OPEN LETTER

REVISED India Research Management Initiative (IRMI) – an initiative for building research capacity in India [version 2; peer review: 4 approved]

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Abstract

Research and innovation are growing in India with significant investments being made towards institutions, researchers and research infrastructure. Although still under 1% of GDP, funding for science and technology in India has increased each year for over two decades. There is also increasing realization that public funding for research should be supplemented with that from industry and philanthropy.

Like their counterparts worldwide, Indian researchers require access to professional research management support at their institutions to fully leverage emerging scientific opportunities and collaborations. However, there are currently significant gaps in the research management support available to these researchers and this has implications for research in India.

The India Research Management Initiative (IRMI) was launched by the Wellcome Trust/DBT (Department of Biotechnology, Government of India) India Alliance (hereafter India Alliance) in February 2018 to narrow these gaps. A 12-month pilot phase has enabled conversations across multiple stakeholders. In this Open Letter, we share some insights from the IRMI pilot phase, which could aid systemic development and scaling up of research management as a professional support service across India. We anticipate these will stimulate dialogue and guide future policy and interventions towards building robust research and innovation ecosystems in India.

Keywords

Research, Research Management, India, Extramural Funding, RMA, Scientific Administration, Science careers, Professionalization, IRMI

This article is included in the Wellcome Trust/DBT India Alliance gateway.

Open Peer Review

Reviewer Status ✓ ✓ ✓ ✓

	Invited Reviewers			
	1	**2**	**3**	**4**
REVISED **version 2** published 10 Apr 2019	✓ report	✓ report	✓ report	
version 1 published 31 Jan 2019	? report	? report	✓ report	✓ report

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Any reports and responses or comments on the article can be found at the end of the article.

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REVISED **Amendments from Version 1**

We thank all the reviewers for their valuable time and comments on version 1 of the manuscript. We have incorporated suggestions from the reviewers into this revised version of the manuscript.

Research Management and RMA have been added as keywords. Additional details and references to the overall research funding landscape have been added and sections rearranged to provide more context to the ecosystem in India. A link to the Cambridge-Africa Partnership for Research Excellence (CAPREx) program has been added as an example of international collaborations shaping RM structures. Details of administrative steps in grant management have been expanded and rearranged. A section on the methodology for the IRMI pilot and data, quotations and references to support statements have been added, whilst retaining the Open Letter format of this publication.

The IRMI Pilot represents the beginning of building wider RM infrastructure in India. Through the IRMI Pilot, we have worked with a small subset of Indian research institutions, both to raise awareness about RM and to understand gaps. This work will eventually need to be expanded to include a wider range of Indian research organizations and professionals. We thank Wellcome Open Research for this opportunity to share our work with the wider community.

See referee reports

Disclaimer

The views expressed in this article are those of the authors. Publication in Wellcome Open Research does not imply endorsement by Wellcome.

Background

Research and Innovation in India is supported through significant investments from the Government of India, international agencies and more recently from the private sector. The National Science and Technology Management Information System (NSTMIS) Division lists nearly 7000 research institutions in India, including Central and State Universities, Central Government research institutions, Public sector and Private sector institutions and others[1]. Over 50% of research in India is supported with public funds from the Government of India, channelled through sources including the Department of Biotechnology (DBT), Department of Science and Technology (DST), Council for Scientific and Industrial Research (CSIR), Indian Council of Medical Research (ICMR) and Department of Atomic Energy (DAE)[1–3].

Research support from the Government of India to Indian investigators includes competitive extramural funding from government agencies, via a wide range of competitive grants, fellowships and international collaborative funding schemes[2]. There are additionally opportunities for research via international funding partnerships such as the Wellcome Trust/DBT India Alliance (hereafter India Alliance), European Molecular Biology Organization (EMBO) and the Human Frontier Science Program (HFSP). Several philanthropic organizations including the Bill and Melinda Gates Foundation, Howard Hughes Medical Institute, Simons Foundation, Tata Trusts and Wellcome Trust support investigators and research projects in India.

While robust systems for managing intramural funding to research institutions are in place, corresponding processes for helping Indian researchers compete successfully for extramural funds have lagged behind. The current funding landscape presents both a need and an opportunity for India to develop a sound support base for this purpose.

About the IRMI Pilot

Research management (RM) systems worldwide have evolved in unique ways, driven by the complexities of research and innovation, the funding landscape and collaborative opportunities[4–8]. As an early step towards understanding RM practices in India, the Wellcome Trust, UK commissioned a scoping study in 2016 on research management (RM) in India, which included five Indian research institutions receiving funding from the India Alliance[9]. The India Alliance subsequently coordinated a panel discussion titled "Research Development Offices: The Need of the Hour" at its 2017 Annual Fellows meeting. Additionally, a voluntary and anonymous survey of India Alliance Fellows was carried out in 2017 to assess existing support for laboratory, data and research management, and research misconduct. Only 18% of respondents in the survey confirmed the presence of a Research Development Office at their institutions[10]. These early steps highlighted the need for developing and sustaining RM support at Indian research institutions.

