JRMG™
JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

VOL. 4
NO. 1

# JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

DECEMBER 2021

JRMG
JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

# FOREWORD

Let me extend my heartiest welcome to the first issue of the Journal of Research Management and Governance (JRMG). JRMG is beginning its journey in December 2018 with the University of Malaya – the premier research university in Malaysia – as its host.

In the past couple of decades, research efforts in Malaysia have intensified to a great extent. Research outputs in term of both quality and quality has been improving significantly. The number of research publications and patents has been on the rise. Other countries in the ASEAN region are also putting great efforts to improve their research performance.

Building and sustaining the momentum of research require an effective research ecosystem. Well trained professionals in research management and governance are a key element of such an ecosystem. The scope of research management and governance is wide. At the micro-level, it may involve managing individual research projects. At a bigger scale, research management is carried out at the institutional level, in a university or a research organization. At the macro-level, research management encompasses at national and international level efforts. Effective research management and governance or administration at different levels is vital to ensure the effective use of research funding and other resources, so as to achieve the intended outcome and impact.

In advanced countries, research management has, to a great extent, taken the shape of a profession on its own. It is recognized that professionals working in the area of research management are required to have unique blend of skills and experience in areas which can be grouped into: research-related, management- and communication-skills; and transferable skills. They may get involved in wide ranging activities such a science funding, project management, science communication, technology transfer, partnership and networking, outreach, lobbying, science policy, lab management, research support services, etc.

A few universities in advanced countries offer postgraduate degree and certificate programs in research management, administration or governance. Professional societies in different countries and regions are putting great efforts for research management professionals to excel. Some of these active societies include Association of Research Managers and Administrators, UK (ARMA); Australasian Research Management Society (ARMS); European Association of Research Managers and Administrators (EARMA); National Council of University Research Administrators (NCURA), USA; Research Manager and Administrator Network Japan (RMAN-J); Southern African Research & Innovation Management Association (SARIMA) and West African

JRMG
JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

Research and Innovation Management Association (WARIMA).

Research management, in this part of the world, is yet to emerge as a profession. In order to help research management profession to flourish in Malaysia and in this region, we need to start building a community of practice. The Journal of Research Management and Governance, the first of its kind in Malaysia and perhaps in the South East Asian region, intends to provide a platform for research management practitioners and administrators, and researchers to exchange knowledge, share their experience and views to order to achieve excellence in their professional pursuits. The journal publishes both scholarly research work and articles to share best practice and viewpoints. I take this opportunity to invite you and your colleagues to submit your contributions to JRMG in the following categories: 1. Full-length article, 2. Short communications, 3. Case Studies, 4. Opinions, 5. Book Review/Conference Report.

It is my hope that this journal will act as an effective scholarly platform for research management professionals in this region and beyond in the years to come.

A.S.M.A. Haseeb
Editor-in-Chief
JRMG
Universiti Malaya

JRMG
JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

# PREFACE

It is my pleasure to welcome the publication of the 4th volume of the Journal of Research Management and Governance (JRMG). University of Malaya as the premier university in Malaysia realizes the importance of research management and governance in supporting the whole research ecosystem. Research, as an integral part of academia has been progressing at an unprecedented rate in this part of the world with many institutions from emerging economies making their marks in global rankings. In the course of evolving into research-based institutions and coping with the flux of resources, information and research output, the need for professional management of research processes has become inevitable. The birth of JRMG is aimed as a platform for exchanging ideas and sharing strategies in the management and governance of research by those who are involved in research management, for the advancement of research in their respective organizations. Good practices of research management and governance significantly influence the various aspects of research including financial management, employment of appropriate talents, output management, and translation of research to the society. I would like to extend my gratitude to Prof. M.A. Haseeb and his team for their efforts in publishing JRMG. It is my greatest hope that JRMG will be recognised as a channel to connect research communities globally to communicate on matters pertaining to research processes be they issues or solutions.

Professor Dr. Shaliza Ibrahim
Lead Advisor
JRMG
Universiti Malaya

JRMG
JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

## DESCRIPTION

The Journal of Research Management & Governance (JRMG) (eISSN: 2637-1103) is an official journal of the University of Malaya. It is an international, peer-reviewed, open access journal with readership throughout the field of sciences and non-sciences. The JRMG was established to provide a platform for scholars, experts, researchers, practitioners, and students from various fields to come together under a common interest in the field covering all aspects related to management and administration of research in universities, research organizations and funding agencies including strategies and policies in research management and administration, development of research management professionals, management and storage of research output, impact and implication of research and the changing research environment at both national and international levels to publish original research, review papers, and other scholarly works that are freely accessible to the whole scientific community, locally and internationally.

