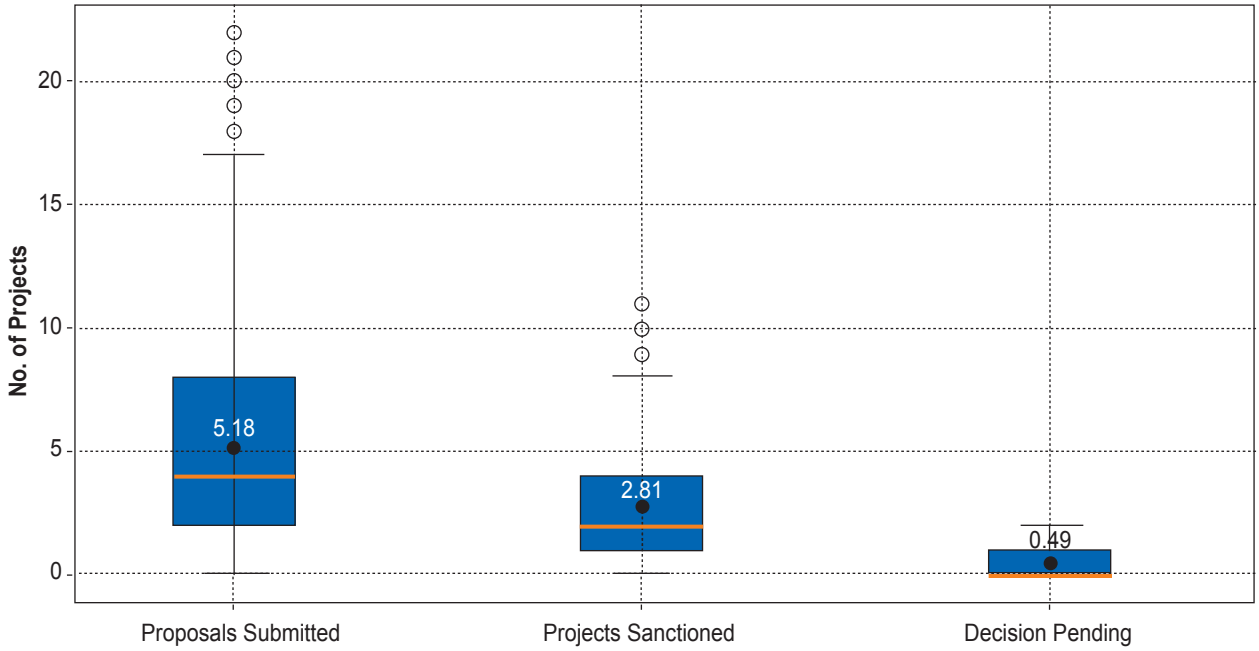


Figure 3.8 Frequency and Status of Projects submitted

The box plot reveals a right-skewed distribution in proposal submissions (mean > median and a long upper tail) indicating that a small group of highly active researchers accounts for a disproportionately large number of proposals. This heterogeneity underscores a concentration of proposal activity among a limited group of researchers within the sample.

3.8 Summary

The respondents' characteristics discussed in this chapter show that the sample is rich in diversity in terms of gender, age, designation, work experience in years, discipline, nature of research and the type of institutions in which the respondents work. The next few chapters discuss the main findings of the survey.


R & D

CHAPTER-4

R&D Funding

Funding plays a critical role in the successful execution of any R&D project undertaken by researchers. At present, researchers can access both intramural funding from within their own institution and extramural funding from external sources. These external sources include government departments, industry, international funding agencies, and non-governmental organisations. Respondents were requested to indicate all the sources from which they had received research funding since the beginning of their careers.

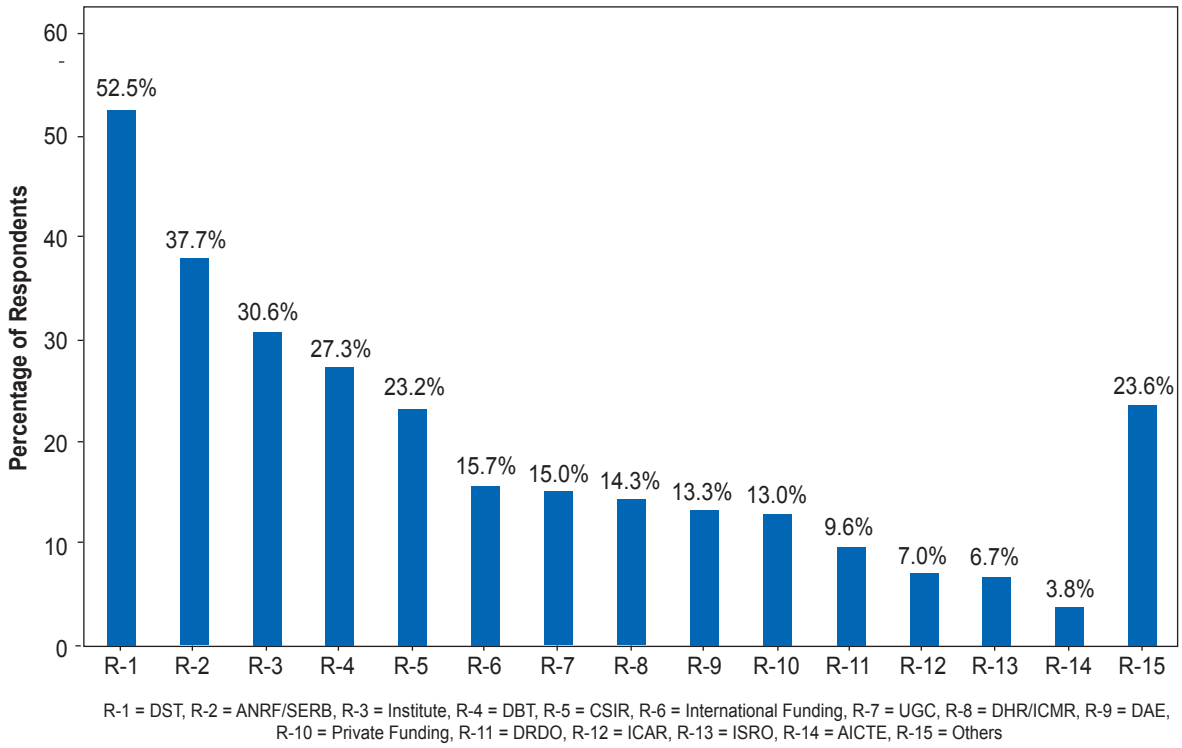


Figure 4.1 Funding Institutions from which Respondents got Funding

As can be seen from **Figure 4.1,** 52.5% of the total respondents reported receiving funding from the Department of Science and Technology (DST), followed by 37.7% from Anusandhan National Research

Foundation (ANRF)[32] and 30.6%[33] from institutional funding. While most of the respondents securing funding from four to five distinct sources, the share of private funding is still only 13%, approximately one quarter of DST funding. This pattern contrasts with broader funding trends observed in leading R&D economies such as the United States, South Korea, and Germany, where private sector participation in research funding is substantially higher. Due to limited private funding in India, researchers rely on multiple sources to meet their research needs, as discussed in a later section.

This chapter would discuss the extent to which respondents are getting funding from different sources to support their research, their preferences of funding agencies and the sufficiency of scholarship support provided to research scholars working with them.

4.1 Extent of Funding Support to Researchers

As can be seen from Figure 4.2, 39% of the respondents found that funding from government sources to support their research was partially sufficient, and 31% considered it adequate. For institutional funding, identified as the third largest funding source, was viewed less favourably, with 37% of respondents describing it as insufficient and 27% considering it only partially sufficient. In contrast, 68% indicated that funding from industry and CSR channels was not available to them. Similarly, 73% reported no access to funding from private foundations, and 60% stated that international funding opportunities were not available to support their research.

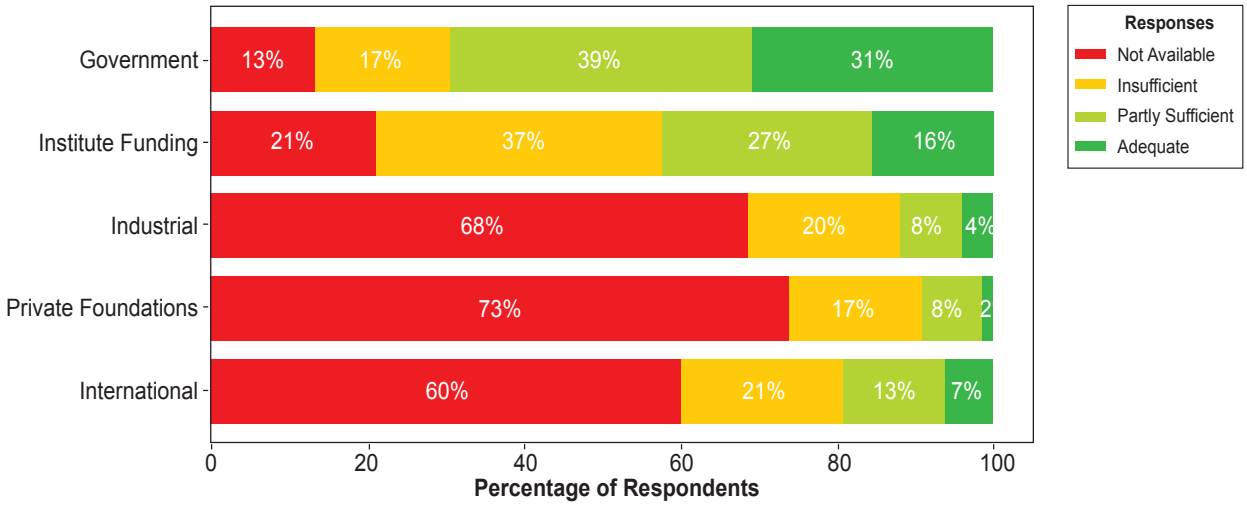


Figure 4.2 Extent of Support from Different Funding Sources

This pattern of responses remained consistent across respondents with diverse personal and professional backgrounds. Hence, there is a need to take dual action - strengthening the scale and adequacy of funding from government and institutional sources, while simultaneously encouraging greater participation and investment from industry and private sector actors in R&D.

32 Erstwhile Science and Engineering Research Board (SERB)
33 Total do not add up to 100% as the respondents could choose all the funding agencies from which they got funding

4.2 Preferences Regarding Funding

Survey findings indicate that, despite the challenges associated with funding from government agencies, a majority of respondents, i.e., 62.5%, expressed a preference for government funding over industrial or private funding. However, preferences varied depending on the nature of the research undertaken.

Respondents engaged in basic and fundamental research showed a strong inclination towards government funding, with 74% favouring it over industrial funding, as shown in Figure 4.3. In contrast, respondents involved in applied and translational research were almost evenly divided in their preference between government and industrial funding.

The strong preference for government funding among basic and fundamental researchers is expected. However, the near-equal split among applied and translational researchers is noteworthy, as their market-oriented work would typically favour industrial funding, indicating a potential mismatch between research type and funding preference.

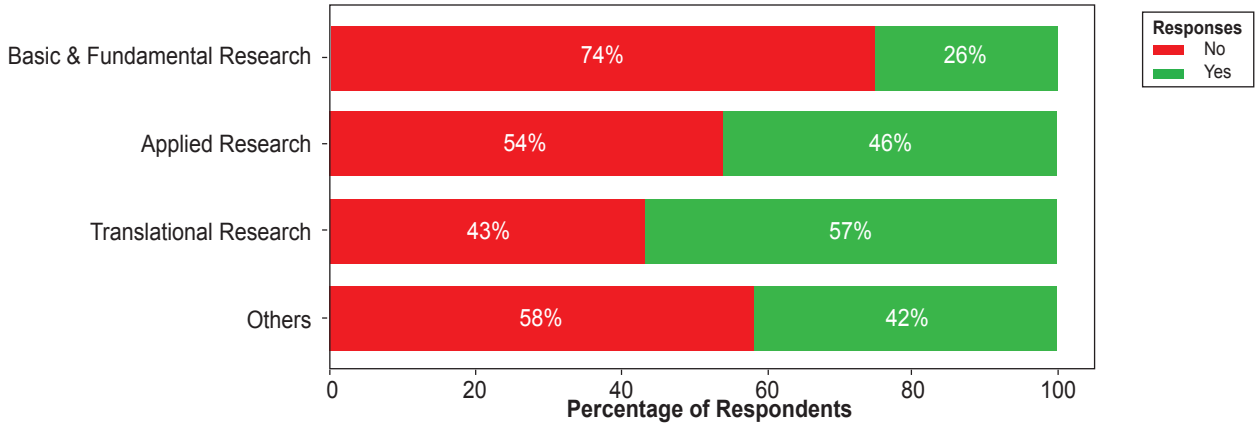


Figure 4.3 Do the Respondents prefer Industrial Sources of Funding over Government Sources of Funding across Nature of Research

Respondent's funding preferences reflect both structural constraints and operational considerations. Many indicated that their inclination toward government funding is not driven by the greater availability of public funding sources alone. Instead, a significant majority (76.4%) reported that industry rarely supports R&D projects in their respective disciplines. Further, 45.9% of respondents observed that the industry's emphasis on rapid, market-ready outcomes often places pressure on researchers to deliver quick results, which may not always be scientifically feasible or reliable. Additionally, 23% pointed to the absence of standardized IPR-sharing mechanisms as a key barrier that limits effective collaboration with industry **(Figure 4.4)**.

At the same time, industrial funding is valued for several operational advantages. A large proportion of respondents highlighted the flexibility it offers in the utilization of funds (73%), along with relatively simpler administrative procedures (58.7%). Many also acknowledged better availability of financial resources (48.6%) and greater autonomy in recruiting suitable personnel for their projects (41.3%) as important benefits **(Figure 4.5)**. Together, these findings suggest that while structural and collaboration-related challenges limit industry engagement in R&D, its procedural efficiency and flexibility remain highly attractive to researchers.

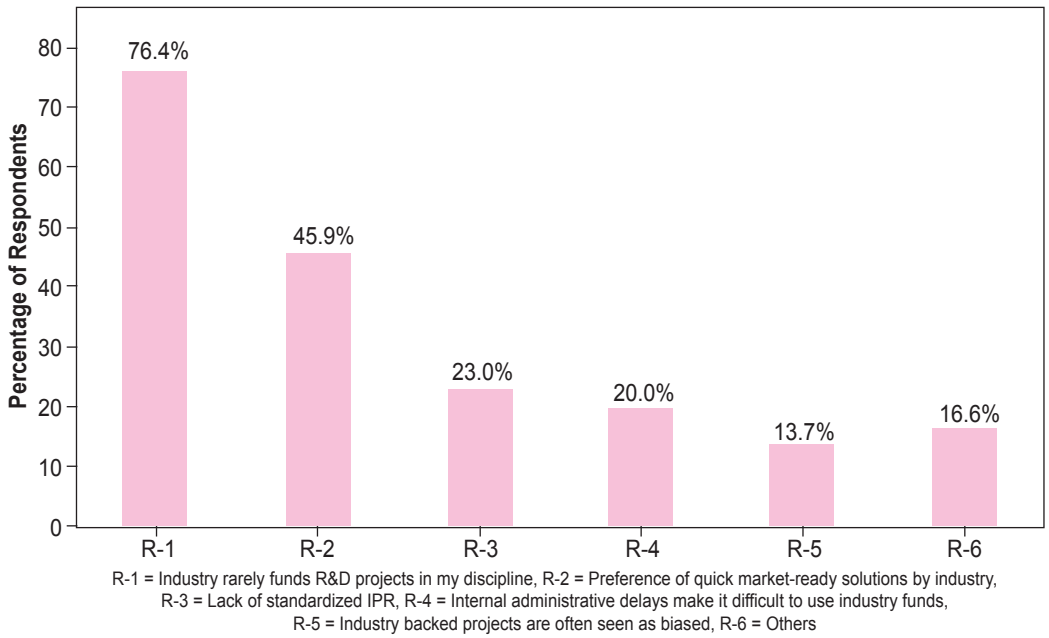


Figure 4.4 Reasons for preferring Government Funding over Industrial Funding

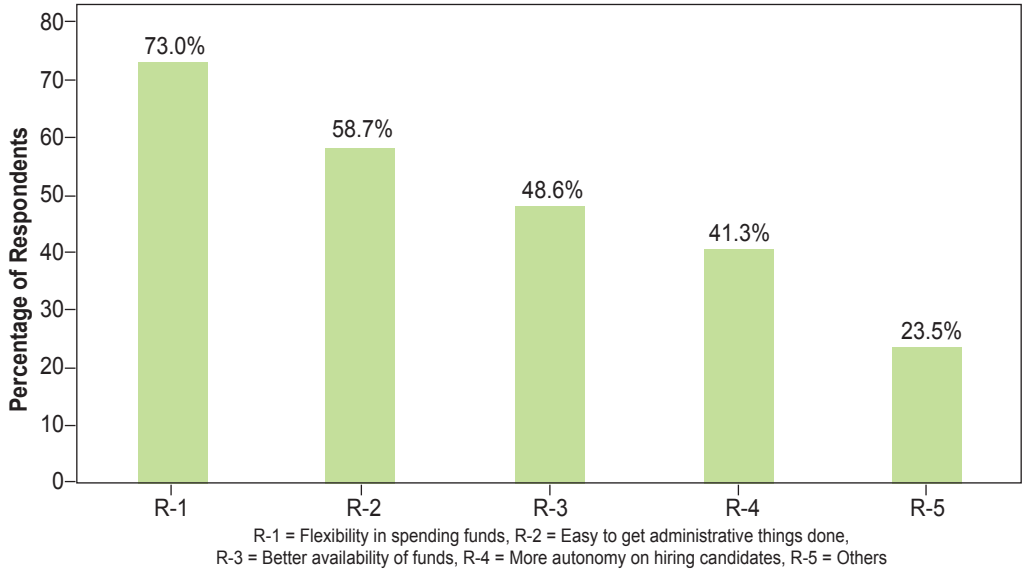


Figure 4.5 Reasons for preference of Industrial Funding over Government Funding

4.3 Support to Research Scholars

The allocated R&D funds ultimately deliver results through researchers, making PhD and postdoctoral scholarships the final link between budgetary allocations and research outcomes, where adequate and timely scholarship amounts directly influence research productivity. This section examines whether researchers have access to additional institutional funding to support their research scholars. It also assesses the timeliness of scholarship disbursement, including whether scholars receive their stipends on schedule and whether there is any delay between the completion of required formalities and the actual receipt of scholarship payments.

As shown in **Figure 4.6**, 33.8% of the respondents have reported that their institution does not have a dedicated funding scheme for both Ph.D. and Post-Doctoral candidates, while 29.5% of the respondents

report that their institution has dedicated funding schemes for these scholars. Additionally, 25.4% of the respondents have reported that their institution has dedicated funding schemes only for the Ph.D. candidates, which is in contrast to the availability of dedicated funding schemes for only 1.4% Post-Doctoral Scholars.

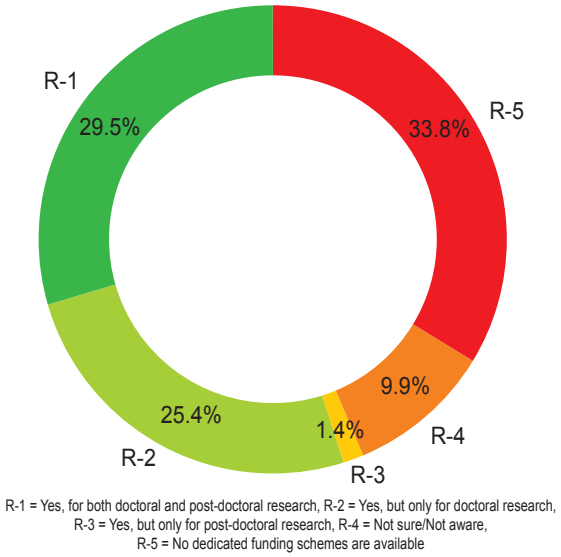


Figure 4.6 Availability of dedicated funding schemes for scholars at Institution

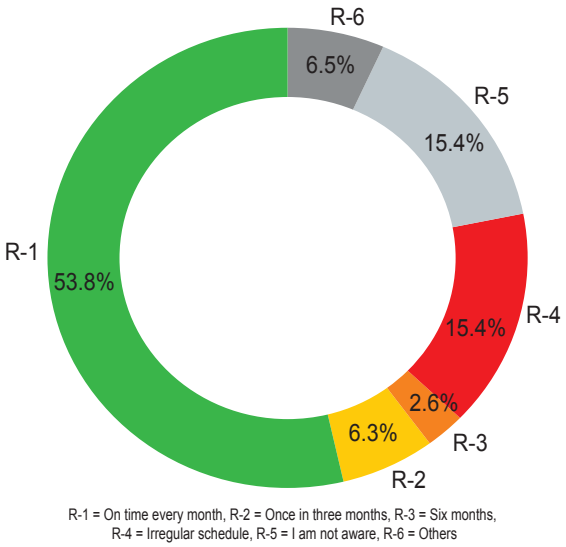


Figure 4.7 Regularity of scholars' fellowship amount as per respondents

It takes an average of about 3 and a half months for the scholars to get their scholarship amount from the government into their bank accounts after they complete all the administrative requirements. However, this time gap worsens for half of the respondents who take more than 3 months to get their first scholarship amount credited to their accounts, with the maximum time even going to the extreme of 12 months too.