Following on from these exercises, the India Alliance formally launched the India Research Management Initiative (IRMI) in February 2018 as an India-led 12-month pilot study aimed at creating awareness for research management, engaging in dialogue with Indian institutions and building a baseline of information upon which to base future policy and funding opportunities. The IRMI pilot has allowed us access to scientific leadership, faculty members, research managers and administrators at 31 participating institutions (Figure 1, Figure 2 and Table 1), staff at major research funding agencies in India and members of the international research management community.

We interacted with individuals in roles supporting grant management, project management, scientific outreach, innovation management, academic programs, financial management, operations, policy development and ethics in India, hereafter defined as **Research Managers and Administrators (RMAs).**

Conversations with institutions were centred on a framework of three themes: (i) Leadership support for research management, (ii) sustainability of research offices, and (iii) career development needs for RMAs. Discussions with stakeholders were conducted via site visits, audio and video calls, IRMI workshops, panel discussions and social media. To gather funding agency inputs on pre-award and post-award matters, staff feedback from the India Alliance was collected for the quality of grants processes followed at institutions. These conversations have allowed

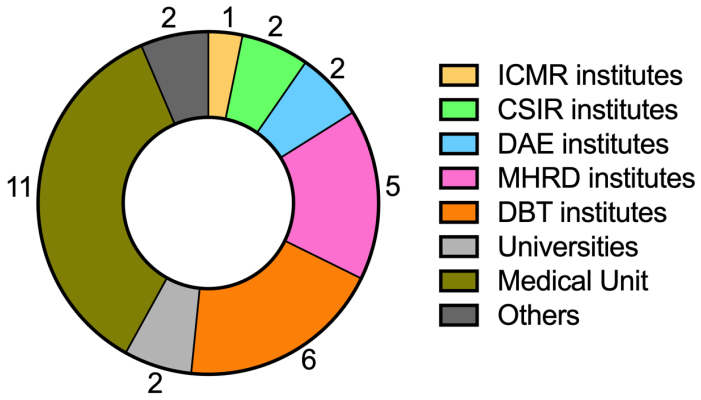

Figure 1. Diversity of institutions engaging with the India Research Management Initiative (IRMI) initiative, including autonomous research institutions of Government of India Departments such as Indian Council of Medical Research (ICMR), Department of Biotechnology (DBT), Department of Atomic Energy (DAE), Ministry of Human Resource Development (MHRD), CSIR; Universities, Medical Centres & associated research units and Others.

us to build an initial picture of expectations, constraints and requirements for various stakeholders.

Insights from the IRMI pilot

A broader working definition of RM is required for India

Indian institutions encourage their researchers to raise funds from extramural sources including the Government of India and other funders, both to further research and as peer-reviewed endorsement of their research. Several institutions therefore have in place dedicated grant management offices, such as the Project Management and Evaluations (PME) Cells at research institutions of the Council of Scientific and Industrial Research (CSIR), wherein support services are largely centred around financial management and reporting on extramural grants. Such offices need to widen their scope, incorporate proactive approaches and provide more responsive support to researchers.

India now requires a more comprehensive and inclusive definition of RM, which is also acceptable across institutions as well as funders. A more contemporary view of RM includes grant management at pre-award and post-award stages, partnership building at national and international levels, outreach to funding agencies, ethics, policy, managing team-science, impact analysis and others. Indian institutions developing their RM activities would benefit from taking this broader international scope into account for creating well-structured support services which address specific research needs.

The beginnings of wider RM in India

In the last decade, a small number of research institutions have taken steps to create science-led RM structures that extend beyond financial management. The National Centre for Biological Sciences (NCBS) in Bengaluru, the Translational Health Science and Technology Institute (THSTI) in Faridabad and Indian Institute of Science Education and Research (IISER) in Pune are pioneers, with operations including international activities, partnership building, grants management at pre- and post-award stages, outreach and ethics. These institutions have a track record of successfully attracting and managing diverse sources of external funding, including the highly competitive India Alliance fellowships. Researchers and the leadership at these institutions regard support from research offices to be crucial for their success, and include these in future planning.

Other government and privately funded institutions have also started investing more broadly in RM. Examples of these are the National Centre for Cell Science (NCCS) in Pune, Centre for Stem Cell Research (CSCR) in Vellore, Public Health Foundation of India (PHFI) in New Delhi, Shiv Nadar University in Delhi-National Capital Region (NCR), George Institute of Global Health (GIGH) in New Delhi, Tata Translational Cancer Research Centre (TTCRC) in Kolkata and Ashoka Trust for Research in Ecology and the Environment (ATREE) in Bengaluru.

At some of these institutions, development of *de novo* RM structures has been driven by the lateral movement of scientific administrators trained at funding agencies including the Wellcome Trust, Department of Biotechnology and India Alliance. These professionals have transmitted funding best practices to their new organizations and have worked in close collaboration with visionary and supportive management teams to build research offices from first principles. These are promising developments, which should be amplified across many more institutions.

Building new research offices

At present, Indian investigators spend a significant fraction of their time on administration, including the time spent on individually following up on their grant submissions and active grants with funding agencies. In the words of an India Alliance staff member, “In the absence of a central office, grant holders are often fighting a lone battle. They have to individually follow up with various Departments and scientific leadership at their host institutions as well as funding agencies to ensure that all grant-related requirements are met. While they would prefer to focus on their research programs and mentoring early career staff, much of their time is spent chasing after such tasks”.