## AIMS AND SCOPES

The main objectives of this journal are to publish quality articles in research management and governance, and to discover and advance best practices in this area.

Articles published in JRMG cover all aspects related to management and governance of research in universities, research organizations, funding agencies and governments. This includes (but not limited to) research ecosystem, study and practice of research management profession, strategies and policies, research policy and ethics, changing research environment, quality and innovation in research administration and management, human resource management and development, full economic costing and research funding, knowledge transfer from research to application, data science and data curation as applied to research management, impact of research, developments within higher education environment and implications of major external influences on research management.

The Editors will consider papers for manuscripts based on novelty and contribution to the advancement of research management. JRMG publishes full-length articles, short communications, case studies, opinions and book review/conference report.

JRMG
JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

# TABLE OF CONTENTS

JRMG JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

Vol. 4, Issue 1, pp. 1-9

OPINION

# Fostering Interdisciplinary Research Culture, Challenges and Way Forward: The Universiti Malaya Experience

Puteri Shafinaz Abdul-Rahman[1,2,*], Haryana Rozana Abdul Rahim[1], Normaniza Osman[1,3,*]

[1] Research Cluster Office, Institute of Research Management & Services, Deputy Vice-Chancellor (Research & Innovation), Universiti Malaya, 50603 Kuala Lumpur, Malaysia

[2] Department of Molecular Medicine, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur, Malaysia

[3] Institute of Biological Sciences, Faculty of Science, Universiti Malaya, 50603 Kuala Lumpur, Malaysia

[*]Corresponding author email:
terisar@um.edu.my;
puteri@ummc.edu.my;
normaniza@um.edu.my

**Received date:** 11 Jan 2021
**Published date:** 31 Dec 2021

**How to cite:**
Abdul-Rahman, P.S., Abdul Rahim, H.R. & Osman, N. (2021). Fostering Interdisciplinary Research Culture, Challenges and Way Forward: The Universiti Malaya Experience. *Journal of Research Management & Governance*, 4(1), 1-9. Retrieved from https://ejournal.um.edu.my/index.php/JRMG/article/view/28133

**DOI:**
https://doi.org/10.22452/jrmg.vol4no1.1

## ABSTRACT

Interdisciplinary research (IDR) exploring beyond the purview of a single discipline is critical for providing the requisite solutions to real-world issues. Furthermore, the process of translating research that could have a positive impact on and benefit the government, industry and society, typically requires a multipronged approach with inputs and solutions integrated from various disciplines. Therefore, IDR is vital in pushing the different disciplines forward and accelerating scientific discovery in innovative ways. Nonetheless, the move towards encouraging researchers to break away from working in silos to working together has been an extremely challenging task. Doubtlessly, interdisciplinary programmes demand much more involvement and exhaustive effort from researchers per se as they require not only academic scholarship but also soft skills to communicate, network and engage with other researchers from diversified disciplines, various stakeholders and beneficiaries. In addition to that, good leadership and all-rounded teamwork support are required in navigating and ensuring the success of the research programme to deliver its intended outcome and impact. In light of this, this opinion paper discusses some of the challenges confronted in fostering IDR at the Universiti Malaya and suggestions on approaches that could be adopted to garner the interest and move it forward.

**Keywords:** Interdisciplinary; Research; Challenges; Way Forward

## 1. Introduction

The complexity of the current global situation, such as the Covid-19 pandemic, persistent contamination of the environment and morbid concerns regarding health and well-being, is a wake-up call for researchers to move beyond the confinement of single disciplinary research in their endeavours to find solutions to the existing real-world problems. Moreover, the influence of global megatrends, such as Sustainable Development Goals (SDG) and Industrial Revolution 4.0 (IR4.0), have made it pertinent for researchers to work in collaboration with each other. Furthermore, in line with Malaysia's national agenda to become a fully developed country status and Shared Prosperity Vision 2030 (Prime Minister's

Office of Malaysia, 2019), experts from a wide array of disciplines would have to work together using interdisciplinary research (IDR) approaches to solve the grand challenges facing our Malaysian society and towards achieving real-world impact.