Additionally, once the scholars get their first scholarship amount in their bank accounts, 53.8% of the respondents reported that their scholars get their subsequent fellowship amount credited per month in a timely manner. In contrast, 15.4% of respondents indicated that the disbursement schedule is irregular for their scholars, as shown in **Figure 4.7.** These findings have to be taken with a pinch of salt, as the scholars were not asked directly to report their scholarship schedule or the time gap, but their supervisors were asked to report on their behalf to the best of their ability. This point is further emphasized as 15.4% of the researchers acknowledged that they are not aware of the schedule of scholarship amounts for their scholars.

4.4 Summary

As evident from this chapter, the respondents have flagged several issues related to the funding of R&D projects. The issue related to funding is threefold for R&D: first, there is a need to enhance the availability of government funding, which currently provides only partial support to researchers and often does not fully meet the financial requirements of R&D activities. Second, there is the issue of scarce investments by industry and private companies for R&D projects, which are surprisingly not even preferred by half of the respondents due to their insistence on quick market-ready solutions and a lack of proper IPR arrangements among the researchers and the industrial or private partners. Third, there is an urgent need to enhance the scholarship provided to research scholars to enhance their research productivity and attract competent research scholars for R&D.


Innovation
Project Management
Portfolio Management
IP Management
R&D Strategy
R&D Operations
Sourcing
Regulatory & Compliance
Talent Managment

CHAPTER-5

Regulatory Framework & Administrative Process

This chapter of the report covers the major issues faced by respondents due to complexity in regulatory frameworks and administrative processes associated with doing R&D in the country. It is divided into three subsections — first section discusses the delays in an average project cycle as admitted by the respondents and the challenges associated with such delays; the second section focuses on the ability of the respondents to secure government funding and any perceived challenges they associate with it, and the final section focuses on the problems and challenges faced by the respondents at their institute level.

5.1 Delays in the Project Cycle

In the survey, 60% of the respondents felt that lengthy evaluation had a significant impact on their ability to get R&D funding. This fact can be further explained by looking at the average time taken to complete all the steps in a typical project cycle, which starts with the preparation of a grant proposal and submission, followed by a wait for getting a decision from the funding agency. If accepted, the researchers then are given a sanction order which details out the amount which would be sanctioned to the project and the deliverables to be expected from them. However, in most of the cases, sanctioning of the project does not mean an instantaneous transfer of the project amount, it takes some time for the funding agencies to disburse the sanctioned amount to the researchers' institution. As there is a lag between the time when a project is sanctioned and the time when actual project money gets disbursed to the researchers, their window for spending becomes typically less than a year, and at the end of the financial year the disbursed amount goes back to the funding agency and the researchers' have to complete some administrative requirements to regain that amount. Finally, after the completion of a project, most of the researchers again have to complete a few administrative requirements to actually close the project and get the remaining amount of the project.

As can be seen from **Figure 5.1**, while an average respondent takes just around 2 months to prepare a grant proposal, on average they have to wait for around 7 months to have a final decision on the approval or rejection of their projects with the maximum time in some cases going for as long as 15 months. The sanctioning of the project then takes another 6 months on average stretching to 24 months for some

respondents. The disbursement of the sanctioned amount then takes additional 5 months and most of the respondents stated that this leaves them with around 7 months on average to spend the disbursed amount for project related activities which then gets lapsed and takes another 4 months on average to come back in their accounts for utilization. Additionally, the respondents stated that it takes around 7 months on average to close their project and receive the complete funding after they complete all the objectives of their projects and submit the requisite documents, which is sometimes even more than 2 years in some extreme cases. These delays remained consistent for respondents regardless of differences in their personal and professional background, indicating that the delays in the administrative processes are pervasive for all respondents.

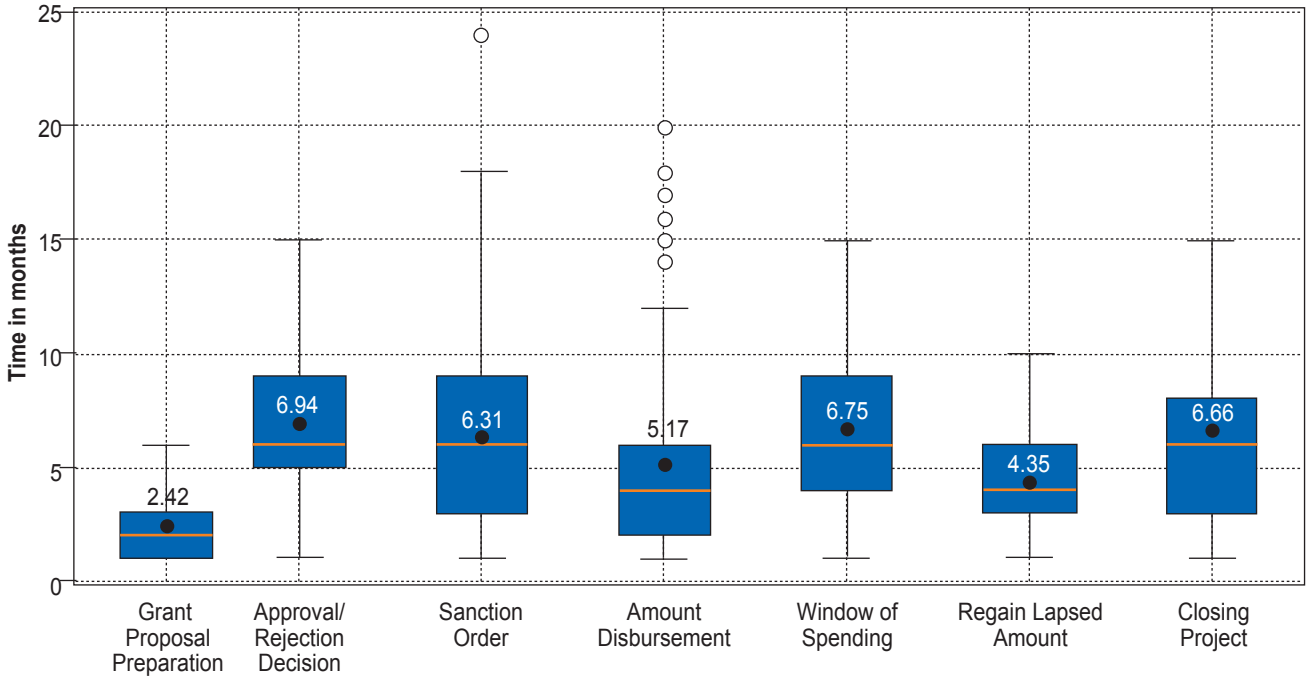
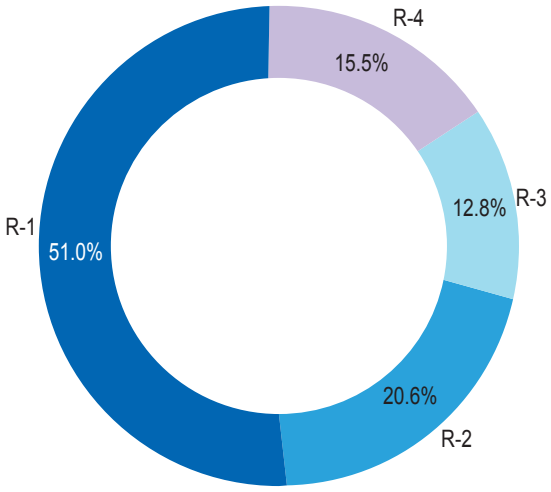


Figure 5.1 Average Project Cycle for Respondents

One of the major impacts of these delays is reflected in the inability of 39.9% respondents to spend the disbursed amount within the year, with 51% of the respondents attributing this to delay in getting the sanctioned amount, distantly followed by internal administrative reasons (20.6%) as shown in **Figure 5.2.**

These delays become especially challenging in the current model of having a typical project cycle varying from 3 to 5 years, with annual disbursement of amount based on completion of some administrative processes and an annual review of the projects. This effectively breaks the projects into annual projects regardless of their sanctioned duration, which increases the administrative load associated with the projects for the researchers. With the government's focus on innovation and becoming a leader in emerging areas like hydrogen fuel, deep technologies, Artificial Intelligence, etc. it is important to fund projects with longer cycles. This was also supported by the researchers themselves as 78.8% of the respondents preferred that the government should fund projects for a duration longer than 5 years.

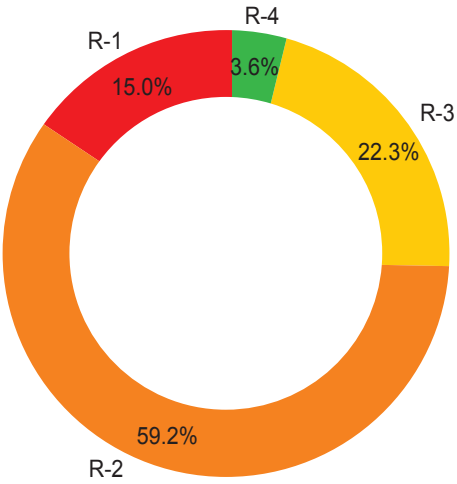


R-1 = Delay in releasing amount, making the window of spending very short,
R-2 = Due to internal administrative process, R-3 = Due to difficulties in
procuring equipment for conducting R&D, R-4 = Others

Figure 5.2 Reasons for the inability of spending allocated funds within a year

5.2 Challenges related to External Administrative Processes

It is important to understand how the respondents perceive the process of securing government funding and what are the factors which can be improved for better reach of funds to researchers. This section explores the perception of respondents about the process of securing extramural funding and the factors which impact their ability to secure those funds to identify the most pressing issues for the respondents. When requested to describe the process of securing EMF (Extramural Funding) in the country, 15% of the respondents agreed that it is rarely accessible, followed by 59.2% of the respondents admitting that the process "involves considerable effort and is highly competitive", with only 3.6% of the respondents characterising the process as "accessible with minimal barriers", as can be seen in **Figure 5.3**. This responding pattern has remained consistent across the respondents regardless of the differences in the personal and professional characteristics of the respondents, highlighting the facts that the process of securing EMF is consistently seen as difficult for most of the respondents.



R-1 = Rarely accessible, R-2 = Involves considerable effort and is highly competitive,
R-3 = Can be secured with effort, R-4 = Accessible with minimal barriers

Figure 5.3 Description of the process of securing EMF

One of the reasons for these challenges could be a lack of clarity for proposal submission as highlighted in **Figure 5.4**. 40% of all respondents stated that the submission of grant proposals is difficult for them due to the availability of multiple online and offline avenues for submission to different funding agencies. Additionally, 38.5% of the respondents admitted that they face technical issues including but not limited to lagging, crash outs, and so on during online submission, while 25% of the respondents reported that they do not get confirmation of acceptance in case of offline applications. Only 25.4% of the respondents stated that they do not face any issues while submitting their grant proposal.

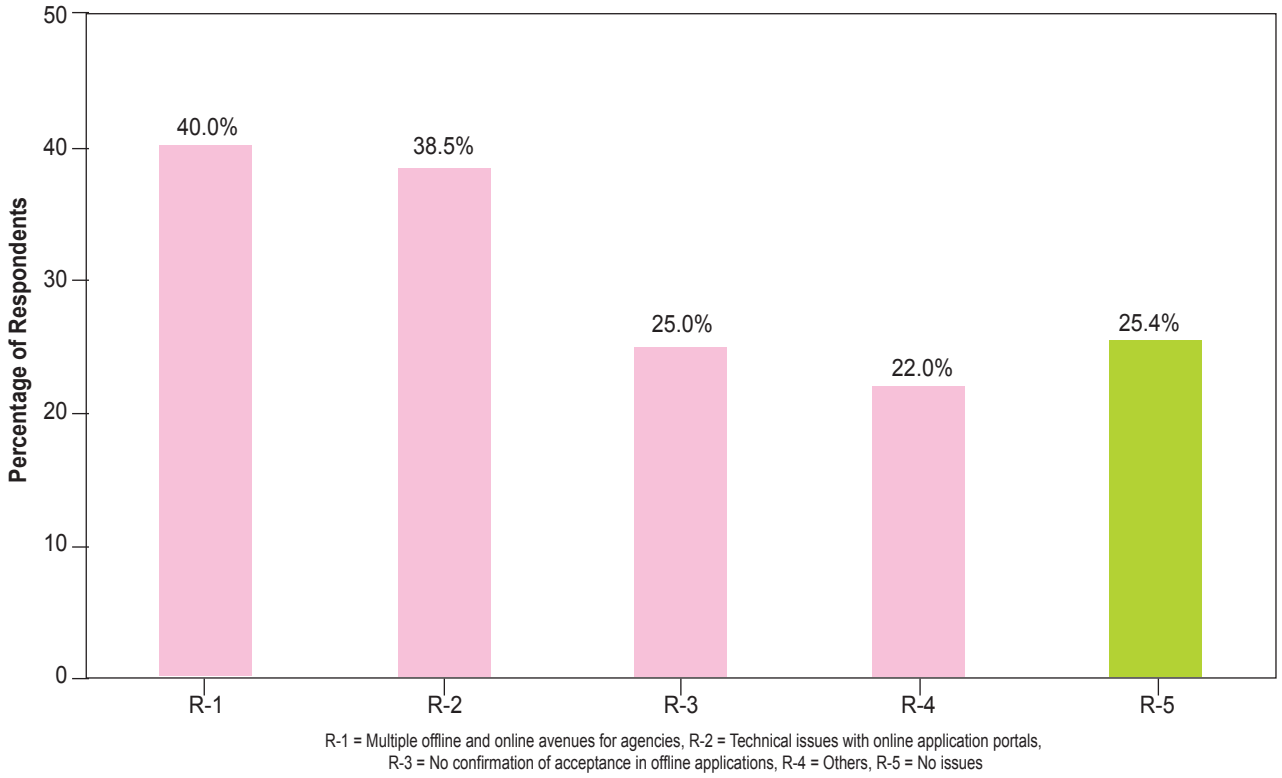


Figure 5.4 Challenges faced during submission of grant proposal

In order to identify the other factors which could have an adverse impact on researchers' ability to secure EMF funding, the respondents were asked to rate the impact of certain factors in affecting their ability to secure R&D funding. As can be seen from **Figure 5.5**, 60% of the respondents felt that lengthy evaluations by funding agencies had a significant impact as discussed in depth in the first section of this chapter. Additionally, 54%, 53% and 50% of the respondents felt that limited funding for high risk or innovative projects, low transparency in selection process and preference for established researchers or institutions respectively are also significantly impacting their ability to secure R&D funding from funding agencies. Interestingly, there were no such perceptions about strict eligibility criteria having a significant impact, with respondents almost equally divided about considering this factor as having no impact (21%), minor impact (29%), moderate impact (28%) and significant impact (22%) on their ability to secure R&D funding. This indicates that most of the respondents do not have any issues with having strict eligibility criteria as long as the process of selection is transparent and objective with minimal biases.

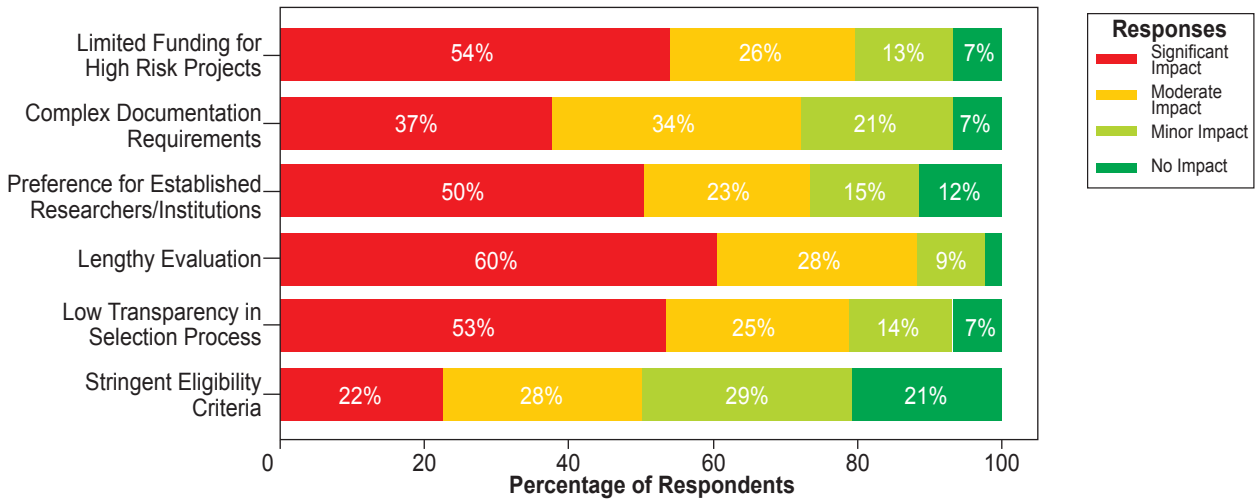


Figure 5.5 Impact of Different Factors in Securing R&D Funding in India

A test of independence was also done for any differences in perceptions of these transparency issues associated with the demographic and professional characteristics of the respondents. After performing the chi-square tests on these responses, it was observed that in the case of impact of transparency, the responses of the respondents were statistically different based on their age group and designation. As designation and age group had a strong correlation, only the variations with designation are presented in this report. Assistant Professors or Scientist B/C/D were more likely to consider low transparency in the selection process as a factor which had a significant impact as compared to Associate Professors/Scientist E/F and Professors/Scientist G/H as shown in **Figure 5.6**. Similar trends were observed for respondents' perception about funding agencies having a preference for established researchers or institutions as a major hindrance in securing EMF (**Figure 5.7**), while such trends were not observed for their perception about risk aversion tendencies of funding agencies.

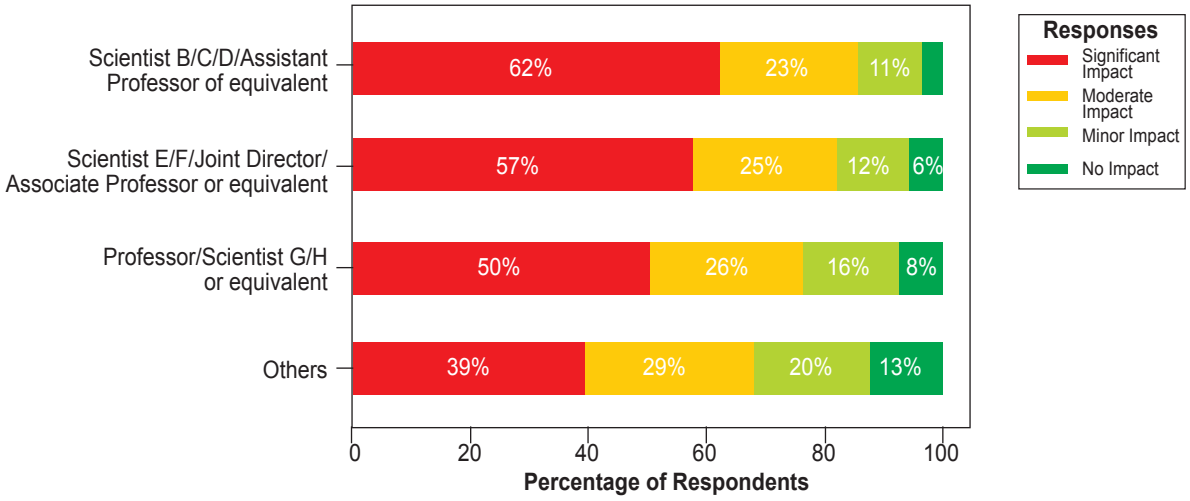


Figure 5.6 Impact of 'low transparency in selection process' on ability to secure R&D funding across designation

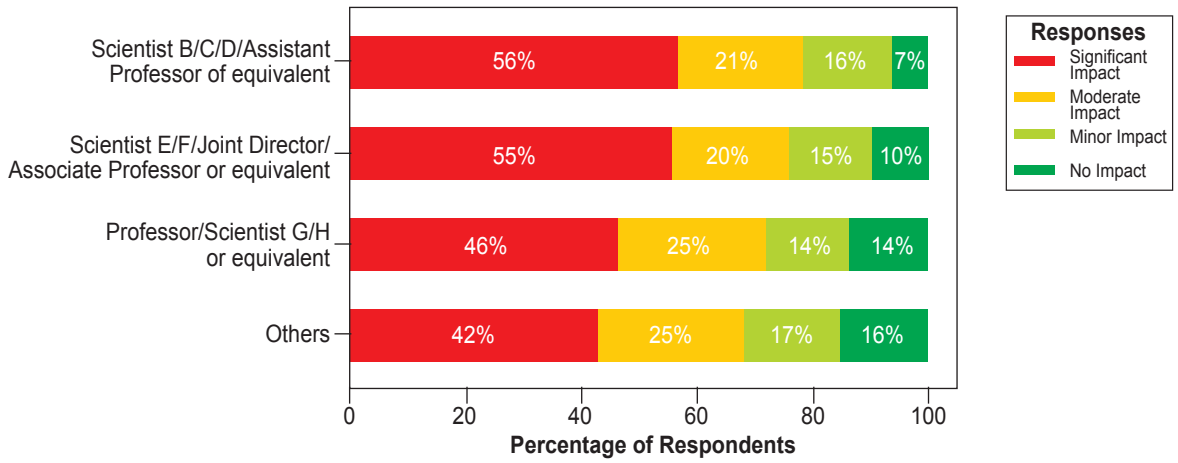


Figure 5.7 Impact of 'preference for established researchers or institutions' on ability to secure R&D funding across designation

These issues related to transparency can be easily resolved by sharing feedback of the reviewers with the respondents, as 41.1% of the respondents admitted that feedback was shared only sometimes during the review process, with 34% admitting that feedback and suggestions were never shared with them **(Figure 5.8)**. The sharing of reviewers' feedback would not only help in improving the perception of the researchers about the funding agencies but would also provide the early career researchers an avenue to improve their proposals for future research projects.