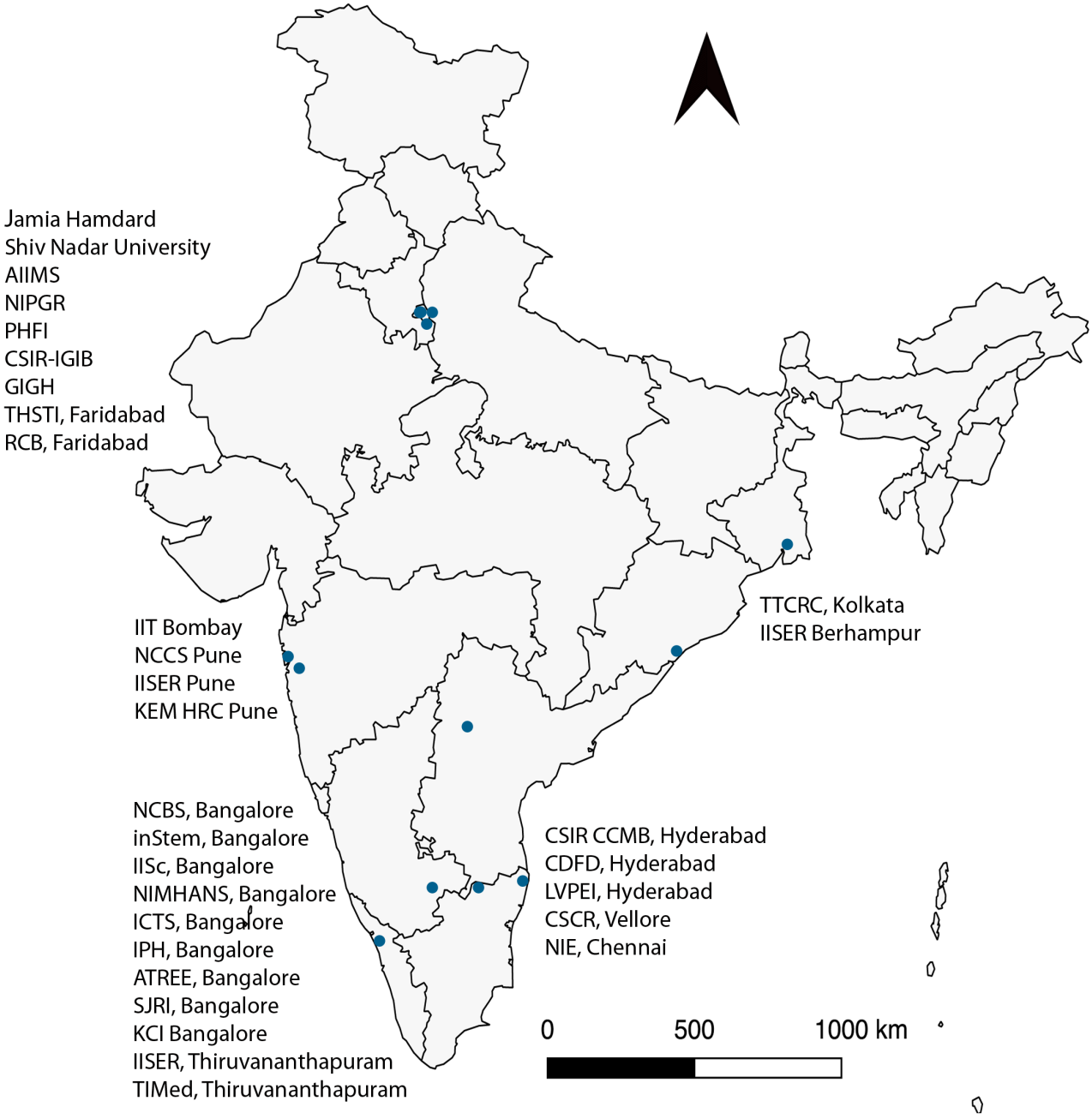

Figure 2. Geographical locations of institutions engaging with the India Research Management Initiative (IRMI) initiative.

Professional research management advice and support can significantly reduce the administrative burden on researchers and improve the effectiveness of funding proposals[5,11,12]. Outreach to funding agencies via a well-functioning centralized office is required for efficiency and creating institutional memory, and would be immensely beneficial to individual researchers, particularly in the context of proactive fundraising from diverse sources.

Institutions should take the initiative to build RM structures to support their unique research priorities. This additionally requires consistently demonstrating the value of RM to researchers and administration alike, to ensure acceptance and long-term sustainability. Leaders should create a climate of trust and actively promote the use of their research offices. This would need to be done in parallel to building capacity in areas such as laboratory management.

Individual researchers at institutions can take an interest in developing their institutional grants offices, and provide inputs and constructive feedback into how such offices could best support

Table 1. List of Indian institutions engaging with the IRMI initiative.