The effort to define 'interdisciplinary research and teaching' was deliberated as early as the 1970s in the Organisation for Economic Co-operation and Development (OECD) meeting held in Nice, France. It was then agreed that the definition of 'interdisciplinarity' refers to the 'Interaction between disciplines and it points to the presence of a team of discipline-based academics and emphasizes applications to real-world problems' (Berger, 1972). The modern concept of interdisciplinarity has been modelled to foster and encourage ideas for unity and knowledge synthesis, the emergence of organised programmes in research and education, and the broadening of traditional disciplines (Klein, 1990). The current definition of interdisciplinarity adopted by the National Science Foundation in their criteria and selection of awarding grants is based on:

> Interdisciplinary research can be defined as a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice (National Academy of Science, 2004).

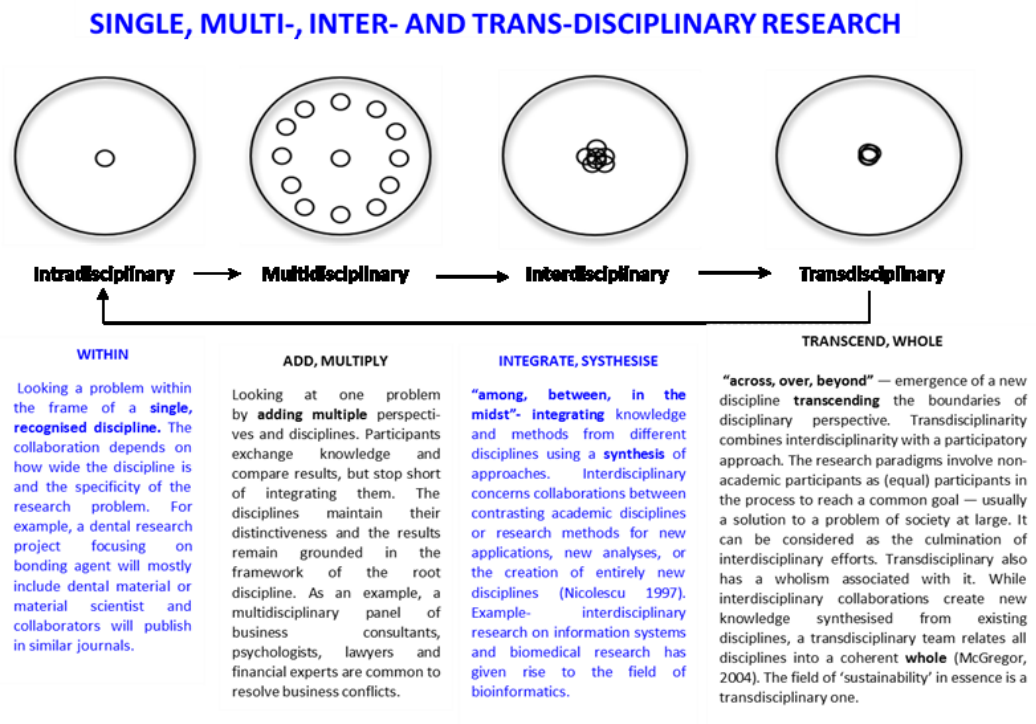



**Figure 1:** Illustration of a simple elaboration of the features of the various disciplinary levels of IDR, from single discipline to multi-, inter-, transdisciplinary (MIT) research (Jensenius, 2012), (Mcgregor, 2004) and (Nicolescu, 1997).

The definitions of interdisciplinarity have evolved in the last several years; however, the fundamental principles are still the same, and most of them are underpinned on a problem-focused approach. Furthermore, the definition now underlines the actual integration of various disciplines rather than their mere interactions. Another crucial feature that is emphasised is the communication between discipline-based academics undertaking interdisciplinary programmes. The complexity of IDR and its different modalities comprising MIT approaches that could be undertaken have invariably created confusion among researchers and have been constantly discussed. Although a consensus is not always attained for these approaches, it is clear that MIT research areas are dynamic, wherein they are continually emerging, amalgamating and transforming. Some of the terminologies and keywords usually used in describing the different levels of integration of MIT research are encapsulated in Table 1.