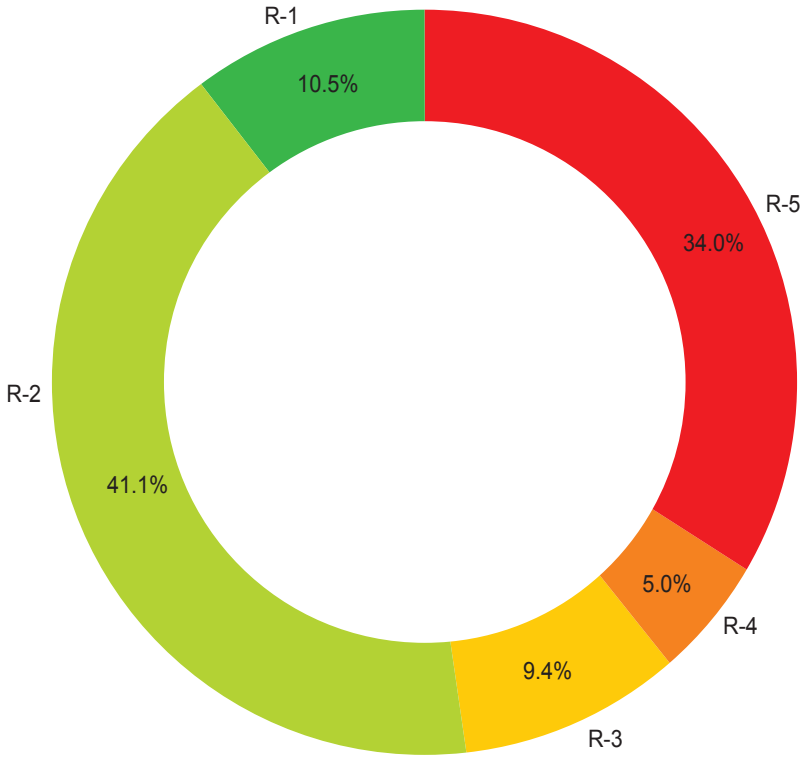


Figure 5.8 Level of sharing of feedback and comments on proposal from reviewers

5.3 Challenges related to Internal Administrative Processes

Apart from dealing with the regulatory and administrative procedures associated with external funding agencies, a researcher also has to deal with the internal administrative framework within their institution. When asked about the competency of the administrative staff at their institution to deal with the funding agencies, 47% of the respondents stated that the staff at their institution was competent enough to handle their administrative duties. Only 30% of the respondents agreed to the fact that the administrative staff at their institute does not have the expertise to carry out their role effectively, with 23% not aware about the abilities of their administrative staff. This pattern held true for respondents despite their personal and professional differences, indicating a general trend of fairly competitive administrative staff at the institutional level.

This competency of institutional administrative staff is also reflected in the moderate ratings given by most of the respondents (ranging from 37% to 41%) to the different aspects associated with grant utilisation at the level of their institution. These aspects include approval of expenditure, recruitment, audit compliance, preparation of Utilization Certificate (UC) and communication regarding the UC with funding agencies. This pattern also held true despite a difference in the type of institution to which the respondents belonged to, indicating a general sense of satisfaction in respondents with the way administrative staff work at their institutions.

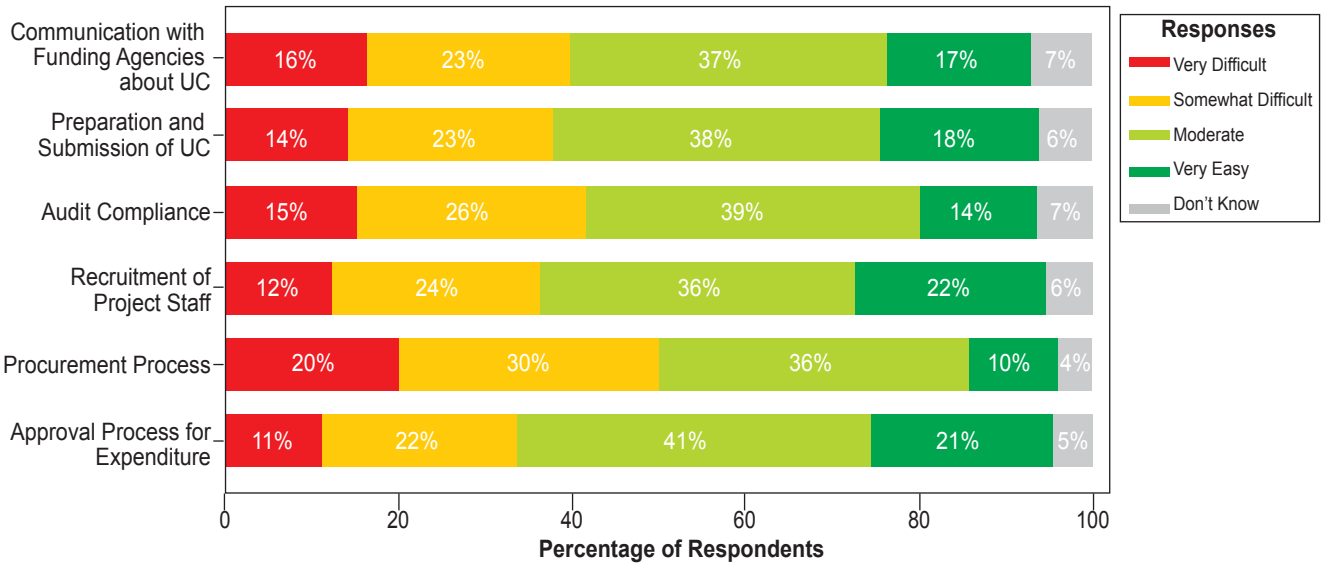


Figure 5.9 Rating of Grant Utilisation at Institutional Level

Another aspect which is important for R&D is the flexibility given to researchers to spend their allocated funding, which gives researchers the freedom to save money from one head of the project to spend it on other heads as long as it is within the overall allocated budget of the project. When asked about describing the process of grant reappropriation, 35.4% of the respondents admitted that the process is slow and unclear and 27.5% admitted that reappropriation is allowed but involves documentation and time. Meanwhile, 20.2% admitted that the process of reappropriation of grants is actively discouraged in their institutions.

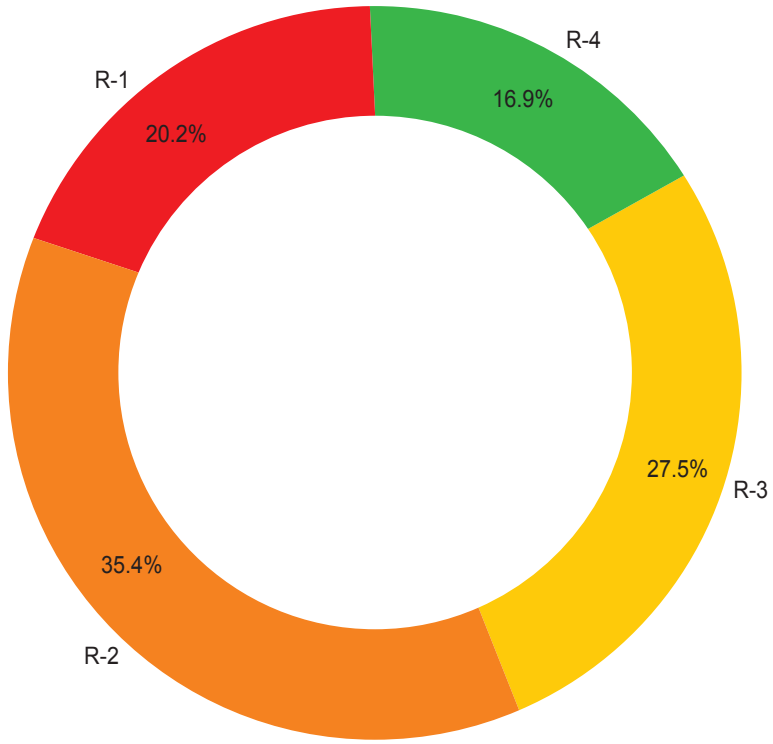


Figure 5.10 Description of the Process of Grant Reappropriation

5.4 Summary

The regulatory and administrative processes associated with R&D in the country are complex and create delays of around 5 to 7 months at each step of the project cycle, which are mostly reflected in the inability of the researchers to spend the allocated amount within the project duration. Some respondents highlighted that the delays and the breaking of project funding for each year makes it very challenging for the researchers to purchase expensive research equipment without financial support from their institutes. Moreover, the respondents have admitted that despite their institution doing fairly well in supporting them with administrative processes they are unable to communicate with funding agencies regarding the ever-changing administrative requirements which impede their research further. Finally, most of the researchers perceive that the current project allocation has the potential to be more transparent and are currently more favourable to more established researchers with an aversion to riskier and innovative ideas in research.

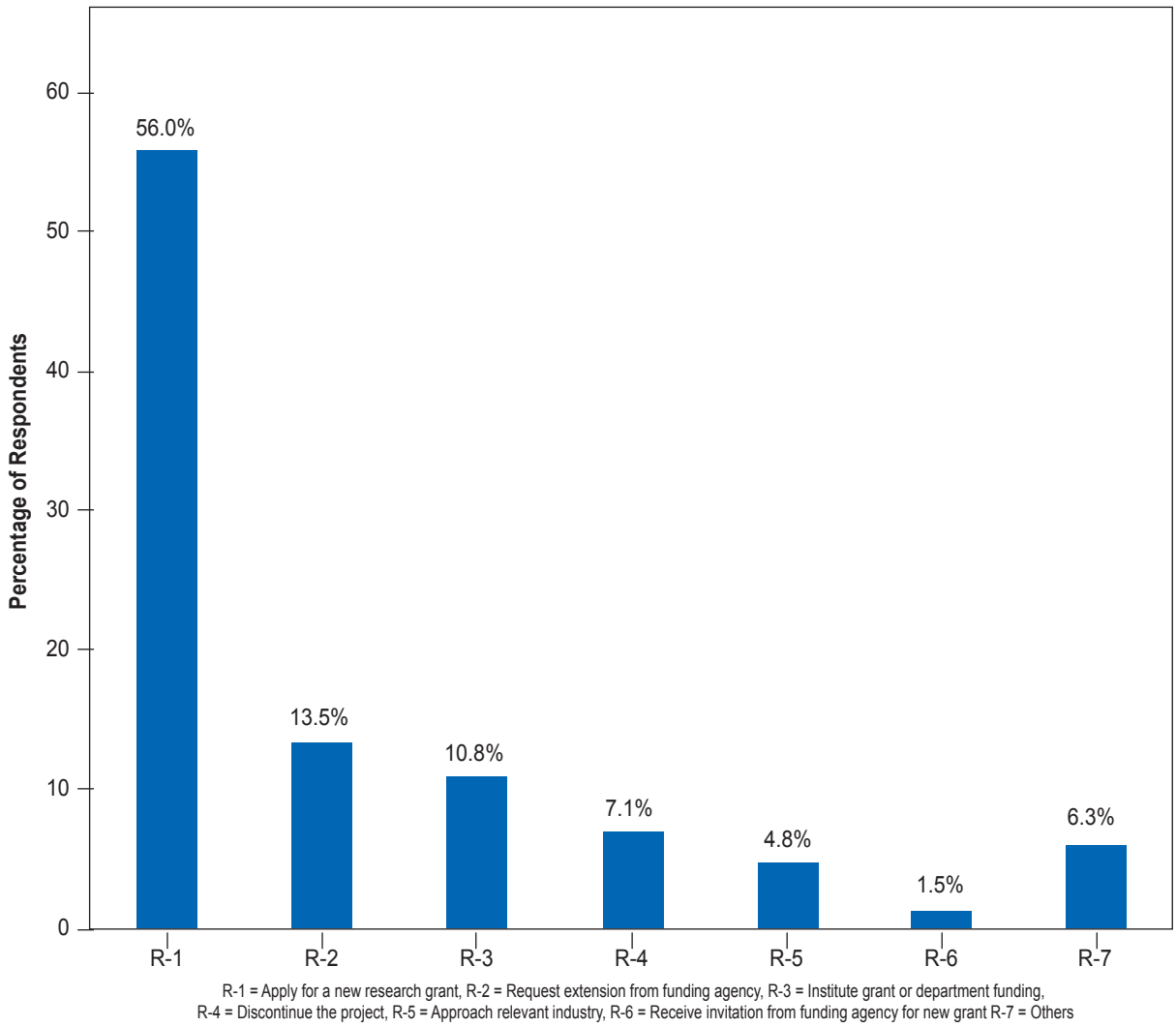


Figure 5.11 Different Pathways adopted by respondents to continue an on-going R&D project

Ultimately these issues are exacerbated by the fact that 56% of the respondents have admitted to applying for a new research grant to continue an on-going project, instead of requesting from their funding agency for an extension (13.5%) or even approach the industry for targeted technology transfer projects (4.8%) as shown in **Figure 5.11**. This indicates that instead of continuing projects based on their previous outcomes, the researchers have to start anew and deal with the same challenges and complexities for furthering their existing research.

CHAPTER-6

Institute Level Research Environment

Researchers require a conducive and supportive institutional environment to effectively carry out research and development (R&D) activities. This chapter examines the institutional support available to researchers across six key aspects that shape their ability to conduct R&D effectively. The first section examines researcher's *access to institutional research infrastructure and equipment*, followed by a second section that addresses the processes for *procurement, maintenance, and disposal*. The third section explores the various pathways of *direct support provided to researchers to undertake R&D*. This includes evaluating the institution's effectiveness in mobilizing funds, recruiting suitable personnel, conducting public outreach to communicate research, providing incentives to encourage R&D, and facilitating collaborative opportunities. The fourth section focuses on the availability of *dedicated time for researchers to conduct research*. The fifth section assesses researcher's ability to identify and engage competent scholars, fellows, and research assistants for their projects; while also examining the reasons they may face challenges in doing so. The final section considers the support available to researchers in the event of a *career break*.

6.1 Research Facilities

This section provides a comprehensive overview of the availability of non-financial resources essential for research. For a better understanding, the resources are divided into three categories based on their primary role in supporting the researchers. The first category - Physical and digital knowledge resources-includes journals, books, and other printed materials that provide foundational information, while e-resources offer the same content electronically for easier access and wider reach. Additionally, initiatives like One Nation One Subscription (ONOS) extend national-level access to key subscriptions across institutions.

The second category involves access to research equipment or other tools which help researchers in undertaking R&D. This includes, availability and access to specialised research equipment, usually available on shared basis within the Institute at a Central Instrumentation Facility (CIF); Central store for common research consumables to reduce the administrative burden on researchers for purchasing repeatedly used consumables; Farms, Animal Houses or other areas for researchers of specific disciplines like agriculture or Life Sciences; Specialized paid software like MATLAB, COMSOL, ArcGIS etc., and fabrication workshops or similar support services that help reduce repetitive and specialised technical work for researchers.

The third category includes the availability of services that facilitate the commercialization of research outcomes, such as Patenting (termed as Intellectual Property Facilitation Centre (IPF), Technology transfer to Industrial or Private partners (termed as Technology Transfer Centres (TTC) and Incubation Centre or accelerators for startups (termed as IC).

6.1.1 Access to Knowledge Resources

A large majority of respondents reported access to knowledge resources at their institutions, including libraries (86%) and e-resources (88%), while around 67% indicated access to the One Nation One Subscription (ONOS) scheme, as shown in **Figure 6.1**. Running a test of independence between these responses and the type of institutions from which the respondents belong gives an association between the two parameters. The breakup of each of these knowledge sources by the type of institutions to which respondents is discussed further.

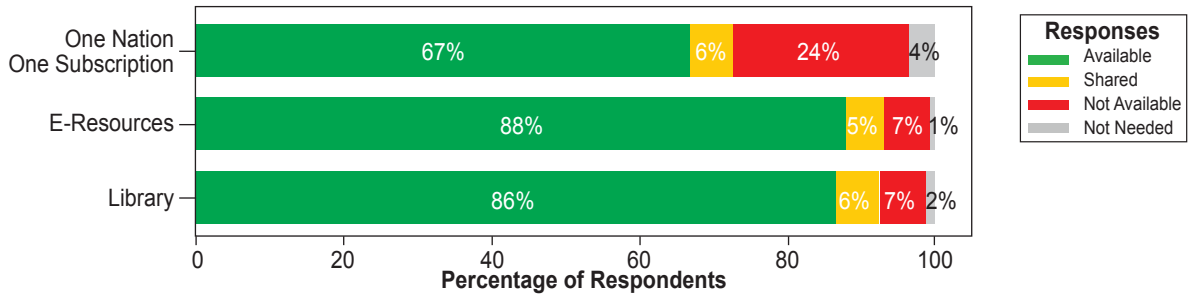


Figure 6.1 Access to Knowledge Resources across Institution

As shown in **Figure 6.2**, 93% and 89% of respondents from centrally funded universities and research laboratories, respectively, reported having access to e-resources. In comparison, state universities have scope to enhance access, as only 71% of respondents from these institutions indicated the availability of e-resources.

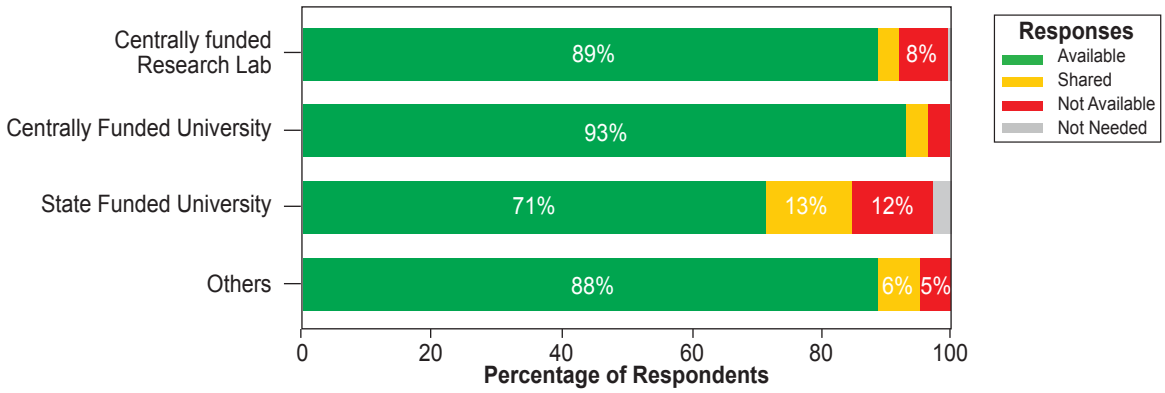


Figure 6.2 Availability of E-Resources across Institution

Similarly, in case of access to Physical libraries, 87% and 89% of the respondents belonging to the centrally funded university and research laboratory respectively, have stated that they have a physical library in their institution **(Figure 6.3)**. In comparison, state universities have relatively lower access, with only 77% of respondents from these institutions indicating the presence of a library.