	Name of research organization
1	Jamia Hamdard, New Delhi
2	National Institute of Epidemiology, Chennai
3	Centre for Stem Cell Research Vellore
4	Regional Centre for Biotechnoloy, Faridabad
5	CSIR- Centre for Cellular and Molecular Biology, Hyderabad
6	Translational Health Sciences and Technology Institute, Faridabad
7	National Centre for Cell Science, Pune
8	Indian Institute of Science Education and Research, Berhampur
9	Indian Institute of Science Education and Research, Pune
10	Indian Institute of Science Education and Research, Thiruvananthapuram
11	KEM Hospital and Research Centre, Pune
12	Institute for Stem Cell Biology and Regenerative Medicine, Bangalore
13	National Centre for Biological Sciences, Bangalore
14	Indian Institute of Science, Bangalore
15	George Institute for Global Health, New Delhi
16	Shiv Nadar University, Uttar Pradesh
17	All India Institute of Medical Sciences, New Delhi
18	Indian Institute of Technology, Bombay
19	Sri Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram
20	Public Health Foundation of India, New Delhi
21	National Institute of Plant Genome Research, Delhi
22	CSIR- Institute of Genomics and Integrative Biology, Delhi
23	St Johns Research Institute, Bangalore
24	Ashoka Trust for Research in Ecology and the Environment, Bangalore
25	International Centre for Theoretical Sciences, Bangalore
26	Kidwai Cancer Institute, Bangalore
27	Institute of Public Health, Bangalore
28	National Institute of Mental Health and Neurosciences, Bangalore
29	Tata Translational Cancer Research Centre, Tata Medical Centre Kolkata
30	Centre for DNA Fingerprinting and Diagnostics, Hyderabad
31	LV Prasad Eye Institute, Hyderabad

CSIR - Council of Scientific and Industrial Research

their needs. They could also connect with peers across India, via leadership networks, shared administrative structures and platforms such as IndiaBioscience, to explore solutions to issues encountered in creating research offices in India.

Diversity of Indian research organizations: implications for RM

Research in India spans agricultural, biological, biomedical, chemical, physical, mathematical, earth, engineering and materials sciences, and other disciplines including social sciences. Institutions such as the All India Institute of Medical Sciences (AIIMS) and Indian Institutes of Technology (IITs) impart quality education in medical and engineering disciplines, respectively, and are also well regarded for their research efforts[1].

Systemic efforts at boosting RM in India should also take into account the operational sizes and administrative complexities of India's myriad research institutes and universities[13,14]. This currently varies widely, with an average life sciences research institute supporting 30–70 faculty members and the universities, AIIMS, IITs and others having much larger faculty bodies. With changes to funding structures for central and state universities, these higher education centres will also need to establish RM systems suited to their unique requirements[15].

Pre-award grant management- a missing element

Support from a central office at the pre-award stages was found to be available at only 9 of 31 institutions. In many cases, grant applicants did not have access to alerts about forthcoming deadlines, neutral professional advice on funding agency schemes and policies and alignment with institutional focus at the pre-award stage. Lack of awareness also made some researchers sceptical of the value of pre-award support, which was viewed as a hindrance or an administrative bottleneck.

Institutions have a responsibility to ensure that outgoing grant applications are compliant with legal, financial and ethical requirements. In addition, funders may have their own expectations with respect to matters such as IP, which need to have been considered by the institution. In the absence of structured pre-award services, the leadership at several Indian institutions often do not receive timely support with due diligence on applications, which leads to submission delays and avoidable errors in grant applications (conveyed to us by India Alliance staff).

The lack of proactive pre-award support can compromise both the ability of Indian researchers to identify and seek funding in a timely manner and institutional benefits from pre-award due-diligence and proper budgeting for grant proposals. This would feed forward into the ability of investigators to manage their grants in alignment with agency norms. This aspect of RM will need to be addressed, both from the perspective of changing attitudes and in developing in the required professional support at Indian institutions.

Team-science: reducing the administrative burden on investigators

Indian researchers are now increasingly participating in complex multi-institutional, often international, team-science projects to address major research questions. With India contributing to international consortia such as EMBO, HFSP and others, Indian researchers have an opportunity to participate and compete at a global level. Managing collaborations requires attention to several administrative considerations, both at pre-award and post-award stages, including budget support and due-diligence at the point of grant submission, project management, regular communication between partners, joint reporting responsibilities, IP management and cross-institutional integration of funding systems and requirements. Such activities would benefit from dedicated RM support for all collaborators, to reduce administrative burden on the investigators and facilitate seamless integration across all participating national and international stakeholders[16–19].

Team-science efforts in India are being funded from both local and international sources and Indian institutions should be willing to request and justify direct resources for RM personnel on grants supporting team-science, rather than expecting their investigators to take care of all administrative requirements.

Sustainability of careers

India has a substantial pool of early career researchers trained to the PhD and postdoctoral levels. With limited academic positions, scientific administration at funding agencies and research institutions is emerging as an attractive career option. In parallel, there is an expectation from researchers that professionals with "blended" scientific and RM skills will be required to drive a wave of change within current administrative structures at their respective institutions[20].

Scaling up RM in India will require the creation of long-term employment opportunities and career structures for RMAs at research institutions across the country. The availability of RM jobs in Indian research institutions should become the norm rather than an exception, as it currently stands. Institutions receiving core-funding from the Government of India face challenges in recruiting RMAs, particularly those with successful academic backgrounds. There is currently no clear path for hiring scientifically trained staff to purely management roles in research organizations supported by the government. Changes to present recruitment norms are required at the policy level to enable government-supported institutions to employ scientifically qualified research managers and create RM structures and roles.