Table 1: The Terminologies and Keywords Describing the Different Levels of Integration of MIT Research

| Terminology | Description |
|---|---|
| **Discipline** | a specific body of teachable knowledge with its own background of education, training, procedures, methods and content areas<br>keywords: specialising, concentrating, analysing, segmenting |
| **Multidisciplinary** | juxtaposition of various disciplines, sometimes with no apparent connection between them<br>keywords: sequencing, juxtaposing, coordinating |
| **Interdisciplinary** | the interaction among two or more different disciplines.<br>Keywords: interacting, linking, blending, integrating, synthesising |
| **Transdisciplinary** | establishing a common system of axioms for a set of disciplines.<br>Keywords: transcending, overarching, transforming, transgressing |

Note: Adapted and incorporated from (i) "Interdisciplinarity: Problems of Teaching and Research in Universities," by G. Berger, 1972, and (ii) "Interdisciplinarity and Transdisciplinarity: Keyword Meanings for Collaboration Science and Translational Medicine," by J.T. Klein, 2014, *Journal of Translational Medicine and Epidemiology, 2*(2), p. 1024.

With more national and international granting bodies moving towards interdisciplinary projects in their call for proposals to resolve real-world issues, researchers must integrate the research questions and concepts in the said IDR proposal. Our researchers also need to embrace the salient characteristics of IDR by being open to interact and practise the art of networking. Adequate communication and soft skills are a bonus in forming an interdisciplinary team as members may not only be limited to counterparts from various disciplines but with collaborators worldwide with different cultures and mindsets.

This opinion paper essentially discusses some of the challenges encountered in fostering IDR, drawn from the experience of the Universiti Malaya (UM). It also includes challenges as well as the recommendations on approaches that could be adopted at different levels of entities to move IDR forward according to interview sessions and Focus Group Discussions (FGD) (Normaniza et al., 2020).

## 2. Interdisciplinary Research: The Universiti Malaya Experience

The initiatives put towards establishing of research management units, the formalisation of governance structure and the creating of a myriad of research grant schemes are principal drivers stimulating research and development at UM. Considering the influence of global issues on research and the country's journey towards the status of a fully developed nation, UM also acknowledges that important research ideas may go beyond the scope of a single discipline. Therefore, IDR is vital in pushing the different disciplines forward and accelerating scientific discovery in innovative ways. UM has also undertaken initiatives to support multidisciplinary projects by establishing specific internal grants and furnishing the requisite facilities for productive IDR.

Among the early funding mechanisms dedicated to bringing together research activities from different disciplines coordinated by UM's Research Cluster Office were the grant award scheme known as Universiti Malaya Research Grant (UMRG) Programme and the Grand Challenge (GC). The former was started in 2012 and it is a three-year (36 months) research programme led by a programme leader with two or more sub-programme leaders in different areas or disciplines. UMRG Programme aims at fostering MIT research and at the same time encourage the generation of new ideas, theories, concepts or processes that promote the generation of knowledge, innovation and new findings. This grant is also open to researchers who are interested in conducting research in groups to promote multi-/inter-disciplinary research (Pejabat Kluster Penyelidikan, 2017).

The GC, on the other hand, is a long-term research programme that aims to enhance community and research leadership in accordance with the principles of social responsibility. It was introduced in 2013 with specific challenge-oriented research and development themes. Five themes were outlined in the GC call for proposals that include active ageing, eco-resilient cities, sustainable resources and technology, world without conflict and pushing economic borders (Pejabat Kluster Penyelidikan, 2017). Compared with the UMRG Programme, the GC is offered for a longer duration of 24–60 months. The programmes considered are those that are cutting across research domains and are transdisciplinary in nature. At the application stage, the research team is required to produce a concept paper, and the outline of the entire programme must demonstrate the interconnection between every sub–Grand Challenge involved. The programme is evaluated on the basis of the potential of its noteworthy contribution to society and the inclusion of stakeholders.

Subsequently in 2019, as a step to further boost and support the accomplishment, expertise and commitment of IDR in UM, a new grant award scheme, the Impact-Oriented Interdisciplinary Research Grant Programme (IIRG) was introduced. The grant given is for two-year programme, and the allocation is regarded as seed funding for the researchers to initiate their project. The specific objectives of the IIRG are to strengthen niche areas and nurture emerging thrust areas in UM, encourage IDR among UM researchers and drive impact-oriented research within UM (Research Cluster Office, 2019). The UM IIRG was launched to gradually transform the research culture within UM to a more integrated interdisciplinary approach. In doing so, it is anticipated to lead towards the ultimate goal of meeting the nation's expectations by addressing real-world issues pertinent to the society and industry. To encapsulate this idea, the elements of impact benefitting society, health, economic, cultural and

environmental are emphasised, and engagement with relevant stakeholders must be incorporated into IIRG proposals.