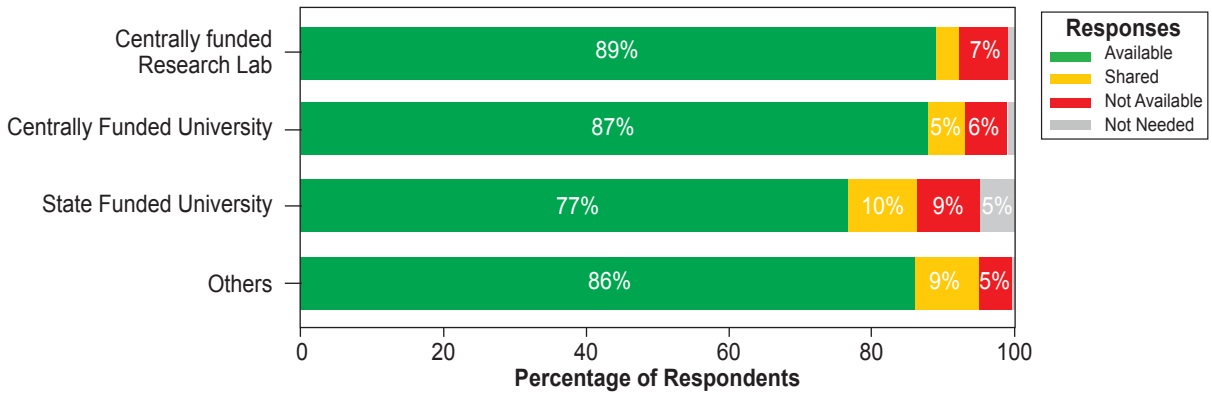


Figure 6.3 Availability of Library across Institutions

The One Nation One Subscription (ONOS) scheme was launched, on 1 January 2025, with the objective of enhancing access to research journals for government-funded universities and R&D laboratories.[34] As can be seen from **Figure 6.4**, the spread of ONOS has been widespread despite having completed only a year, with 75%, 68% and 57% of the respondents belonging to centrally funded universities, centrally funded laboratories and state funded universities respectively, having access to ONOS. It is expected that access will improve significantly with the implementation of phases two and three of the ONOS scheme.

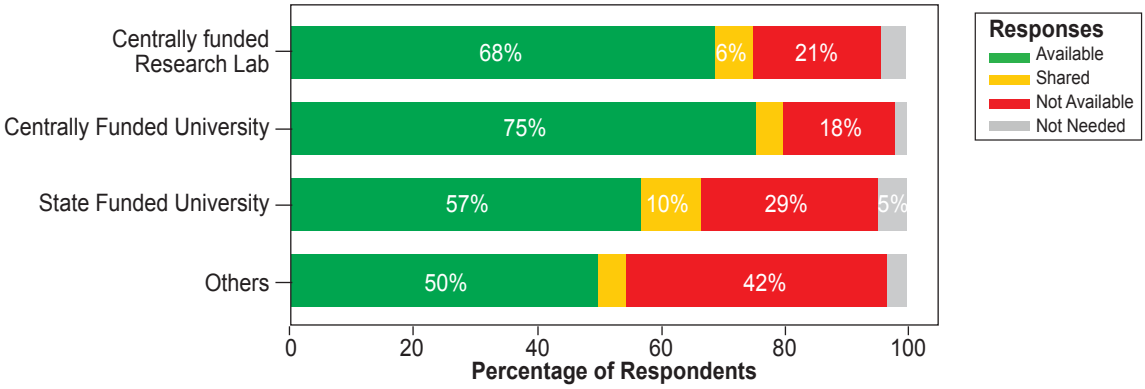


Figure 6.4 Availability of One Nation One Subscription (ONOS) across Institution

6.1.2 Access to Research Equipment

The second category in the institutional environment looks at the access to research equipment or tools that enable the researchers to conduct experiments, collect and analyse data, analyse them and facilitate other aspects of the R&D lifecycle.

In this context, the Inter-institutional sharing of resources remains limited. The reported access to shared resources such as central stores (2%), farm (5%), paid software (8%), instrumentation facilities (8%) and workshops (9%) is very low (**Figure 6.5**).

34 For more information, please refer to this link: https://www.onos.gov.in/

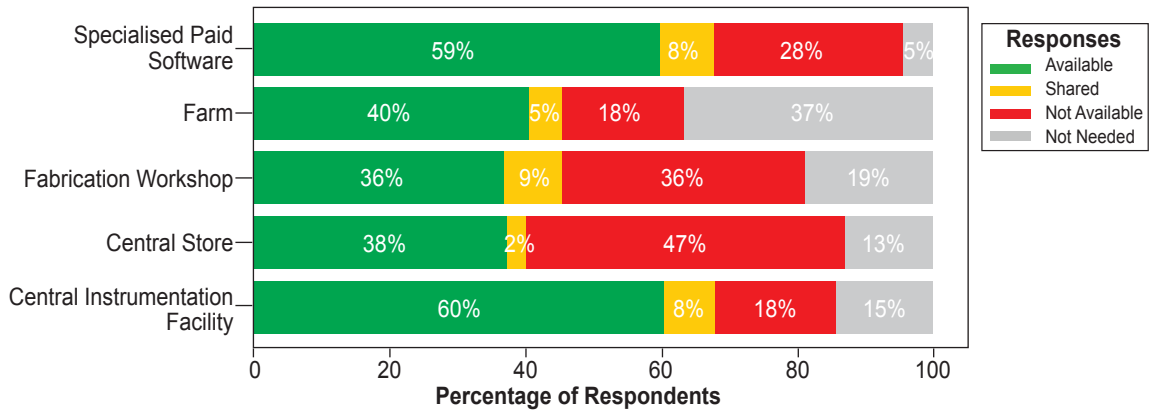


Figure 6.5 Access to Research Equipment

Upon further exploration, the availability of these facilities across different types of institutions has been identified and reported in this section. Overall, the availability of a Central Instrumentation Facility (CIF) for specialised research equipment stands at 60%, while 18% of respondents reported its absence despite the requirement, and only 8% indicated access through sharing with other institutions. The pattern, however, varies by institution type: centrally funded universities and research laboratories report availability at approximately 66% and 62%, respectively, whereas CIF availability in state universities is significantly lower at around 44% **(Figure 6.6)**. However, the rate of CIF sharing is higher among state universities at 15%, compared to around 5% in central institutions. This suggests that access to specialized research equipment could be improved through resource-sharing schemes, such as SRIMAN (Scientific Research Infrastructure Sharing, Maintenance, and Networks) introduced by the Department of Science & Technology (DST)[35].

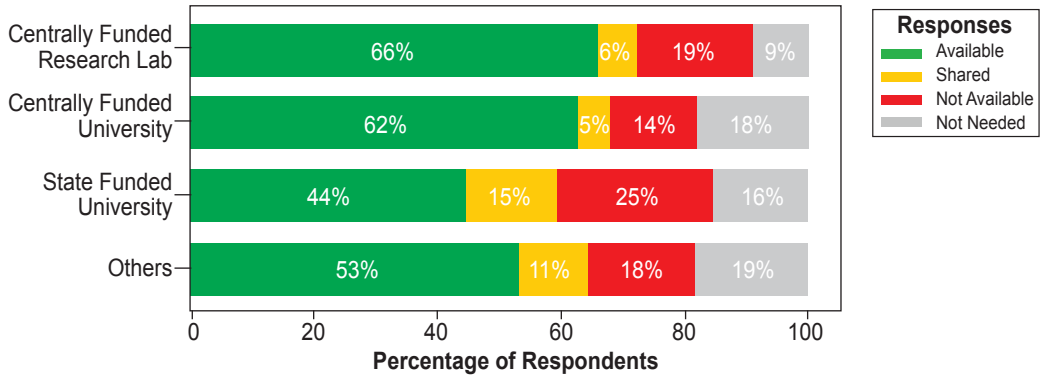


Figure 6.6 Availability of Central Instrumentation Facility (CIF) across Institution

The availability of a Central Store is notably lower than that of CIF, with only 38% of respondents reporting its presence, while 47% indicated that it is not available (**Figure 6.5**). These differences become more pronounced when analysed by the type of institution to which the respondents belong. The availability of a Central Store stands at 50% for respondents from centrally funded research laboratories or organisations, while it is significantly lower for universities, at 27% for centrally funded universities and 29% for state-

35 Department of Science & Technology. (2022, May 12). *Scientific Research Infrastructure Sharing Maintenance and Networks (SRIMAN) Guidelines 2022*. Government of India. https://dst.gov.in/sites/default/files/SRIMAN%20Guidelines%202022%20Book.pdf

funded universities (**Figure 6.6**). Although a higher proportion of respondents from centrally funded laboratories reported the availability of a Central Store, a significant share across all three institution types reported its non-availability. This is partly because some respondents from central and state universities indicated that a Central Store is not required for their disciplines.

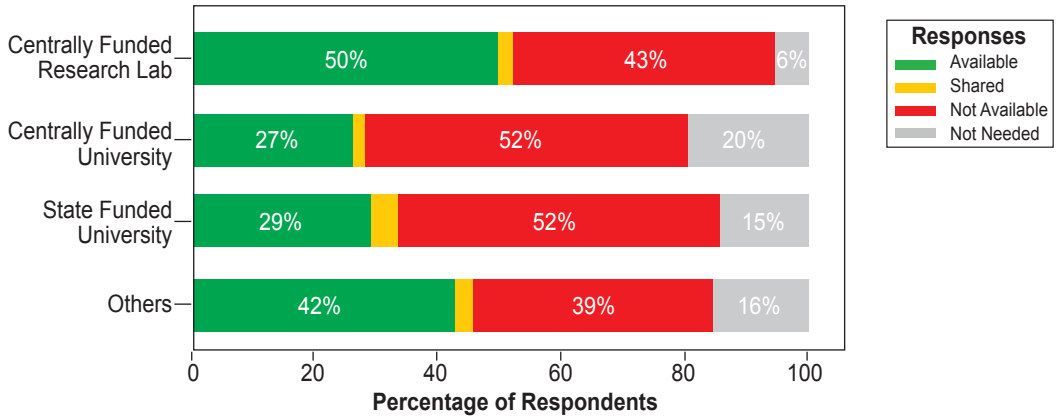


Figure 6.7 Availability of Central Store across Institution

In addition, a lot of researchers require specialized paid software to conduct their experiments and/ or to analyse their results from the experiments. The absence of these software can hinder the researchers in applying the latest methodologies or analysis techniques in their R&D projects, raising questions about their competitiveness globally.

The availability of specialised software is higher than that of other research support facilities such as Central Stores, with 59% of all respondents reporting access, while 27% indicated that such software is not available **(Figure 6.5)**. However, the trend of comparatively lower availability in state universities persists, with only 39% of respondents from state universities reporting access to specialised software, compared to 62% and 63% of respondents from centrally funded universities and centrally funded laboratories, respectively **(Figure 6.6).** The non-availability of specialised software is reported at 44% in state universities, compared to 26% in both centrally funded universities and research laboratories. Moreover, some respondents highlighted that *"even if … institutions have a subscription to a specialised software, there are limited licences which create scarcity."*

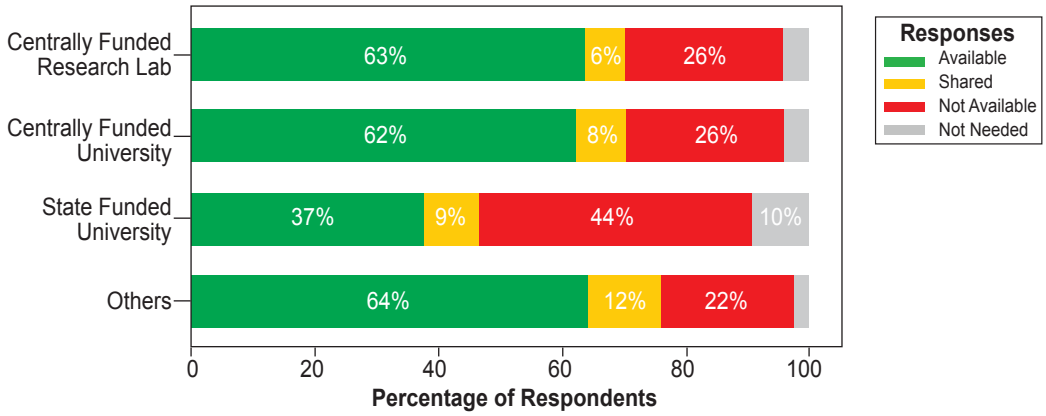


Figure 6.8 Availability of Software across Institution

6.1.3 Access to Commercialisation Support

As mentioned earlier, the third group comprises the availability of supporting services and facilities that enable researchers to translate their work from the laboratory to the market. These include support for patenting through Intellectual Property Facilitation Centres (IPF), technology transfer to industry or private partners through Technology Transfer Centres (TTC), and incubation centres or accelerators (IC) for startups.

Overall, the availability of these services is lower than that of knowledge resources and research equipment, with the availability of IPF, TTC, and IC reported at 60%, 42%, and 48%, respectively **(Figure 6.9)**.

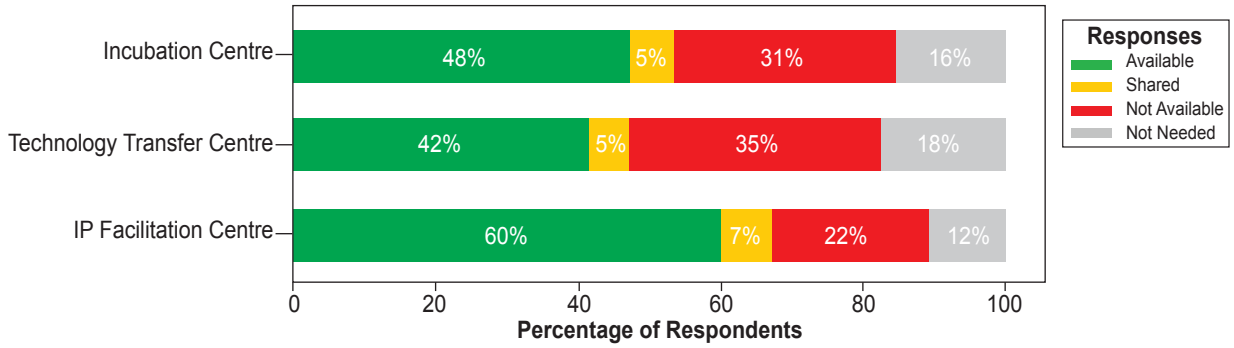


Figure 6.9 Access to Commercialisation Support

The availability of an Intellectual Property Facilitation Centre (IPF) is essential to ensure that researchers are aware of their intellectual property rights and receive adequate support in filing patents for their inventions. Around 60% of respondents reported the availability of an IPF at their institution, while 22% indicated that their institution does not have an IPF. Additionally, 12% of respondents stated that such a facility is not required for their discipline **(Figure 6.9)**.

Continuing the trend observed in the previous categories, the availability of IPF also varies by institution type. Around 60% of respondents from centrally funded laboratories and universities reported the presence of an IPF, compared to 45% of respondents from state-funded universities **(Figure 6.10).** In contrast, non-availability is highest in state-funded universities at 36%, followed by centrally funded laboratories and centrally funded universities at 21% and 19%, respectively.

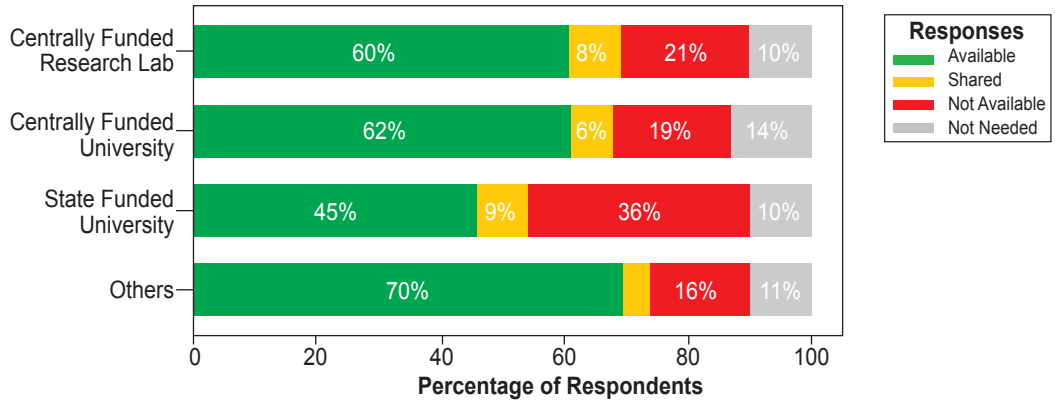


Figure 6.10 Availability of Intellectual Property Rights Facility (IPF) across Institution

The presence of a Technology Transfer Centre (TTC) facilitates the transfer of research outputs and inventions to industry partners and also provides a platform for direct engagement between researchers and industrial stakeholders to address challenges.

Technology Transfer Centres (TTCs) are reported to be available for 42% of respondents, while 35% indicated their non-availability and 18% stated that such facilities are not required for their discipline **(Figure 6.9)**.

An analysis by institution type shows a clear pattern in **Figure 6.11**. While the availability of TTCs is highest among centrally funded laboratories at 45%, a substantial 38% of respondents from these laboratories also reported their non-availability. In centrally funded universities, TTCs are available to 39% of respondents, with 33% indicating non-availability and 24% stating that such centres are not required for their discipline. In contrast, state universities report the lowest availability of TTCs at 28%, with as many as 45% of respondents indicating that their institution does not have a TTC.

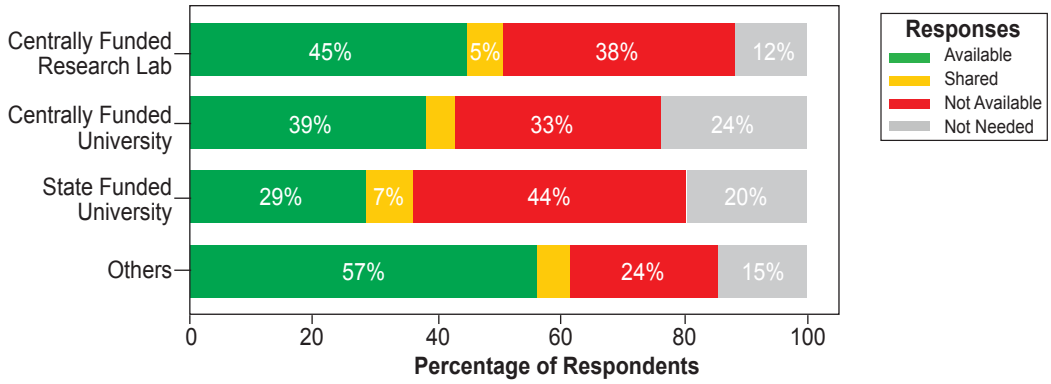


Figure 6.11 Availability of Technology Transfer Centre (TTC) across Institution

The availability of Incubation Centres (IC) supports researchers in translating their innovations into marketable products and services, including through the creation of startups. Overall, 48% of respondents reported the presence of an IC at their institution, while 31% indicated its non-availability and 16% stated that such facilities are not required for their discipline **(Figure 6.9).**

In contrast to the availability of TTCs and IPFs, only 34% of respondents from centrally funded laboratories reported the presence of Incubation Centres (ICs) at their institution, compared to 48% and 57% of respondents from state-funded universities and centrally funded universities, respectively **(Figure 6.12)**. Similarly, 45% of respondents from centrally funded laboratories indicated the non-availability of ICs, as against 28% and 20% for state-funded universities and centrally funded universities, respectively.

This suggests that, despite having relatively stronger R&D infrastructure, researchers in central laboratories lack adequate institutional support for translating their research into startups. This concern was also highlighted by several representatives from central laboratories during the regional consultative meetings too.