Institutional overheads are globally accepted as a means of supporting research office costs. However, more clarity is needed in India about the use of grant overheads for recruitment of RMAs. It would be beneficial for institutions to work within their respective administrative frameworks to develop clear policies for costing overheads on grant proposals and to utilise a proportion of overheads received towards the recruitment of RMAs.

Capacity building

With the profession being at an early stage in India, concerted efforts on several fronts are required to prepare and develop an RMA workforce for the next decade. Training programs need to be coordinated in diverse areas of RM, at exploratory, beginner and advanced levels. In order to widen the scope of RM in India, RMAs need access to training modules in several aspects of RM. Training and exchange opportunities should be made available to RMAs in India, potentially through the work of multiple stakeholders.

Individuals with backgrounds in areas such as research, medicine, dentistry and public health would likely play key roles in shaping RM structures for Indian institutions, in a manner that caters to specific institutional requirements and priorities. The profession will hence need to be open to participation from a wider pool of staff with diverse training. Career development programs for Indian RMAs would have to take cognizance of these considerations and incorporate suitable standards.

There are already two RM training programs being offered in India. The Department of Science and Technology (DST) supports training of active scientists at different levels, which does not specifically cater to the career requirements of RMAs. Opening such courses to RMAs would significantly widen the benefits to institutions. Workshops on scientific administration are being supported through the Newton Bhabha Fund and offered by IISER Pune in partnership with the British Council and India-Bioscience. These workshops, aimed at women candidates

wishing to develop careers in scientific administration, have elicited growing interest from the community.

Indian RMAs would also benefit from inclusion in a global community of professionals. IRMI workshops and attendance of Indian delegates at INORMS 2018 were the first opportunities for Indian RMAs to interact with each other and with peers from other parts of the world. There is now a dedicated Linkedin page as an early online community for Indian RMAs. Such networking efforts require nurturing and development. In the longer term, once there is a sizeable RM community in India, it would be beneficial to have a professional association of RMAs, which would be expected to cater to future networking and career development needs of India's RMAs and for ensuring their connectivity with the international RM community.

The gender issue

A recent survey has highlighted that in several countries, RM is female dominated[21]. This is true for India as well. At the IRMI institutions, the majority of RMAs from academic backgrounds are women at early or intermediate stages of their RM careers. The Indian research ecosystem needs to recognise the value of good RM support. It is important for RM to be accepted as a bona-fide profession and not be viewed as an optional route for retaining women with research backgrounds in the workforce, with the risk of their being relegated to ill-defined support roles with unclear paths for career progression.

Wider participation from other stakeholders

The primary mandate of the India Alliance, which supported the IRMI Pilot, is to enable biomedical research. Conversations during this phase show that RM systems in India need to be inclusive of all areas of science, including social sciences. Beyond IRMI, a wider effort would require collaboration between several funders to support this across disciplines. For maximum impact, the development of RM as a profession in India would require government commitment and participation.

Conclusions

Indian institutions must now invest in developing a sound RM support base for their investigators. Without such support, the time of a researcher and funds invested in research are not being optimally utilized. The lack of good RM support also risks future growth and the ability to sustainably attract extramural funding from government, private, philanthropic and international sources. Building RM as a viable profession in India will require concurrent creation of sustainable jobs at Indian institutions and training of RM aspirants at different levels. The nascent RMA community in India will benefit from the creation of a formal members association, which can then serve to channelize training, networking and international collaborative opportunities. Such an association could also function as an advocacy group for key funders supporting research in India. With wider participation from RMAs, institutions, mentors and funders, RM can grow considerably in India and make a significant impact on its research and innovation landscape.

Data availability

No data is associated with this article.

Grant information

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Acknowledgements

The advisory group that helped develop a framework and international linkages for the IRMI pilot included Dr Simon Kay and Ms Claire Cunliffe at the Wellcome Trust and Dr John Kirkland, Chief Operating Officer of the National Institute of Economic and Social Research. They are gratefully acknowledged.

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Open Peer Review

Current Peer Review Status: ✔ ✔ ✔ ✔

Version 2

Reviewer Report 28 May 2019

https://doi.org/10.21956/wellcomeopenres.16628.r35282

✔ **Silke Blohm**
SOAS University of London, London, UK

It is good to see that the authors have taken a significant number of peer reviewers' comments into account, both with regards to establishing a clearer structure as well as a stronger integration of relevant literature. As a result, it reads a lot more fluid.

The paper is attempting to cover quite a wide range of topics within the subject of research management starting from work into an identified increased need for research management to the development of a profession of RMAs addressing this perceived need. These two parts at times still seem disconnected at times and conclusions are not always evidenced.

The need for research management is mainly explained through an increase in external funding and documented through an overall low number of research support structures. This alone does not seem a strong argument for these support structures, even though practice in other countries would indicate the benefit of such offices.