Contrary to other grants (UMRG and GC), apart from the academic output, the IIRG programme's deliverables also consider forms of non-academic output, such as writing media articles and organising forums or seminars as means of bridging the researcher with the public. Another requirement of IIRG is that the awarded recipients must apply for an external grant to encourage researchers to expand the purview of their research and sustainability of the project. This grant is perceived as highly competitive. The selection process is stringent with two levels of evaluation, and researchers are challenged to pitch their proposals to the panels and stakeholders before being successfully awarded the grant.

In contrast to UMRG and GC programmes where the team takes off their project on their own after being awarded the grant, a coordinated guided approach is undertaken for IIRG. A number of workshops are designed by the Research Cluster Office in providing an integrated overview of interdisciplinary concepts to the researchers embarking on IIRG programmes, in order to gradually transform the research culture within UM. These workshops are expected to provide casual avenues for interactions amongst the different background researchers while they work in collaboration with each other to develop their programme's impact pathway, enhance research communication skills and construct meaningful lay and graphical abstract for the understanding of the general public.

## 3. Challenges confronted by IDR

Although the initiatives and avenues to support IDR have been taken and provided for more than a decade, either at national or university level, the IDR approach in conducting research is still considered to be a challenge in many aspects. In addition, from our interview session and FGD, we discovered that a number of studies that were carried out were loosely clustered according to the various disciplines in the faculty and crossed faculty research was observed lacking (Normaniza et al., 2020). Apart from that, other noticeable challenges of carrying out IDR, *inter alia*, were as follows:

i. Concept and IDR approach are ambiguous
   - The definition and concept of IDR are ambiguous because of the evolution of knowledge and real-world issues.
   - It is unclear about how IDR should be initiated, as to whether the approach should be taken via working on a real-world issue or natural progression from a single to multidisciplinary project.

ii. Conventional mindset in doing research
   - It is a challenge for some researchers to venture into IDR as they feel that their field will be 'diluted' whilst engaging in IDR-based programmes. Moreover, executing interdisciplinary projects also felt like 'moving into foreign territory', with all the concomitant dislocations, confusion, and frustrations due to unfamiliarity of the language, the practices, or even the way people see the world (Bromme, 2000).
   - Thus, the researchers need to develop an open and positive mindset that they will not lose their identity or expertise but instead would be acquiring integrated knowledge, skills and solution that could not be achieved by means of a single discipline.

- Lach (2014) has described that those who engage in IDR are tolerant for ambiguity and paradox amid complexity, have the willingness to work with others, openness to the perspectives of other disciplines, and humility.

iii. Lack of researchers' visibility and ways to promote IDR
- The lack of visibility of our researchers is also a concern. Researchers face difficulty in finding experts from different disciplines for IDR collaboration.
- The publicity on existing IDR that has been conducted to create awareness to the public and researchers who are interested to venture into IDR is also lacking.

iv. Lack of research ecosystem support
- Researchers feel that the existing awarding systems such as key performance index (KPI) and promotion do not take into consideration industrious effort in the measurement of involvement or performance of researchers undertaking IDR.
- Researchers voiced the opinion that support from top management is essential for establishing a conducive research ecosystem such as shared facilities to encourage researchers to work with others across faculties.

## 4. Recommendations and the Way Forward

In accordance with the challenges enumerated earlier, the proposed recommendations and the way forward that may be undertaken towards fostering effective IDR are elaborated. This is presented in terms of visualisation of the improvement of five key conditions.

i. Organisation administration
- Assisting in building bridges – provide platforms and sessions to facilitate networking and linking researchers with potential collaborators including industrial partners, NGOs, agencies and communities.
- Facilitate positive attitude amongst researchers – organising research empowerment training, motivation and sharing session on successful IDR researchers and programmes.
- Recognition and rightful acknowledgement for academic researchers who foster IDR. The paradox of interdisciplinarity is that 'it is encouraged, but poorly rewarded' (Science Europe, 2019). IDR programmes are also designed for good impact towards the betterment of society. Thus, the dedicated effort of the team in developing and sustaining a programme, which includes non-academic measures and output, and constant engagement with stakeholders should be justly recognised and acknowledged in evaluation measures such as key performance index (KPI) and promotion. Recognition awards may also be given for programmes that perform outstandingly in different categories.

ii. Building bridges
- Foster communication – Seminars, workshops or sharing sessions can be conducted to facilitate and improve communication among researchers, stakeholders and industry. Sharing sessions for inculcating IDR could include enhancement of the IDR concept and knowledge for researchers and inspirational dialogue with successful IDR leaders.