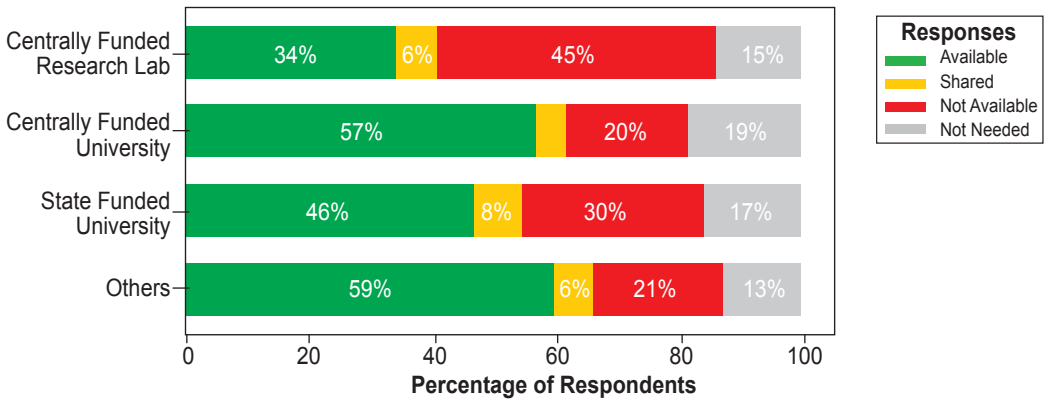


Figure 6.12 Availability of Incubation Centres (IC) across Institution

6.2 Procurement, Maintenance and Disposal of the Research Equipment

Apart from the availability of research equipment, the administrative procedures related to its procurement, maintenance, and disposal also play a crucial role in facilitating or constraining R&D activities. This section presents respondent's overall assessment of these procedures and examines the variations across different types of institutions to which they belong.

6.2.1 Process of Procurement

As evident from **Figure 6.13**, there is high reliance on Government e-Marketplace (GeM) (76.9%) and conventional Open/Limited Tendering (54.8%), while relatively lower adoption of Rate Contracts (30.6%) and Two-Stage Bidding (26.5%) is observed. Looking at the delays associated with procurement, it was observed that there is a delay of around 6 months to a year for most of the respondents as shown in **Figure 6.14**. About 12.6% of respondents reported that procuring research equipment takes more than a year, while 39% indicated that it takes between 6 months and a year. Only 15.2% of respondents stated that procurement is completed within one to three months, and 33.1% reported a timeframe of 3 to 6 months. These delays persist regardless of the different procurement methods employed at their institutions.

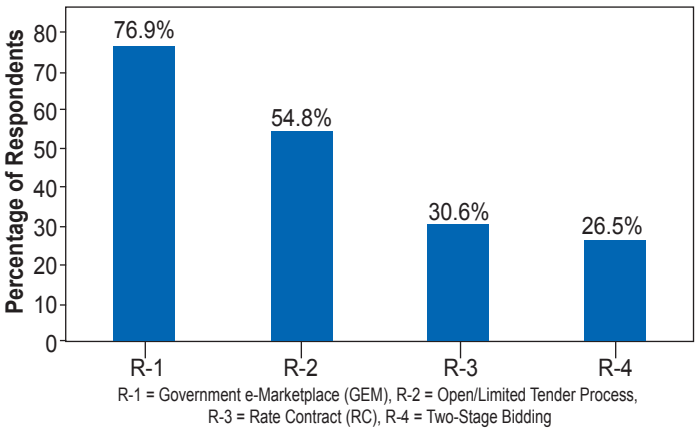


Figure 6.13 Mode of Procurement

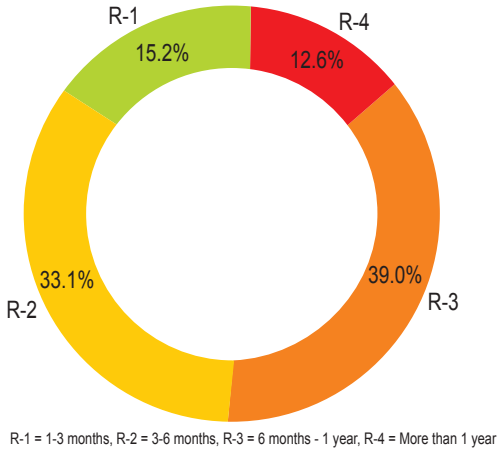


Figure 6.14 Average Timeline of Procurement

6.2.2 Operation and Maintenance of Research Equipment

Regular operation and maintenance of research equipment is essential to ensure high-quality R&D and to allow researchers to work with minimal obstacles. When respondents were asked to describe the maintenance process at their institution, 23.8% characterized it as having "minor delays but generally smooth." However, when aggregating all challenging responses, 56.3% of respondents reported issues: 16.3% described the process as ad hoc with minimal institutional support, 21.8% reported frequent delays, complex procedures, or lack of dedicated support, and 18.2% noted noticeable delays accompanied by moderate bureaucratic requirements **(Figure 6.15)**.

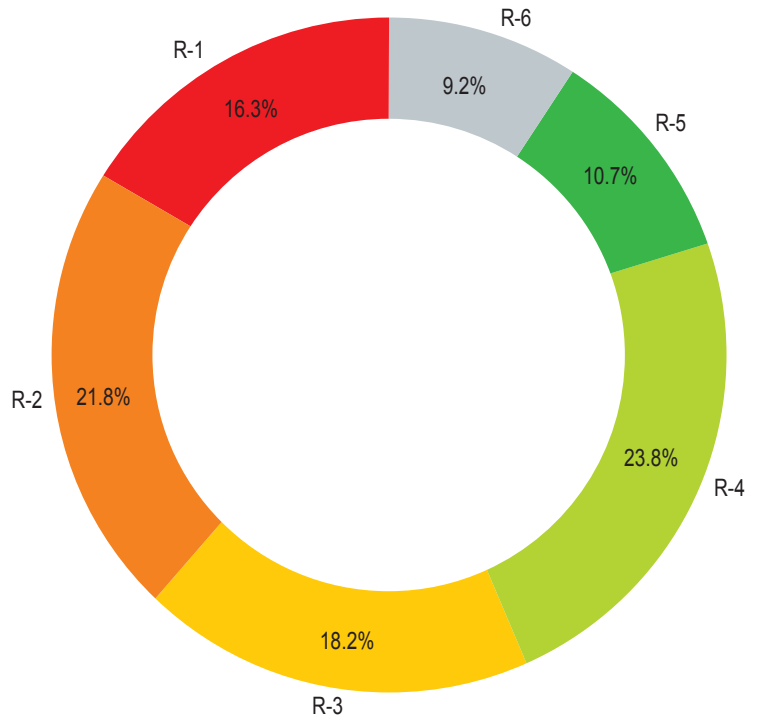


Figure 6.15 Description of Operation and Maintenance (O&M) Process

This characterization of operation and maintenance becomes statistically different for respondents based on the type of institution to which they belong. Majority (32%) of respondents from centrally funded laboratories have characterized the operation and maintenance process as a process with 'minor delays but generally smooth process', whereas only 19% and 17% of the respondents belonging to centrally funded university and state funded universities respectively have characterized the operation and maintenance process similarly as shown in **Figure 6.16**. In contrast, 24% of the respondents from both centrally funded universities and state funded universities have reported that maintenance is ad hoc, with minimal institutional support, which has been done by only 7% of the respondents from centrally funded laboratories.

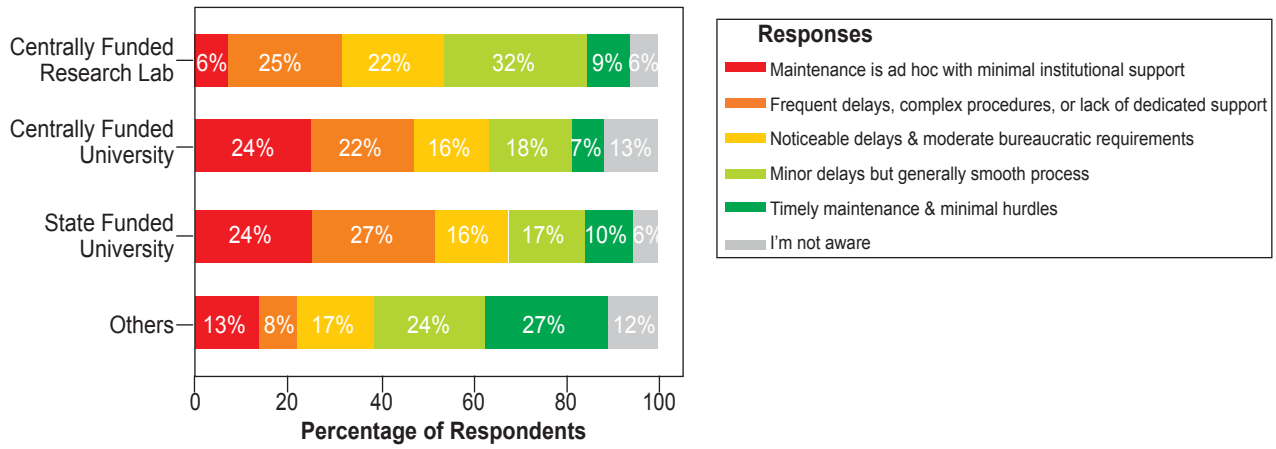


Figure 6.16 Description of Operation and Maintenance (O&M) process across Institution

6.2.3 Disposal of Outdated Research Equipment

The timely disposal of obsolete and outdated research equipment also ensures that there is room to acquire the research equipment with latest specifications and the researchers are able to do competitive R&D. While only 5% of the respondents have reported that their institution does not have a clear disposal policy or process, 26.7% of the respondents have admitted that disposal is slow due to lack of clarity or administrative bottlenecks in their institution and 20.8% of the respondents have reported that guidelines exist but their implementation is inconsistent. Only, 13.8% of the respondents have stated that there are moderate delays and occasional procedural confusion and 18.9% respondents have reported that they have clear guidelines, minimal paperwork and quick approvals for disposal of research equipment as shown in **Figure 6.17**.

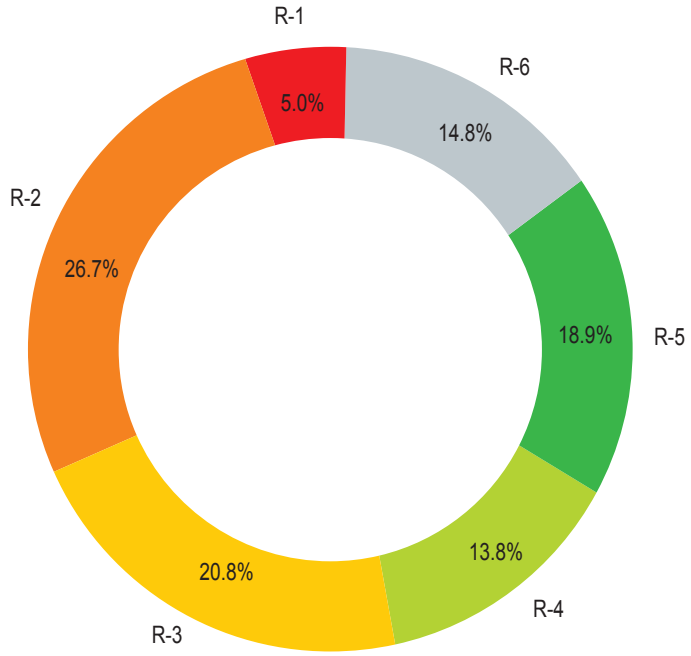


Figure 6.17 Description of the Process of Disposal of Outdated Equipment

In contrast to operation and maintenance, the responses for describing the disposal processes have remained fairly consistent for the respondents across the type of institutions to which they belong as shown in **Figure 6.18**. Respondents from centrally funded laboratories (29%), universities (27%) and state funded universities (26%) have reported that disposal is slow due to lack of clarity or administrative bottlenecks in their institution, while the presence of clear guidelines, minimal paperwork, and quick approvals holds true for 17%, 17% and 12% of the respondents belonging to the centrally funded laboratories, universities and state funded universities respectively.

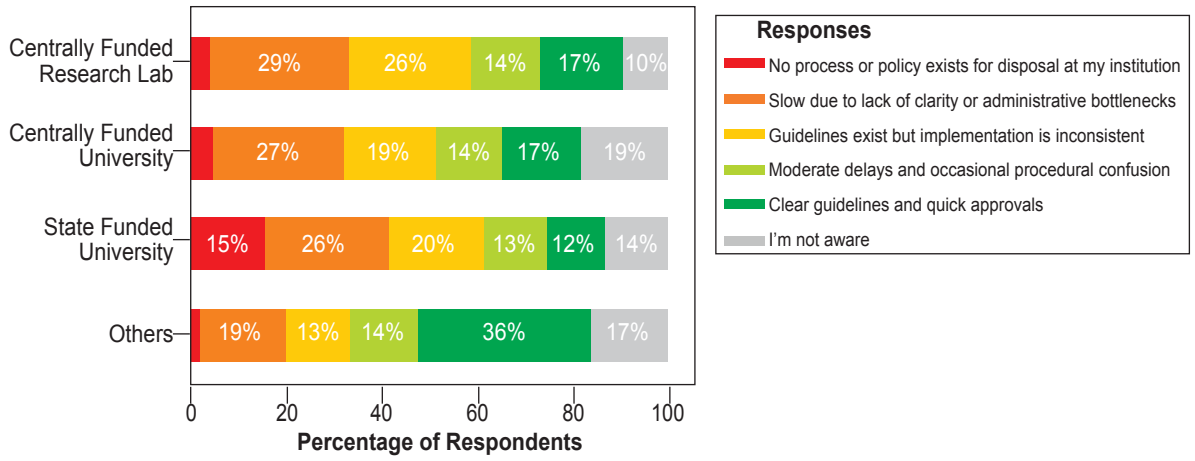


Figure 6.18 Disposal Process across Institution

6.3 Institutional Facilitation of Research and Development

This section examines the direct mechanisms through which institutions support researchers in carrying out their work. It assesses the extent to which institutions actively mobilize funds from external sources and provide seed funding, which is particularly crucial for early-career researchers at the initial stages of their academic journey. The section also evaluates institutional responsiveness in filling vacant positions in a timely manner to ensure that research activities are not disrupted. Additionally, it considers the efforts made by institutions to communicate research findings to the broader public, thereby enhancing outreach and societal engagement. Further, the section explores the availability of institutional-level R&D guidelines that offer clarity on administrative procedures and best practices, thereby assisting researchers in navigating procedural requirements effectively. It also reviews the incentives provided to encourage research activities and the facilitation mechanisms that promote collaboration among researchers within institutions.

Overall, the findings indicate that most respondents perceive their institutions as moderately active in supporting various R&D-related activities. However, an exception is observed in the area of seed funding, where a majority believe their institutions are not sufficiently active, as illustrated in **Figure 6.19**. The overall pattern of responses remains consistent across different types of institutions. A similar trend is observed for public outreach activities among all respondents, with the exception of seed funding provision, where variations in perception are more pronounced.

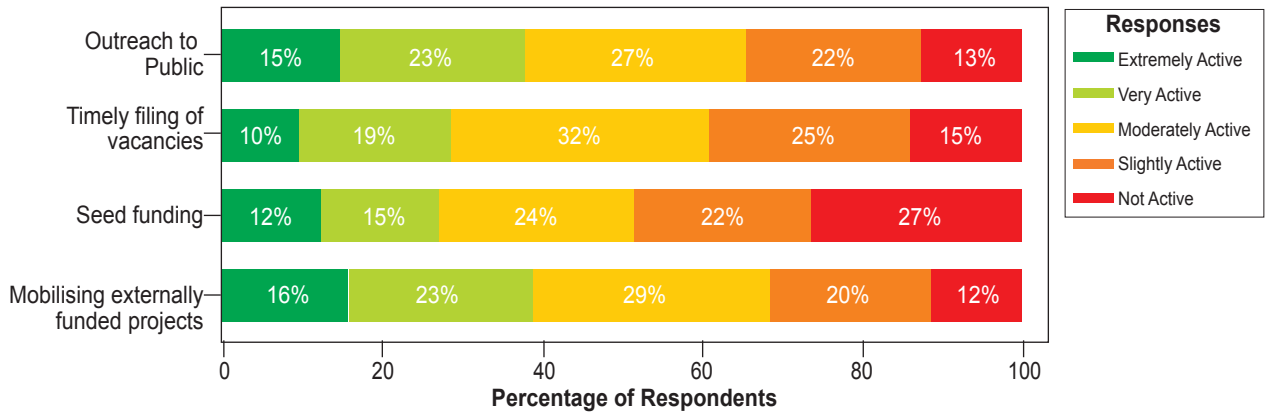


Figure 6.19 Role of Institutions in Supporting Research

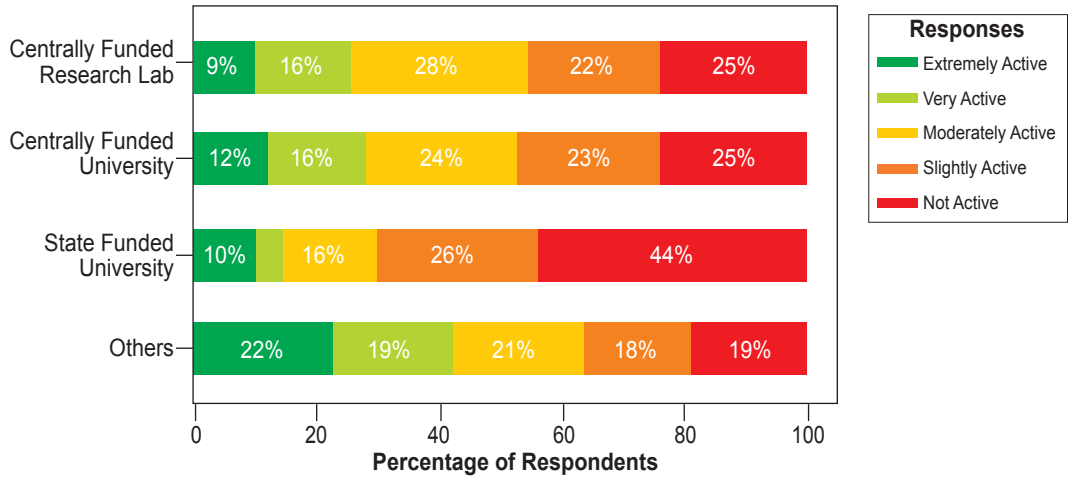


Figure 6.20 Seed Funding across Institution

The responses indicate noticeable variation in perceptions of seed funding support across different types of institutions while clear institutional differences would emerge when disaggregated by category as shown in **Figure 6.20**. Among centrally funded research labs and central universities, perceptions are relatively similar. In both cases, 25% of respondents consider their institutions to be not active in providing seed funding. A comparable proportion rate their institutions as slightly active (22%–23%) or moderately active (24%–28%), suggesting a middling level of institutional engagement rather than strong support.

In contrast, state universities exhibit a more concerning pattern. A significant 44% of respondents from state universities report that their institutions are not active in offering seed funding, a proportion substantially higher than that observed in centrally funded institutions. This percentage drops to 26% among those who consider their institutions slightly active, indicating that strong institutional backing for seed funding is comparatively limited in the state university system. Institutions grouped under "Others" show a relatively more balanced distribution, with higher proportions reporting moderate to high activity compared to state universities.

Taken together, the findings suggest that seed funding support differs across institutional types, with state universities appearing comparatively weaker in institutional facilitation, while centrally funded institutions demonstrate moderate, but not strong engagement.

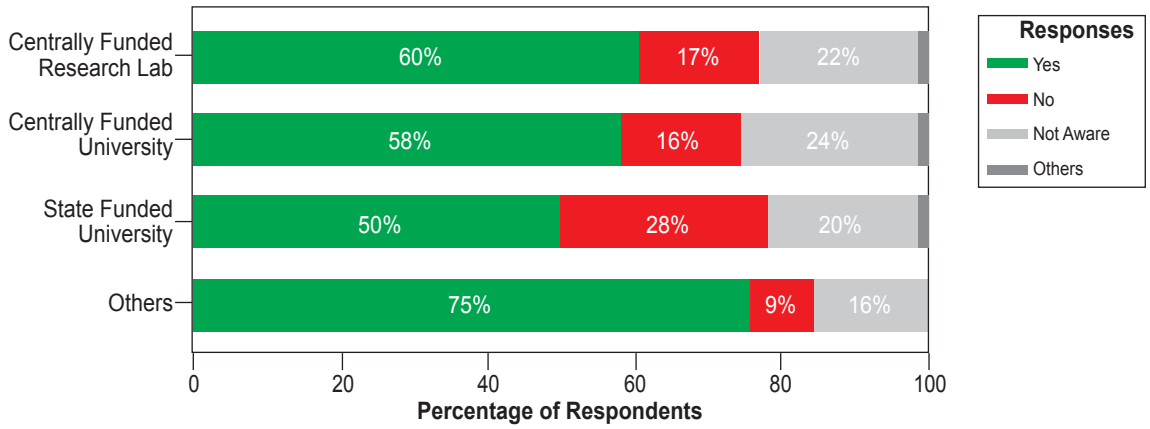


Figure 6.21 Availability of clearly defined R&D Guidelines across Institution

In addition to the institution's efforts in securing funding and addressing vacancies, it is essential for these institutions to furnish their researchers with explicit R&D Guidelines. This will help them understand the administrative procedures and regulations they need to adhere to while conducting research and development. 60% of the respondents have stated that their institution has clear R&D Guidelines, while 16.9% of the researchers have claimed that their institutions do not have such guidelines. Additionally, 21.5% of the respondents are not aware about the presence or absence of any such guidelines. When examining the differences in responses according to the type of institution the respondents are affiliated with, it was found that 60% of those from centrally funded research labs and 58% from universities reported having R&D Guidelines in place at their institutions. In contrast, this was the case for only 50% of respondents from state universities, as illustrated in **Figure 6.21**. Additionally, while similar percentage of respondents varying from 20% to 24%, have indicated an unawareness about the presence of R&D guidelines at their institute, 28% of the respondents belonging to state universities have indicated the absence of R&D guidelines at their institution in comparison to 17% and 16% for respondents belonging to central labs and universities.