The development of the profession of RMAs is explored in more detail. I like the consideration of future career paths within the discipline which will play an important role in the sustainability of such roles and offices. What I would question here is the emphasis on the requirement of an academic background. Looking at regions where research support offices are well established seems to indicate a wide range of backgrounds in successful RMAs which would suggest that this complex field might need a mix of different skills (ranging from various academic (partly non-STEM) backgrounds, legal or financial qualifications, to a wider set of management and partly also leadership skills). In the slightly wider field of higher education management this is often referred to as the 'third sector'.

Overall though, the article seems significantly stronger now. As previously said, this seems an important piece of work for a region where research support structures are emerging but are certainly still under researched. Hopefully it will increase the awareness for this subject and lead to an overall strengthening of research at Indian institutions. It also seems to provide a good starting point for future studies and research.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: International Higher Education management, research management

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 30 April 2019

https://doi.org/10.21956/wellcomeopenres.16628.r35285

Simon Kerridge
University of Kent, Canterbury, UK

It is gratifying to see that the authors have taken on board the various reviewers' comments and have made significant efforts to address them. The Open Letter is now, I think, much stronger; and makes better use of the evidence base, with far fewer unsubstantiated claims. The coverage of the literature is also much improved, although perhaps the Colquhoun citation might be placed differently. I would imagine that rather than being associated with "can significantly reduce the administrative burden on researchers and improve the effectiveness of funding proposals" that it might more naturally be associated with a phrase such as the "viewed as a hindrance or an administrative bottleneck" later in the text.

One area that I still have an issue with is the asserted perceived need for RMAs to have a scientific background. While this might be the norm for countries developing an RMA infrastructure, it does not appear as prevalent in countries that has a long history of RMA. But perhaps this is natural evolution over time - an interesting area for research perhaps; similarly with the gender dynamic of the profession.

Overall the text and structure have been improved and I hope will increase the impact that the Open Letter will have. In my view this professionalization of RMA is entirely the right direct of travel for building research capacity in India, and I hope that it will be a catalyst for continued change. I would like to congratulate the authors on their efforts.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Research Management and Administration

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 10 April 2019

https://doi.org/10.21956/wellcomeopenres.16628.r35283

Katrina Lawson
Oxford University Clinical Research Unit, Hanoi, Vietnam

This version is much clearer. I think the argument you make for more development of Research Management capacity in India is strong, and the results of the IRMI pilot are also coming through much more clearly in this revised version.

I still think that there is a lot more to say about the gender issue (this is an area where more research is needed!), and although I personally disagree that there is a strong need for RMAs to have science backgrounds, the reference to the pilot study data now shows clearly where this expectation has arisen from.

I think this Open Letter is really important, and I hope that it leads to more attention for the need to develop Research Management Capacity in India.

Congratulations to the author team.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Research Management

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 25 February 2019

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L.S. Shashidhara
Indian Institute of Science Education and Research, Pune, Pune, Maharashtra, India

In the past ten years, we have seen massive expansion of S&T enterprise in India. Also, in the entire world the way science is pursued is also very different since the beginning of this millennium. All of this demands special category of scientific professionals trained in science management and administration in research/education institutes and universities. They should not only manage

day-to-day activities of their organisation, they should also be in the forefront of planning, executing, assessing and communicating (to the policy makers, finance people and public at large) various educational and research activities in S&T. In this context, the survey and its analysis discussed in this article is timely and essential.

The article has surveyed a good number of diverse organizations and has outlined the current status of Research management in India. As the article has pointed it out, unfortunately, except for a handful of organizations, in all organizations researchers themselves have to run around to get everything done. Since they are not specialized in these skills, they spend more time, but output is much wanted in terms of quality and quantity.

The authors have also made some constructive suggestions on how to improve the situation. The work undertaken by the authors is commendable.

However, much of the discussion is on managing grants. Research management goes beyond all this. People with necessary skills of framing policy so that science and its methods are widely used in all policy decisions for improved governance, people with good communication skills, people with administrative skills in setting up laboratories, procuring instruments and reagents, maintenance of equipment, graduate admissions (how to attract and select best students), facilitating national and international collaborations, and science entrepreneurship should be part of a good science management team of any medium size (100+ faculty) to large (400+ faculty) University/research institute.

Perhaps, a follow up to this article, authors may consider taking up a survey on how institutional research ecosystem is managed in this country. Perception is, we are not managing well and there is no organizational policy in managing it. A systematic study would give an idea of what India-specific management needs are.

Is the rationale for the Open Letter provided in sufficient detail?
Yes

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language?
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Genetics, Developmental biology and also Science Policy, administration, communication etc.

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 22 February 2019

https://doi.org/10.21956/wellcomeopenres.16445.r34741

Katrina Lawson
Oxford University Clinical Research Unit, Hanoi, Vietnam

It is really great to see this report. As with many developing countries, the Research Administration landscape in India is evolving slowly and in a different way that the RA landscape in developed countries. It is rare for resources to be available to investigate and address the infrastructural environment that exists around research support, and the project that has led to the development of IRMI is immensely valuable, as evidenced in this article.

I think that the article could benefit from some more clear definitions of terms.
Intramural vs extramural: Although it is undoubtedly common in India, I am not clear about what is considered intramural vs extramural funds, and the distinction appears to be significant for this piece. I initially thought that extramural meant competitive funding from outside of India, but now am not sure. How are intramural funds awarded to the researchers? Is it a competitive grant-making process?
Definition of RM: The article calls for broader definition of RM, but I'm not sure what the baseline definition is. Is it just financial accounting post-award? The example list of what would be included in a contemporary view of RM is quite all-encompassing – I wonder if there is benefit in providing more clarity around these functions, and perhaps a scale of development. I felt that this section was also a little bit in conflict with the assertion later on that each institution needs to build RM structures that support their unique research priorities. I think this point is crucial – RM needs to reflect the needs of the research in each context, and there is no single perfect solution.

In the section about pre-award support, slightly more discussion around the concept of **due diligence** could be helpful. It would be good talk about the needs for institutions to comply with legal and ethical constraints, as well the constraints imposed by funders – which can be significant, particularly in terms of financial control and IP.

The team science point is very important. You could also specifically mention some of the administrative considerations involved in supporting collaborative research – including IP considerations, shared reporting responsibilities, conflicts of interest, research contract management, and financial reporting and liability for audit.

I think the point about gender is extremely valuable to make here, and you could make it more strongly. The fact that research administration globally is a female dominated profession is one of the direct reasons that it is undervalued. There is an entire PhD project that could be spent on this particular issue, but for the purposes of this article I would make the point more clearly that Research Administration is

undervalued precisely because of gender discrimination. I think it's not phrased quite right at the moment when you say RM is "a route for retaining scientifically trained women in the workforce". I think the more obvious point is that RM is being used as a tool to exclude scientifically trained women from the scientific workforce. People should not be training for 15 years to become scientists, and then find that the only research-related work they can get is in the research office doing accounts. I think this also feeds into the capacity building section. I am not sure of the reason why you seem to arguing that RMAs should preferably be trained scientists. A science background is sometimes an advantage in RM, and other times quite irrelevant. But insisting on a scientific background for the RMAs is probably contributing to the gender imbalance, and the filtering of female scientists into the research office and out of the lab.

Finally, the case for creating a professional association of RMAs in India is very strongly made here, in particular when considering the need for wider participation from other stakeholders. An RM professional network will be able to broker that support, and advocate for the needs of the research community in relation to RM.

This review was written under the assumption that the submitted article is an opinion piece, rather than a scientific report.

Is the rationale for the Open Letter provided in sufficient detail?
Yes

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language?
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Research Management

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 20 February 2019

https://doi.org/10.21956/wellcomeopenres.16445.r34743

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Silke Blohm
SOAS University of London, London, UK

The paper describes an important piece of work which seems very timely and is filling a gap within its regional context. The conclusions and recommendations seem compelling and would seem to align with findings/developments in other places. However, this connection is not explicitly made and not evidenced strongly enough. Here drawing on existing studies and publications, e.g. from existing research management associations or some academic studies and papers published, could significantly strengthen the paper.

The paper gives some important and insightful background on the historical development of research and related funding at Indian universities. This information is useful and would also benefit from references to supporting work and data. The paper then seems to jump too quickly to some initial conclusions before having outlined the foundation for these conclusions. Here a restructure of the order of chapters/paragraphs would help to development a clearer line of argument. It would seem useful to first give an introduction into the Indian HE and research funding landscape before then moving to what seems at the core of the paper, the IRMI pilot.

The authors have conducted what seems an impressive amount of work on data collection through surveys and individual discussions. The paper gives some insights into findings, overall though could make better use of this data and be more precise about findings and conclusions drawn.

While these conclusions made might seem obvious and likely could be supported by data and case studies from similar developments in other regions, those links have not explicitly been drawn and not enough reference has been made to existing work in this area. This would seem a main weakness of this paper which could be addressed by cross-referencing findings and conclusions back to the data collected and to experiences/findings made in other regions/institutions.

Overall the reader would benefit from a clearer structure which would avoid jumping from observations to conclusions and back. Important aspects to cover would seem:

- a brief historical overview of research and research funding at Indian HEI,
- an introduction of the pilot this article is based on, the methodology used and why it has been used,
- a brief summary of other work in this area, i.e. experiences of emerging research management/administration structures in other places (which would then later on support the conclusions drawn)
- findings from the pilot
- discussion of findings in context of the wider development of research management/administration globally
- conclusion/recommendation

Overall this is a very laudable and ambitious attempt at covering what seems a very large amount of work and data. The paper is also entering a field that overall still seems ‘under-researched’ with limited publications available. The paper would seem an important piece of work to contribute to the overall body of literature on evolving research support structures in HEIs.

The intent of this Open Letter might be to give an overview of the pilot study and some initial findings rather than embedding the work in a comprehensive sector and literature review. In this case a clearer

focus on giving an introduction into the pilot and its aims and where possible sharing some initial findings might be a more realistic achievement in this paper. It would seem crucial to cross-reference and evidence any findings and conclusions.

Is the rationale for the Open Letter provided in sufficient detail?
Yes

Does the article adequately reference differing views and opinions?
No

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language?
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: International Higher Education management, research management

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 14 February 2019

https://doi.org/10.21956/wellcomeopenres.16445.r34742

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Simon Kerridge
University of Kent, Canterbury, UK

Overall the Open Letter is clear and compelling - India should invest in Research Management and Administration (RMA) infrastructure in order to better support researchers in their endeavours. The specific recommendation for the creation of a national association for RMAs is also welcome. However some of the assertions are not underpinned with evidence, at least not with evidence provided in the article.