6.3.1 Incentives provided to Researchers at Institute Level

This sub-section focuses on the availability of Professional Development Allowance to the researchers for their skill upgradation and the type of incentives present for them to do more research. The presence of such incentives gives the researchers motivation to undertake more R&D projects with efficiency. This section also explores the differences in the responses based on the type of institution to which the respondents belong.

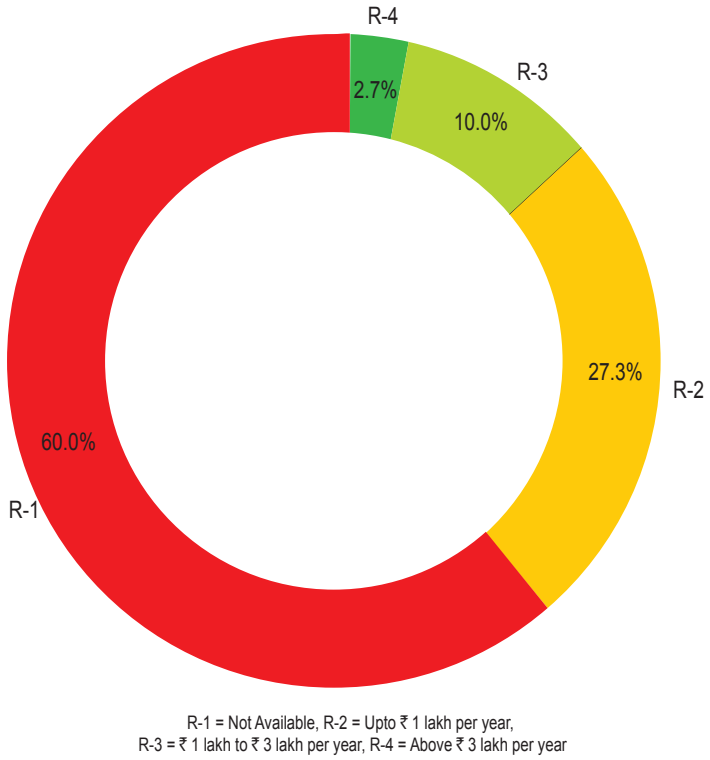


Figure 6.22 Availability of Professional Development Allowance (PDA)

The availability of Professional Development Allowance (PDA) not only helps the researchers to employ the money given for their professional growth by skill upgradation, it also sometimes helps the researchers in plugging the financial shortfalls in their R&D projects by providing them with financial assistance with flexibility in spending. 60% of the respondents reported that they do not get PDA, followed by 27.3% of the respondents admitting that they are entitled to up to Rs. 1 lakh per year as PDA as shown in **Figure 6.22**. Only 10% of the respondents are entitled to PDA from Rs. 1 lakh to 3 lakhs, and 2.7% of the respondents stated that they are entitled to a sum more than Rs. 3 lakhs per annum as their PDA. This pattern of responses changes drastically based on the type of institution to which the respondents belong.

As shown in **Figure 6.23**, 84% of the respondents from state universities have admitted that they are not entitled to PDA, followed by 69% and 45% respondents from the central labs and universities admitting

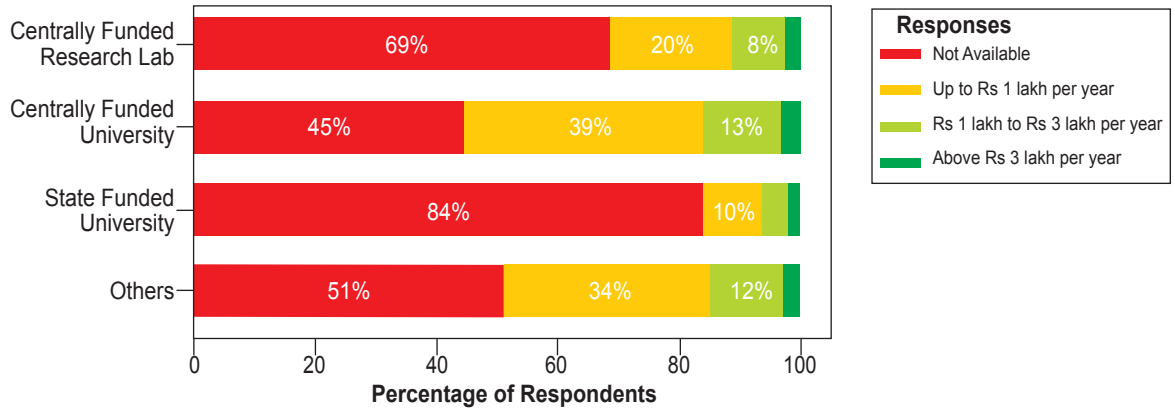


Figure 6.23 Availability of Professional Development Allowance (PDA) across Institution

to the same. 39% of the respondents from central universities report that they are entitled to up to Rs. 1 lakh per year as PDA. This figure is almost half at 20% for respondents belonging to central labs, and at a mere 10% for the researchers from the state universities.

When inquired about the activities for which respondents allocate their PDA, nearly all respondents receiving PDA opted to use it for purchasing books or periodicals (41.9%) and participating in training programs (39.5%). This was followed by international travel (34.8%), article processing charges (34.5%), and the acquisition of minor equipment (32.2%). Additionally, 23% of respondents utilize PDA for inviting guest scientists, while 17.8% also use it to hire temporary staff, as illustrated in **Figure 6.24**. Although the use of PDA for skill enhancement and collaboration is commendable, it raises concerns that researchers are compelled to use their allocated PDA for acquiring minor equipment and hiring temporary personnel, expenses that should ideally be included in project budgets.

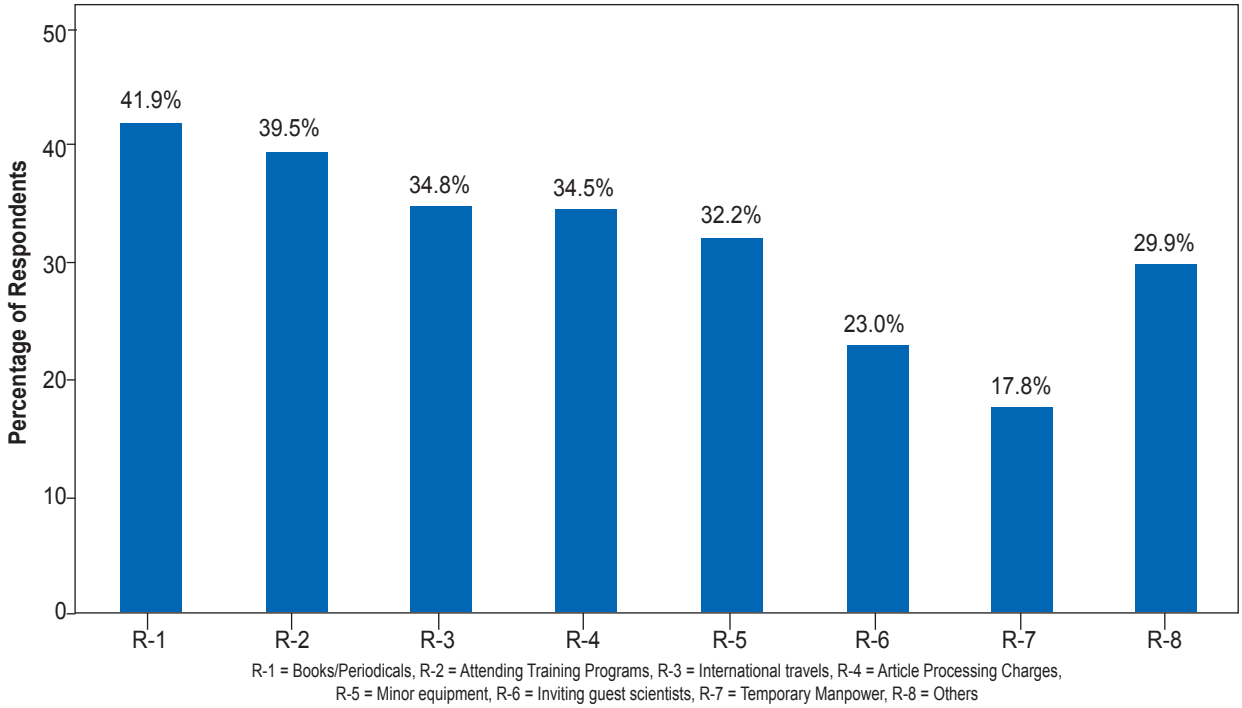


Figure 6.24 Professional Development Allowance (PDA) Heads

While PDA helps the researchers in their skill enhancement, the provision of incentives in the form of awards or monetary rewards for conducting good R&D can also act as a motivation to young researchers in pursuing good R&D projects and bringing in more projects to their institution. As seen in **Figure 6.25,** 47.5% of the respondents admitted that their institute has neither formal nor informal incentives to encourage researchers to undertake more R&D projects, with 22% of the respondents reporting that their institution has informal incentives in place to encourage the researchers. 16.3% of the respondents state that they have formal non-monetary incentives like awards in place and 14.2% of the respondents report that they have formal monetary incentives in place to encourage the researchers. This pattern of availability of incentives remains consistent for the respondents regardless of the type of institution to which they belong.

Another way in which institutions tend to incentivize their researchers for bringing in more R&D projects is by sharing a percentage of the Overhead Charges (OHC) with the respondents. This ensures that the respondents have a direct monetary incentive to bring in more research to their institution. As shown in **Figure 6.26**, 46.9% of the respondents have stated that they do not get a share in their institution's OHC, followed by 27.6% of the respondents stating that they can get up to 20% of the OHC, with 18.3% and 7.2% of the respondents stating that they can get from 20% to 50% OHC and more than 50% OHC respectively. This pattern changes for the respondents based on the type of institution to which they belong to.

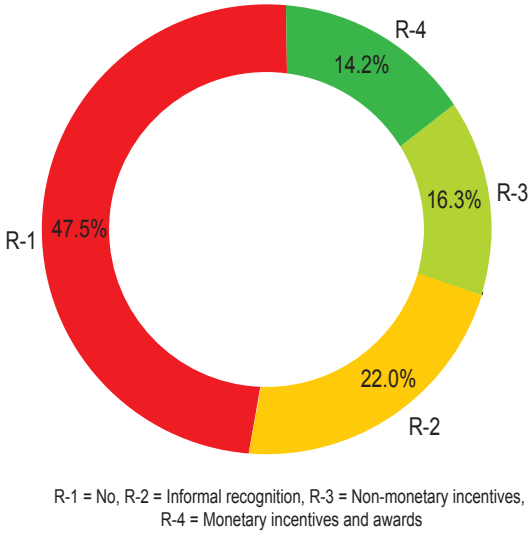


Figure 6.25 Availability of formal incentives at Institution to encourage research

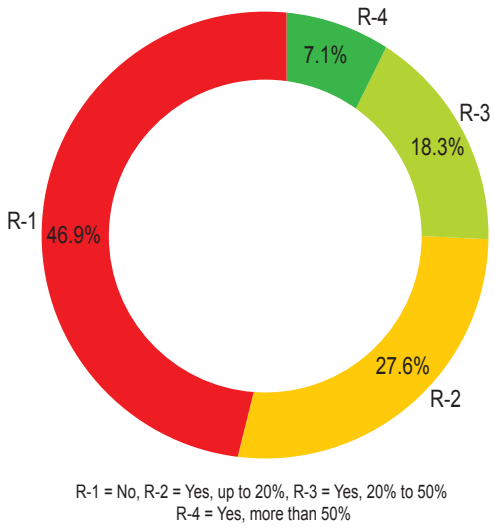


Figure 6.26 Status of sharing of overhead charges with Principal Investigators (PIs)

As seen in **Figure 6.27,** 65% of the respondents from centrally funded labs and 49% of the respondents from state universities state that they do not get any share from OHC. This figure drops down to 28% for the respondents belonging to central universities, as most of the respondents at 38% from there state that they get up to 20% of the OHC shared with them. This figure is just 24% and 17% for the centrally funded labs and state universities. 25% and 23% respondents from central and state universities have admitted that they get from 20% to 50% of the OHC, if they bring an R&D project for their institution. In contrast this is true for only 8% of the respondents belonging to centrally funded labs.

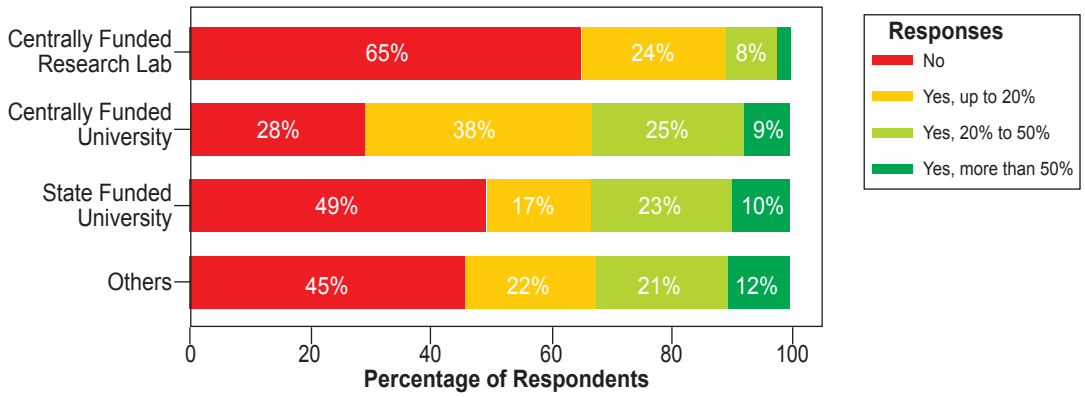


Figure 6.27 Sharing of overhead charges to PIs across Institutions

6.3.2 Facilitation for Collaboration

Working together with fellow researchers is a crucial element that can enhance the quality of research. Institutions can promote this collaboration by offering assistance to their researchers when attending conferences, both domestically and internationally. This section explores the different methods of collaboration utilized by the respondents and the obstacles they encounter while traveling to participate in both national and international conferences.

As can be seen from **Figure 6.28**, 67.6% respondents have stated that they collaborate with researchers outside their institution but within India, followed by 61.8% respondents reporting that they have collaborated within their institute. Interestingly, only 18.3% researchers have collaborated with industry – around half the number of researchers who have collaborated internationally at 35.2%. Additionally, 13.5% respondents have stated that they have not yet collaborated with anyone for their R&D projects. This trend of responses remained consistent regardless of the type of institution to which the respondents have belonged to.

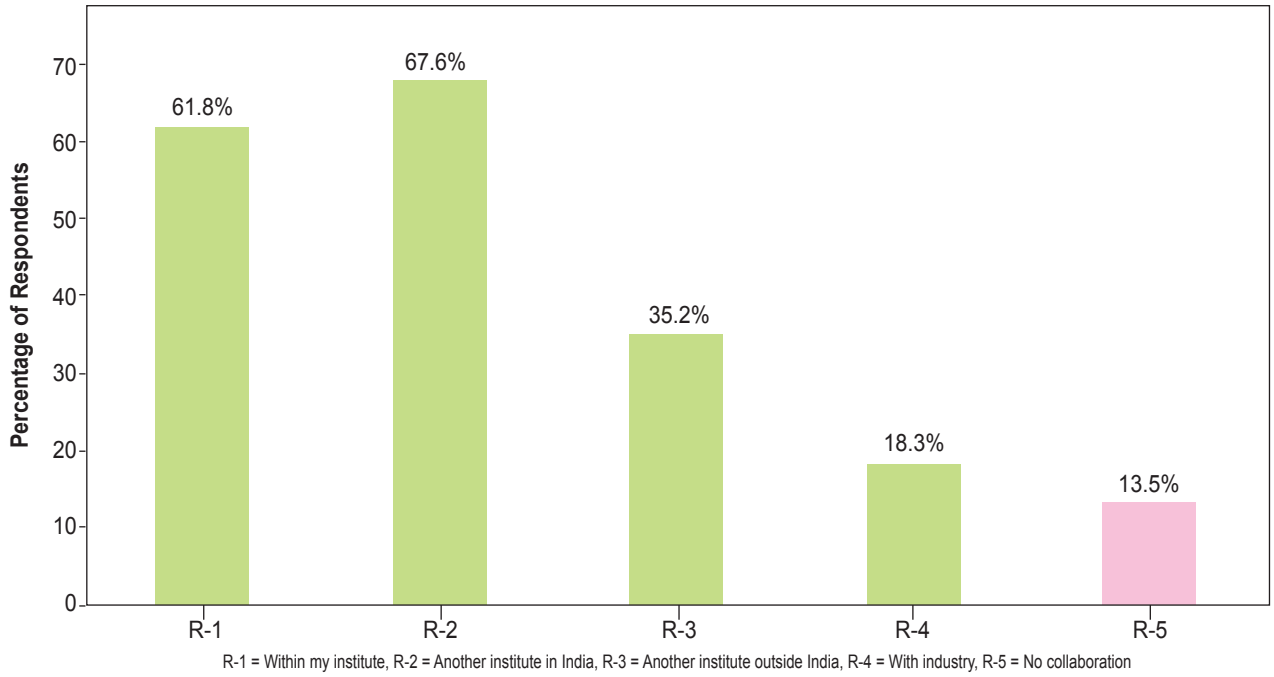


Figure 6.28 Mode of Collaborations

Regarding the challenges encountered by researchers when traveling to attend conferences within the country, 35.2% of respondents indicated that they do not experience any difficulties, whereas 13.5% reported a lack of support for such travel. Furthermore, 35.7% acknowledged that they have to pay for expenses from their own pockets and face delays in reimbursement for their expenses after returning from the conference, as shown in **Figure 6.29.** Additionally, 30.4% of respondents highlighted the delays in obtaining necessary approvals from their institutions, which hinder their travel plans, while 11.4% mentioned that they are allowed to attend only one conference per year. This trend in responses was consistent among participants, regardless of the differences in their institutions.