This is a real shame as the overall argument is (in my opinion) sound, but it is perhaps because of my experience as an RMA that I believe this, rather than with the evidence presented in the article - in some cases the Open Letter does not provide evidence for the assertions made. However it does appear that

much evidence will have been gathered in the IRMI work. This could perhaps be more explicitly and directly drawn into the Open Letter – one method could be the incorporation of quotes from participants; but this could be problematic post hoc, and would perhaps change the tone of the article. Another is to provide more detail on claims, for example “At present, Indian investigators spend a significant fraction of their time on administration…” there is no indication of what this fraction might be, or how the data to make the assertion was collected.

In terms of unsupported assertions, another example is "Collaborative proposals involving Indian institutions lacking research offices often suffer delays, inadequate due diligence, undercosting of proposals on the Indian side, inadequate overheads and sluggish project management." - is this the case, where is the evidence? It seems (to me) to be a reasonable assertion, and one I presume that came from the IRMI work – but the authors do not state this. However, most of these assertions do reflect the findings of others, but again they are not referenced.

India / IRMI specific assertions were similarly unsupported, for example “Support from a central office at the pre-award stages was found to be available at only a small minority of institutions.” How many of the 31 institutions looked at was this? There is no underlying dataset to help answer this.

One specific assertion that I do not quite follow is: “Individuals with backgrounds in areas such as science, medicine, dentistry and public health would likely play key roles in shaping RM structures for Indian institutions, in a manner that caters to specific institutional requirements and priorities.” As shown in their 4th reference (disclaimer, this was work I led), around the world, RMAs come from a wide variety of academic backgrounds. It is not clear why this would be focussed around science and medicine in India. However the IRMI work was based around institutions predominantly it seems in these subject areas and so perhaps, given the newness of the profession in India and the apparent propensity in countries where RMA is developing for RMAs initially to be researchers moving into administration, then perhaps this is to be expected.

One specific weakness is in addressing opposing views. This is only highlighted with the sentence “Lack of awareness also makes some researchers sceptical of the value of pre-award support, which was viewed as a hindrance or an administrative bottleneck.” which is then not countered or debated. For example David Colquhoun makes some strong statements http://www.dcscience.net/DC-research-fortnight-020610.pdf; however the majority of the literature suggests that “good” research support can indeed unencumber the researcher from administrative burden, and even help improve the chances for research bids to be successful. See for example Pamela F. Miller (2017)[1], and Natasha G. Wiebe and Eleanor Maticka-Tyndale (2017)[2].

Given the use of the worded “blended” in terms of professionalism, one might have expected a reference to the work of Celia Whitchurch. In general there is a low level of citation.

I would have liked to see “Research Management” and “RMA” included in the keywords.

Overall the authors are to be commended in covering such a large amount of ground in such a short space, however this does perhaps mean that the reader has to take some assertions on face value. Perhaps as an Open Letter, to provoke debate, this is not unreasonable but the arguments would be much stronger with the evidence base that the IRMI work surely produced – allowing the conclusions to be properly justified.

In summary, the effectiveness of Research Management and Administration is in general an under

researched area, and this Open Letter and its recommendations are welcomed, but is felt that some work is needed to show robust evidence for the conclusions made.

References

1. Miller PF: The Global Research Environment. *Chapter 3 in Research Management: Europe and Beyond*. 2017.
2. Wiebe NG, Maticka-Tyndale E: More and Better Grant Proposals? The Evaluation of a Grant-Writing Group at a Mid-Sized Canadian University. *Journal of Research Administration*. 2107. 67-92

Is the rationale for the Open Letter provided in sufficient detail?
Yes

Does the article adequately reference differing views and opinions?
No

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language?
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow?
Yes

Competing Interests: The reviewer has been minimally involved in the Wellcome Trust/DBT India Alliance / African Academy of Sciences initiative that the authors have played a major role in; however we have not worked directly together.

Reviewer Expertise: Research Management and Administration

I have read this submission. I believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reader Comment 19 Feb 2019

Naresh Sharma,

Thanks Savitha, appreciate your efforts in highlighting the need of Research managers in Indian research institutes. You have rightly highlighted the symbiotic relationship between research managers and researchers.

This niche of managers having passion and scientific background brings in value addition to standard procedures of pre- and post-award management. The political and academic leadership should recognize this value addition and formalize the positions and career development policies for this group.

Competing Interests: No competing interests were disclosed.

Comments on this article

Version 1

Reader Comment 02 Feb 2019

Prashanth N Srinivas, Institute of Public Health Bengaluru, India

Congratulations on writing up the experience of IRMI. Country/institutional investment in research management will be crucial in realizing the impact of the ongoing investments into research in India. In my opinion, many large government research institutions are struggling without this role right now. Introducing such roles in non-governmental research organasations in India (such as ours) also has its challenges. Changes to grant architecture similar to the changes introduced to accommodate open access publishing fees would be needed to ensure adequate focus on research management.

Competing Interests: My institution (IPH Bangalore) has participated in workshops conducted under IRMI initiative.