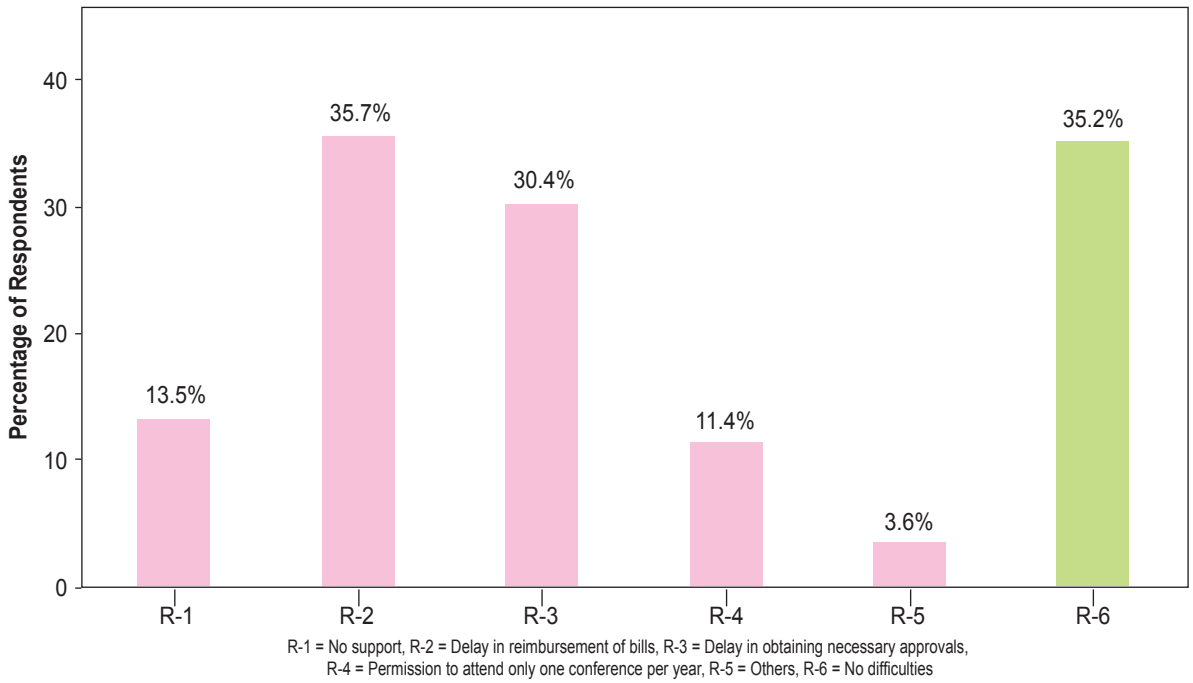


Figure 6.29 Challenges due to travelling for national conferences

When it comes to international travel for conferences, in addition to the intricate requirements set by the host organization and other documentation associated with international travel, 47% of respondents have acknowledged that they must also secure their travel grants independently to participate in these events, as illustrated in **Figure 6.30**. This becomes difficult for many researchers as there is delay from the end of funding agencies in communicating their decision which hampers their ability to arrange timely travel support. Additionally, while 31.1% of the respondents have reported that they get both administrative and financial support to attend an international conference, 12.1% of the respondents have claimed that they are not even allowed to travel internationally by their institution.

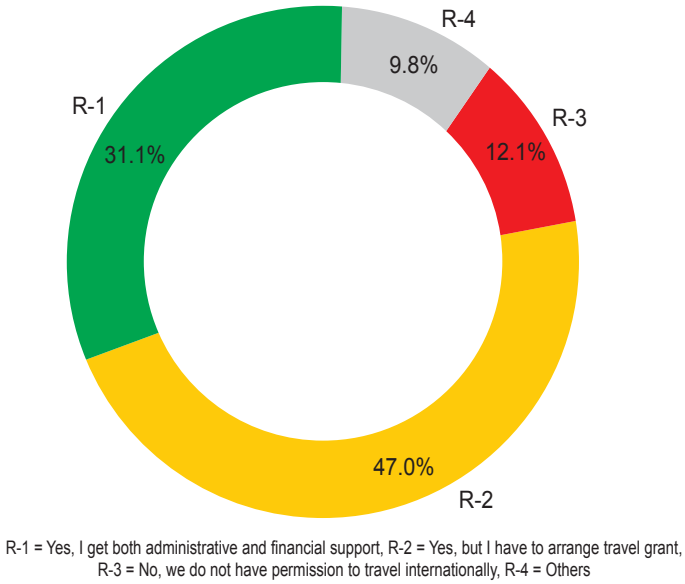


Figure 6.30 Challenges due to travelling for international collaborations/ workshops

This pattern of responses changes slightly for respondents based on the type of institution to which they belong. Most of the respondents have to arrange for their own travel grant, regardless of the institution to which they belong to as shown in **Figure 6.31.** Many of the respondents from central labs and universities also get administrative and financial support to attend international conferences, while numerous respondents belonging to state universities are not allowed to travel internationally. 53%, 51% and 43% of the respondents belonging to state funded universities, central funded universities and central labs have admitted that they have to arrange for their own travel grant. Most of the remaining respondents from central labs (30%) and universities (32%) get both administrative and financial support to attend international conferences, while most of the remaining respondents from state universities (22%) are not allowed to travel internationally.

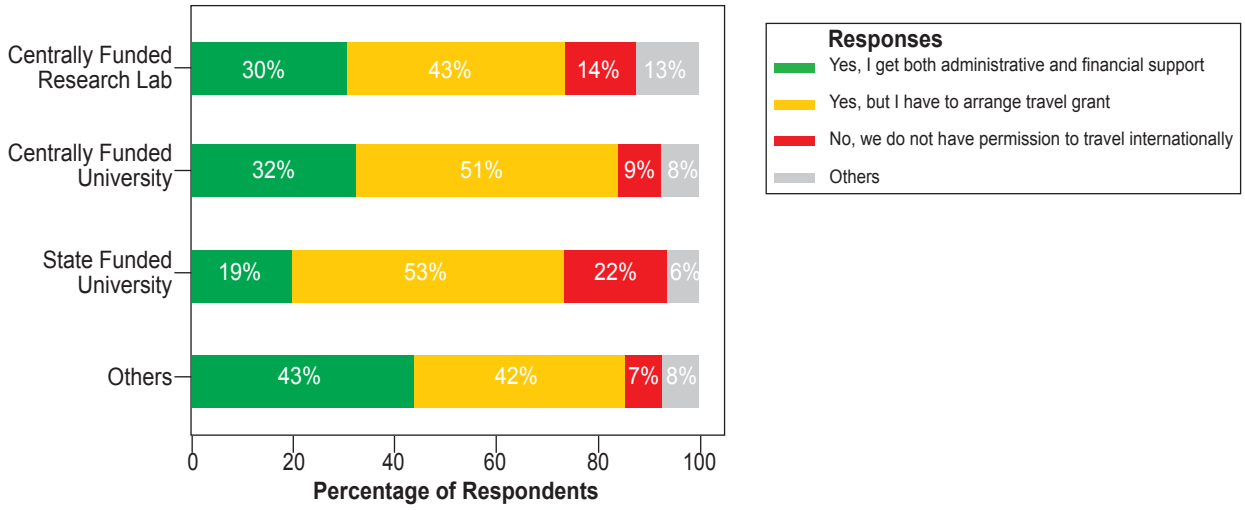


Figure 6.31 Challenges due to travelling for international collaborations across Institution

6.4 Availability of Time for Researchers

Ideally, researchers should be able to devote their full working hours to research. However, they are often required to undertake additional responsibilities such as teaching assistantship, as well as administrative duties related to their research and the overall functioning of the institution. Moreover, sometimes the researchers are required to undertake some additional responsibilities depending on the requirements of the institute. As shown in **Figure 6.32**, respondents, on average, spend about 39.40% of their weekly working hours on research, followed by 37.99% on teaching. The remaining time is allocated to administrative tasks (17.96%) and other activities (4.17%). This time distribution remains similar across the type of institutions to which the respondents belong.

The overall distribution of time appears broadly reasonable for researchers; however, a notable pattern emerges for those working in central R&D laboratories, as shown in **Figure 6.33**. It was assumed that the respondents belonging to centrally funded R&D laboratories would have a comparatively lower teaching load than their counterparts in universities. However, the survey responses indicate that the respondents from central R&D laboratories are also spending around equal time in teaching scholars and students. The teaching load can be reduced by collaborating with universities for teaching or training of the research scholars in the central laboratories.

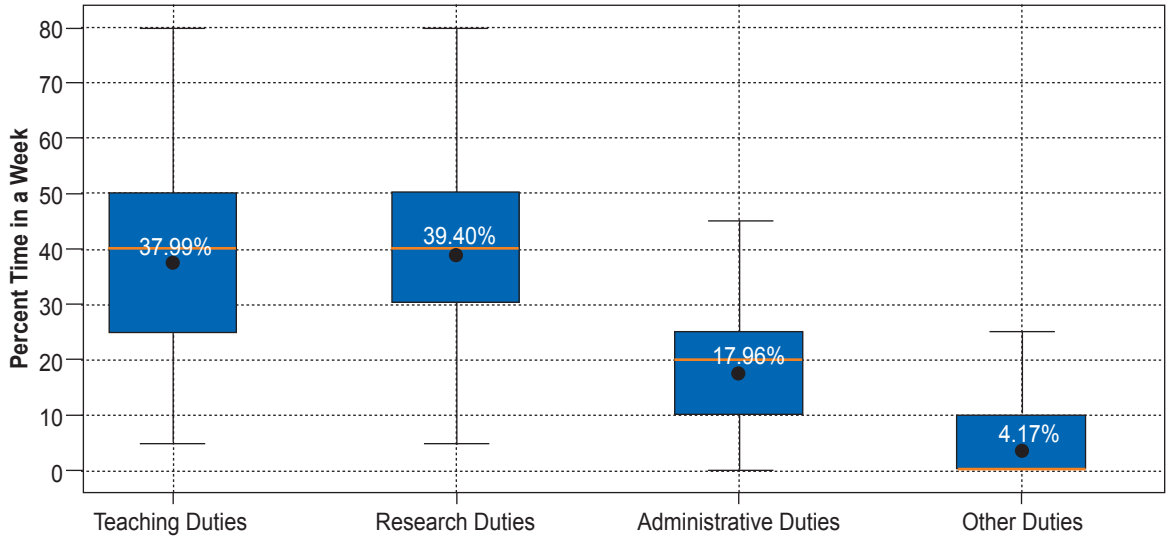


Figure 6.32 Time Share

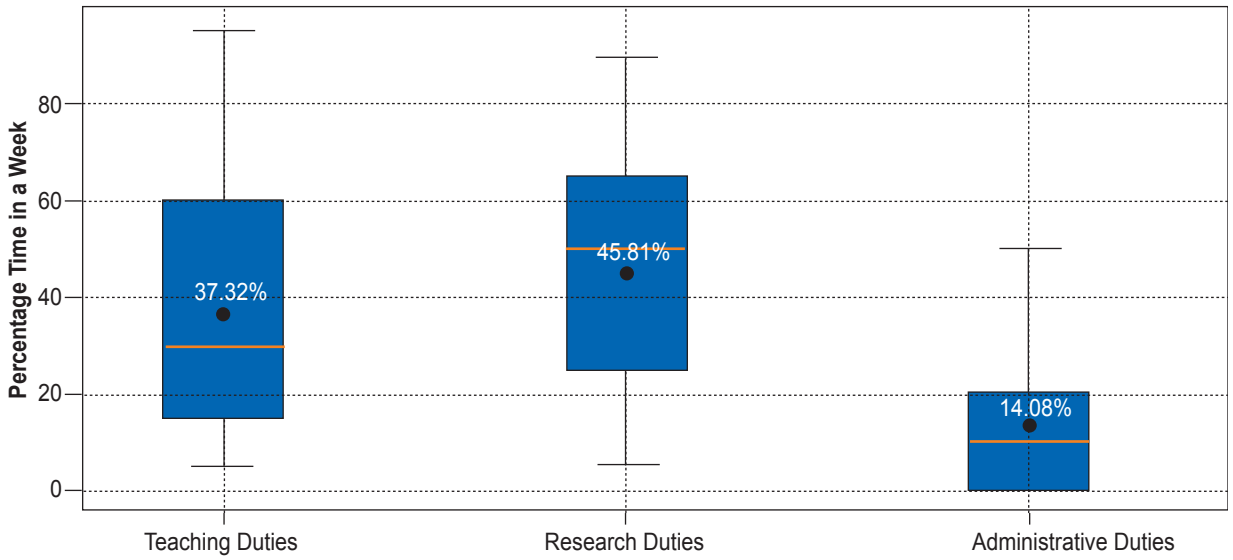


Figure 6.33 Time Share for respondents from Centrally funded R&D labs

6.5 Finding Competent Research Scholars

The availability of competent Ph.D. and Post-Doctorate scholars to conduct research and experiments for R&D projects is absolutely necessary to ensure quality of research. This section explores the ability of researchers in finding competent scholars for their research and the reasons if they are unable to do so. These factors are then further explored against the demographic and professional characteristics of the respondents to identify any underlying variation.

Overall, 41.7% of the survey respondents have admitted that they are unable to find competent scholars to work with them in R&D projects. This challenge appears to be consistent across different age groups and designations, indicating no significant variation along these dimensions. However, a statistically significant

difference is observed with respect to gender. As illustrated in **Figure 6.34**, female researchers report greater success in finding competent collaborators compared to their male counterparts.

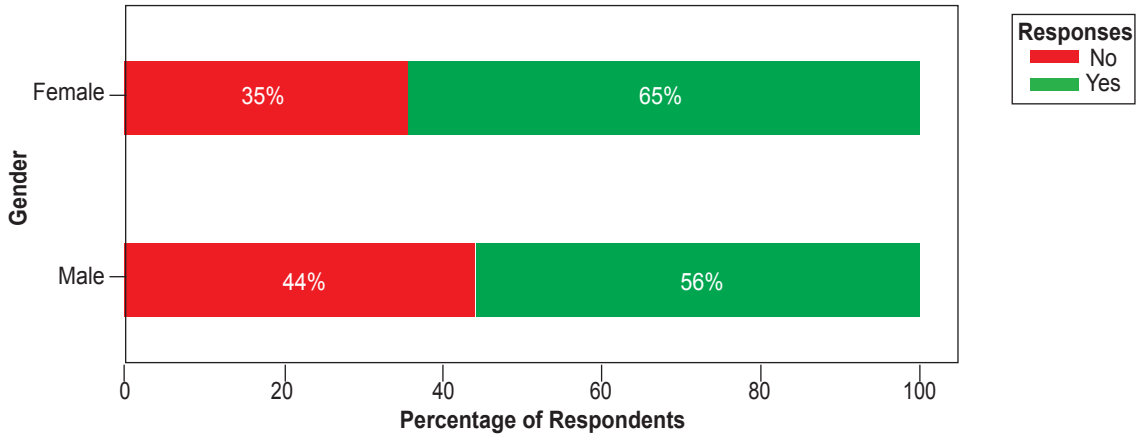


Figure 6.34 Responses to "Q - Are you able to find competent scholars for your R&D Projects" across gender

The variation in the answer of respondents with respect to their ability to find competent scholars at different types of institutions also shows an interesting pattern as shown in **Figure 6.35**. While the respondents belonging to the state universities are following the overall pattern, respondents from centrally funded universities are more likely to report that they are unable to find competent scholars when compared to the overall pattern and in contrast respondents from centrally funded labs or organizations, who are less likely to admit to their inability to find competent scholars as compared to the overall pattern.

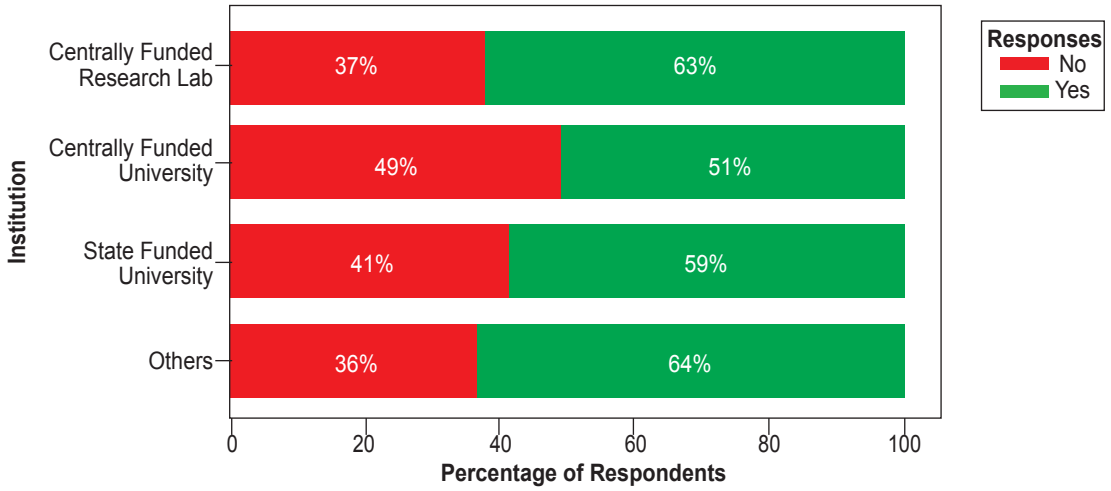


Figure 6.35 Responses to "Q - Are you able to find competent scholars for your R&D Projects" across institution

When exploring the possible reasons for the non-availability of competent researchers the responses of the 41.7% of the respondents from varied types of institutions stated their inability to find competent research scholars for their R&D projects were analysed. From among these respondents, 42.9% attributed the non-

availability of scholars to the insufficiency of scholarship amount for scholars **(Figure 6.36)**. Other factors contributing to non-availability of scholars include inadequate housing facilities at their institutions, reported by 32% of the respondents; and, the highly niche area of research work, cited by 29.1% of the respondents. Overall, the findings imply that most of the researchers are unable to find competent scholars primarily because of insufficient scholarship amount and inadequate housing facilities.

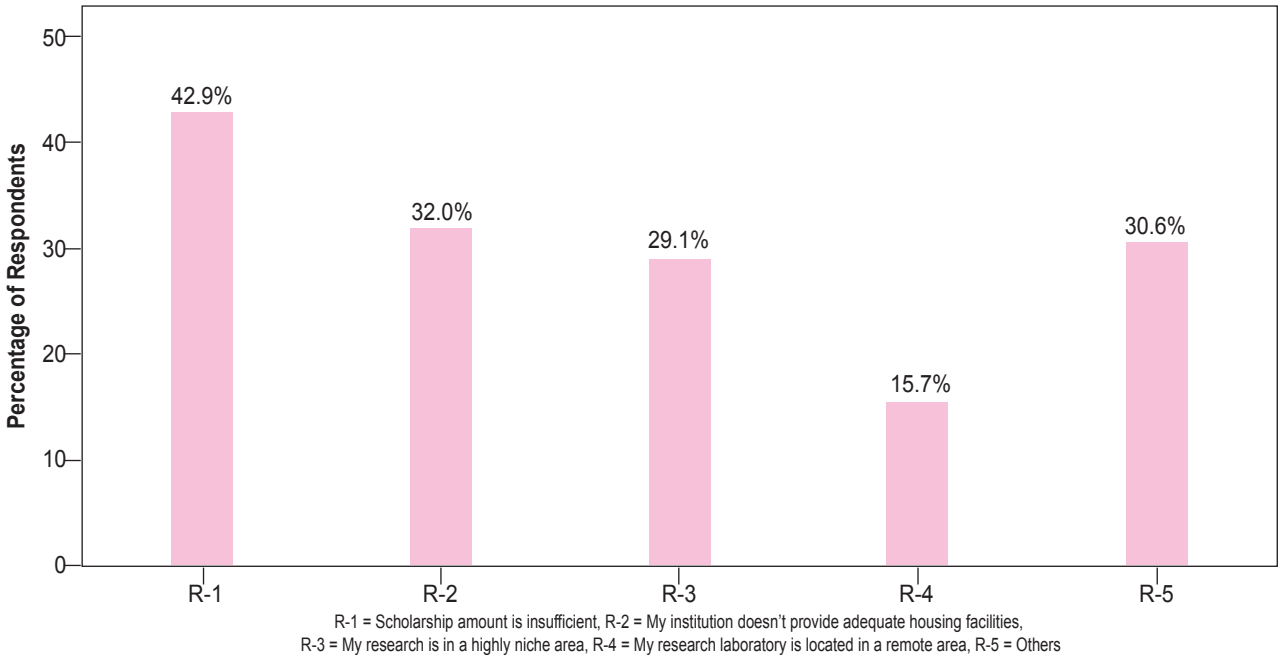


Figure 6.36 Reasons for inability to find Competent Scholars

6.6 Challenges in Career Break

A supportive institutional framework for career breaks is essential to retain experienced researchers affected by personal or life-stage circumstances. 93.5% of survey respondents reported not having taken a career break, while 6.5% of the respondents reflected important structural concerns within the R&D ecosystem. Notably, 83% of those who took a career break were women, substantially higher than their overall representation in the R&D workforce, thus highlighting the gendered nature of career interruptions. The primary reasons cited were family-related responsibilities (29.1%), followed by higher education (18.2%) and pregnancy (18.2%) as shown in **Figure 6.37.**

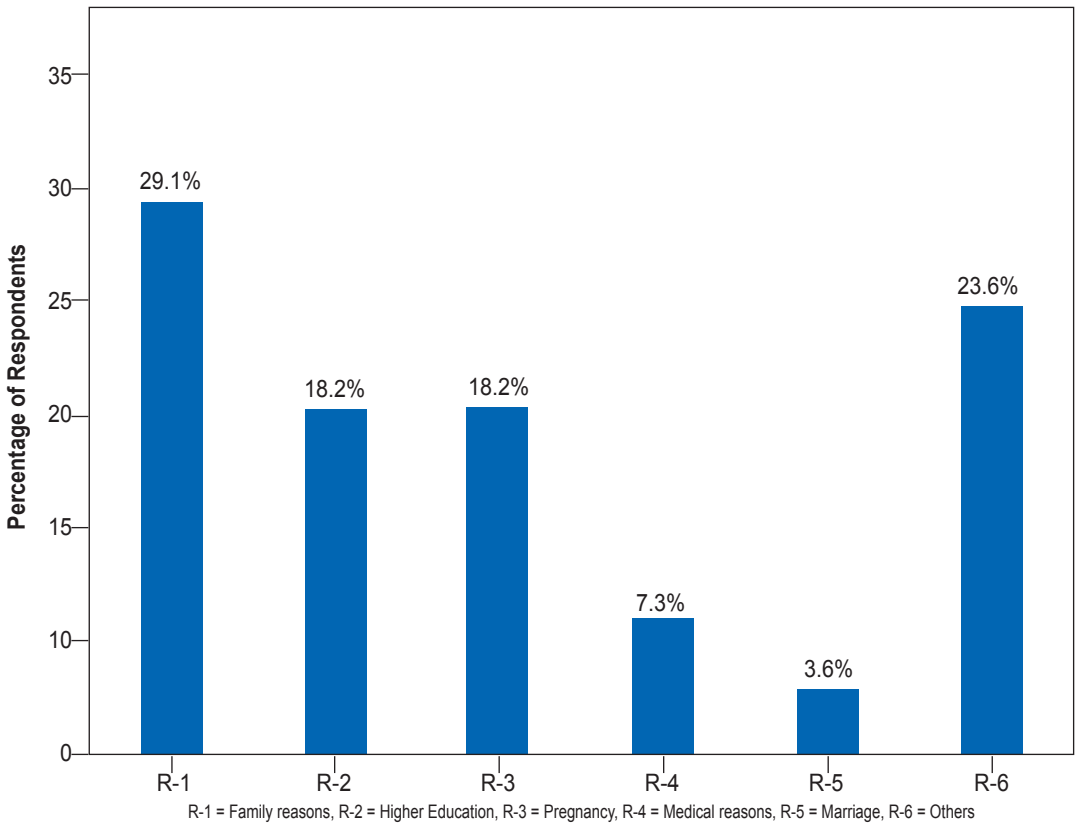


Figure 6.37 Reasons for Career Break

Most of the respondents stated that they faced no significant challenges while rejoining the workforce (40%), followed by 38.2% respondents admitting a bias or lack of recognition of prior work and 32.7% respondents claiming that they face difficulties in accessing funding opportunities. 25.5% respondents agreed that they have gaps in technical skills or their knowledge is not updated as shown in **Figure 6.38.**

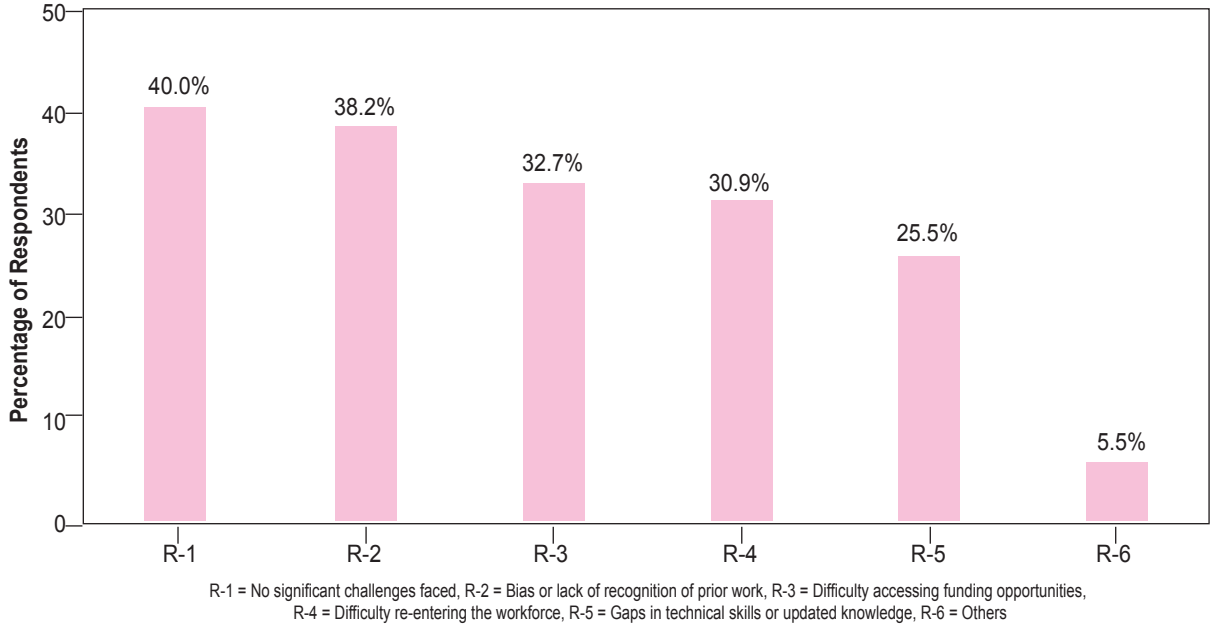


Figure 6.38 Challenges in rejoining after career break

6.7 Summary

Overall, in terms of the institutional research environment, nearly 90% of survey respondents reported adequate availability of knowledge resources. However, availability declined to about half for research equipment and experimental facilities. Access to support services such as incubation and commercialization facilities—including IPF, IC, and TTC—also stands at roughly half the level of knowledge resources. This disparity is more pronounced in state universities, where the availability of resources and services is approximately half of that observed in centrally funded universities and national laboratories across most components.

In addition, procurement of research equipment is consistently delayed, from 6 months to a year, regardless of the type of institution or the mode of procurement adopted. Similarly, respondents reported that the process of operation and maintenance is riddled with challenges like delays, uncertainty and general lack of clarity. While the disposal guidelines of the research equipment are generally well defined, there are inconsistencies in their implementation and often marked by several administrative delays.

If looked at through the lens of type of institution, the central laboratories fare better compared to state universities and central universities in terms of the operation and maintenance of their research equipment, however, respondents across all types of institutions reported poor disposal facilities. Another interesting observation was that while central laboratories have better availability of equipment, services and even their maintenance compared to the central and state universities, they often lack facilities such as incubation centres which can help them in commercialising their research.

Further, most of the respondents, overall have a positive perception about the support their institutions are providing them to support their R&D projects, as most of the respondents have rated their institution as moderately to slightly active for timely filling of vacancies, mobilisation of externally funded resources and outreach to the public. However, most of the respondents believe that their institutions have the potential to be more active in providing them seed funding, which is especially true for respondents belonging to state universities. Additionally, most of the respondents have stated that their institutions should have clear R&D Guidelines which will facilitate in navigating the complex administrative procedures associated with R&D.

When it comes to explicit monetary incentives and support to conduct R&D, respondents from central universities tend to fare comparatively better than respondents from state universities and even central laboratories and organisations. However, in case of sharing of overhead charges with the principal investigators, respondents from central universities and state universities have reported a general tendency of their institute to share around 20% of the charges with them, while most of the respondents from central labs have stated that they do not get any overhead charges of the R&D project which they bring, to be shared with them. Moreover, the time available for conducting research has the potential to be enhanced by reducing the teaching and administrative duties of the researchers.

Moreover, nearly half of the researchers reported difficulty in finding competent scholars to support their R&D primarily due to inadequate scholarship amounts. Apart from this, even the insufficient amount is unable to reach the scholars in a timely manner creating financial uncertainty and affecting their ability to sustain their research and meet basic living expenses.

Finally, most of the respondents stated that they generally collaborate either within their institute or outside their institute but in India, indicating significant scope to strengthen international and industry linked collaboration. These collaborations can also be increased by providing greater support to researchers for participation in national and international conferences. However, respondents highlighted persistent challenges, including delays in travel approvals and reimbursements for domestic conferences, limited financial support for international travel, with multiple respondents from state universities admitting that they are not allowed to travel internationally.


SUBSIDY
R&D

CHAPTER-7

Open-Ended Inputs from Survey Respondents

At the end of the questionnaire the respondents were asked to rank the different factors that hinder their research and give open-ended suggestions for enhancing the research ecosystem in the country. The open-ended section provided an opportunity for respondents to express issues which were not covered with the questionnaire. The first section of this chapter discusses the ranking of hindrance factors, along with issues highlighted by the respondents associated with these factors. The second section gives a synthesised summary of suggestions given by respondents under different headings.

7.1 Ranking of Hindering Factors by Respondents

As can be seen from **Figure 7.1**, most of the respondents consider the scale and timely allocation of funding to be a major factor (ranked first by 24% of the respondents), which can hinder their R&D projects if not taken care of by funding agencies. This was followed by the availability of research infrastructure, and issues related to regulatory framework and administrative processes (each factor ranked first by 20% of the respondents). This was followed by the availability of competent human resources, which was ranked first by 18% of the respondents. In contrast, only 10% and 9% of the respondents have ranked availability of time and institute level research environment, respectively as their first option.

While the ranking highlights the relative prioritization of factors, the network visualization below **Figure 7.2** reveals how these concerns are interlinked in respondents' narratives. A co-occurrence network graph of the major keywords in the open-ended responses received shows four major clusters. First cluster (red) relates to funding related aspects, namely timely release/disbursement, procurement procedures, hiring manpower and bureaucratic processes. The second cluster (green) highlights issues of R&D ecosystem functions such as collaboration, incentives, etc. The third cluster (blue) consists of keywords highlighting laboratory/institution level aspects such as students, research proposals, team, specialisation area etc. Finally, the fourth cluster (yellow) shows keywords such as outcome, promotion, committee, merit and allocation indicating aspects related to assessment and management.

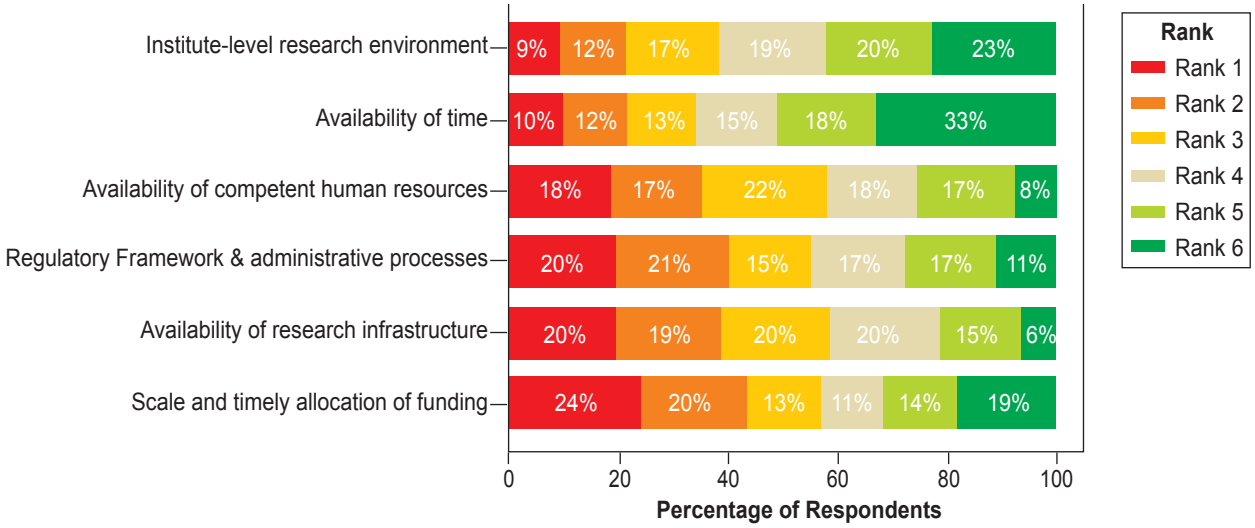


Figure 7.1 Ranking of Factors which Hinder R&D by Respondents

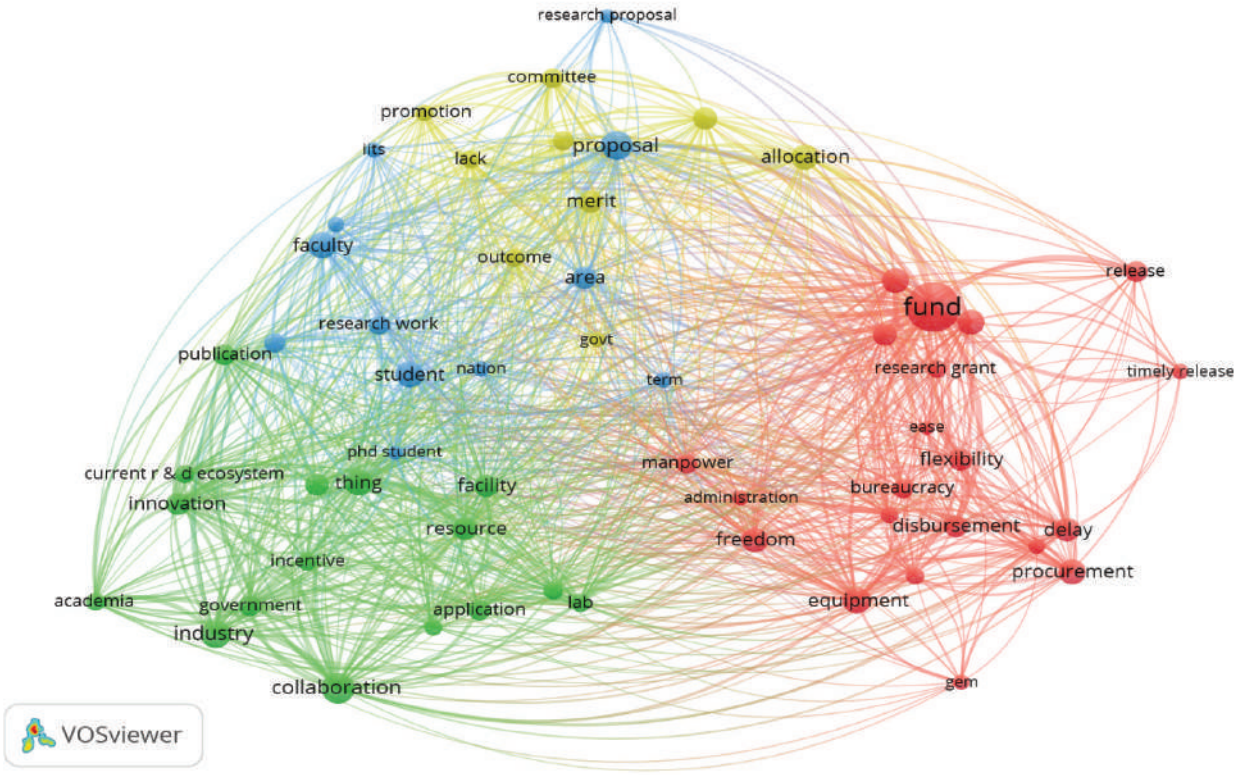


Figure 7.2 Keyword co-occurrence network map with major words in the open-ended responses (drawn using VoS Viewer)

A closer examination of the responses reveals that these funding and administrative concerns are accompanied by several related issues. **Figure 7.3**, gives a glimpse of the specific issues raised by the respondents in their own words.

Figure 7.3 Representation of major concerns raised by respondents

7.2 Actionable Suggestions given by the Researchers[36]

Apart from flagging the challenges with the R&D ecosystem in the country, many respondents also gave actionable suggestions to make it more efficient and effective. Some of these focus on fundamental factors like how the aim of R&D projects should be decided or some other transformational changes in the ecosystem. Others focussed on giving practical suggestions to reduce the inefficiencies in the funding process and bring in more transparency in the selection of projects. This section gives a summary of these actionable suggestions by the respondents, aimed at resolving different challenges identified by the respondents.

7.2.1 Enhancing the Reach of Funding to Researchers

i. Funding agencies should release an annual calendar for calling of RFPs on different topics which should be widely circulated.

ii. Mandatory fund allocation to every newly joined faculty to initiate their research work ranging from 2-10 lakhs in a year as a one-time support which can be continued further based on outcomes of the first project.

iii. Support to universities should be enhanced by introducing dedicated funding or allocating 15-30% of the funds to universities which are involved in R&D.

36 The suggestions presented in this section are a summarized synthesis of respondents' inputs and do not, in any manner, represent the views of the authors, INSA, DST, or NITI Aayog. They are included solely to reflect respondents' perspectives on possible measures to strengthen and improve the country's R&D ecosystem.

7.2.2 Suggestions to bring in more efficiency, transparency in the Process and enhance access to research infrastructure & enhance researchers competencies

Figure 7.4 Representation of the Major Suggestions Provided by Respondents

i. Funding agencies should undertake regular training for researchers and their administrative support staff about major changes in their rules and regulations.

ii. The application requirements can be reduced for researchers undertaking fundamental and basic sciences as it is currently designed for experimental work and creates redundancy. This can be also done for basic and clinical trials in comparison to more rigorous requirements for Randomised Control Trials.

iii. Selection committees should include 50% industry professionals, 25% representatives from state universities, and 25% from central institutes, closely aligned with the topic for which grant proposals are being evaluated.

iv. The reviewing process should be "professionalised" by providing them with incentives and appropriate training.

v. An independent grievance redressal mechanism for R&D discrimination cases – "like the Lokpal model, but for science" and protections for whistleblowers to safeguard scientists who raise genuine concerns.

vi. GST, import duties and other taxes on research goods – both consumables and equipment, should be removed as in practice, vendors increase their prices to cover such requirements.

vii. Paperwork and physical signatures should be done away for purchases below a specific amount, to reduce the paperwork.

viii. The stipend for Ph.D scholars should be at market rates to bring in talent. Further it should be revised every two years, or pegged to the inflation-rate. Moreover, PhD scholars should be recognized as employees and should receive benefits such as health insurance coverage for their dependents.

ix. Senior researchers, ad hoc professors or guest professors should be allowed to apply for funding as co-PIs.

x. The age limit as eligibility criteria should be removed for contractual positions in a project as it is a "…great loss of unique skills and knowledge shaped by their (Ph.D Scholar's) experiences."

CHAPTER-8

Conclusion

This report has attempted to identify various obstacles and reforms required to promote EoDR in the broader goal of strengthening research capacity, expanding innovation outputs, and building a vibrant entrepreneurial landscape. Recent policy initiatives and reforms, aligning the organisational priority areas with India's long-term development aspirations, demonstrate a clear intent to create an enabling environment for research and development activities. This is, however, a very challenging task, considering the size and complexity of the national STI ecosystem. With this consideration, the EoDR survey serves an essential purpose, i.e., presenting an assessment of challenges faced by the S&T workforce in their activities. It has attempted to identify both systemic as well as institutional challenges as an empirical input to guide future revisions in different regulations and procedures.

The findings of the report suggest that continued attention to the Ease of Doing Research can play a pivotal role in unlocking the full potential of India's R&D ecosystem. Streamlining administrative and regulatory processes, improving the predictability and continuity of research funding, and strengthening institutional support systems, can significantly enhance research efficiency and outcomes. Incremental improvements in these areas have the potential to generate greater positive impacts by allowing researchers to focus more on scientific inquiry, innovation, and knowledge translation.

The report highlights opportunities to deepen private-sector participation in R&D, strengthen university–industry linkages, and expand pathways for research commercialisation. Encouraging greater collaboration across institutions, regions, disciplines, and international partners can further accelerate knowledge diffusion, and enhance the societal and economic relevance of research outcomes. Similarly, sustained investment in human capital, through competitive and timely scholarships, career progression pathways, and reduced administrative and teaching burdens, will be critical for nurturing the next generation of researchers and innovators.

Taken together, the evidence presented in this report underscores the value of a coordinated and system-wide approach to improving the Ease of Doing Research. Continued engagement between government, funding agencies, research institutions, industry, and the scientific community will be essential for translating policy intent into effective implementation. The insights and suggestions offered by researchers through this survey provide a valuable empirical basis to inform ongoing and future reforms.

The report brought forward insights from individual scientists and researchers regarding the overall R&D environment in the various institutions across the country. These insights, thus, not only provide valuable inputs and suggestions, but also present a true picture of the actual operating environment of R&D ecosystem. Therefore, the report adds significant value to the whole Ease of Doing R&D initiative being pursued by NITI Aayog, and complements other activities of the initiative.

As India advances towards becoming a knowledge-driven and innovation-led economy, sustained policy attention to creating a supportive, and responsive research environment will be crucial. By building on recent reforms and progressively addressing the areas identified in this report, we can further strengthen India's research ecosystem and ensure that investments in R&D deliver inclusive, high-impact outcomes in support of national development priorities.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