- Linking researchers – As an entity closest to the researchers, faculties can play a vital role in assisting researchers in building linkages across faculties or disciplines. Faculties could also function actively in bridging researchers with industries, non-governmental organisations and stakeholders.
- Mentorship – The faculty could encourage the inclusion of the IDR concept in the existing mentorship system.

iii. Supporting the project
- IDR review committee – Establishing an interdisciplinary review committee comprising experts and successful IDR leaders is essential for recognising potential research with high impact.
- Involvement of related funding organisations and stakeholders can further strengthen the IDR project.
- Adequate time for mutual learning – Allow sufficient time to build consensus among researchers, considering they have diverse backgrounds, research niches and nature of work prior to grant call via informal discussion and pre-proposal workshop.

iv. Organisation of facilities
- Research ecosystem – The faculty is encouraged to provide conducive research ecosystems that include shared instrumentation, common space and research-informative websites and social media platforms to increase the visibility of their researchers.
- Improved interaction and promotion space – The creation of common spaces that can enhance casual meetings among researchers such as cafes, cubes and co-working spaces are essential for informal and relaxed meetings. Such conducive environment is likely to enhance the gathering and exchange of ideas among researchers, leading to the ideation of interdisciplinary programmes.

v. Positive attributes
- Researchers must be open-minded, tolerant and willing to learn while venturing into the challenges of IDR.
- Integration into the IDR team – Researchers are encouraged to be involved from the early stage of the proposal, conduct frequent meetings among team members and acknowledge the contribution of the various team members to the project.
- Communication and IDR skills – Researchers should invest their valuable time to attend research empowerment training, workshops or sharing sessions that are organised by the administrative unit to improve IDR skills and communication among researchers, stakeholder and industry.
- Leadership – programmes should be led by individuals with a clear vision of the direction of IDR and empathy towards the different research background of team members.
- Understanding different background and research cultures – it must be understood that there are variations in different disciplines, contexts and nature of work.

## 5. Conclusion

An encouraging number of researchers have taken up the opportunity and challenge of being involved in IDR programmes in their endeavour to solve real-world issues and provide impactful solutions. Having common interests to solve complex problems or those driven by scientific curiosity or practical needs could be a good start for a group of researchers from different areas to initiate an IDR team or programme. However, many still worry about venturing into IDR as they are unclear about the concept of IDR and apprehensive about losing their identity and expertise. A number of key conditions could be promoted to foster and garner the interest of researchers towards IDR. Key conditions that can be improved are organisation administration, facilities organisation, support system and assistance in linkages and networking for researchers. Equally important is to catalyse the integration of various disciplines in the team is the willingness to learn each other's 'vocabulary', methodology, thinking style, and perceive each discipline with equal importance and expectation. The success of IDR is partly attributed to good leadership with clear vision and those with effective communication lines among the team members. Above all, in developing a good IDR, researcher who ventures into the challenges of IDR, an individual with positive attributes such as perseverance, open-mindedness and willingness to learn, is crucial.

## Acknowledgements:

We would like to thank Professor Ainin Sulaiman and everyone from the Research Cluster Office, Universiti Malaya, for their expertise and assistance throughout the preparation of this manuscript.

## References:

Berger, G. (1972). *Interdisciplinarity: Problems of Teaching and Research in Universities.* Paris: Organisation for Economic Cooperation and Development. Retrieved from https:// files.eric.ed.gov/fulltext/ED061895.pdf

Bromme, R. (2000). Beyond one's own perspective: the psychology of cognitive. In Weingart, & Stehr (Eds.), *Practicing interdisciplinarity.* (pp. 115-133). Toronto, Canada: University of Toronto Press. Retrieved from https://msu.edu/~orourk51/800-Phil/Handouts/Readings/CommonGround/ Bromme-PsychologyOfCognitiveInterdisciplinarity-W&S-2000.pdf

Jensenius, A.R. (2012, March 12). *Disciplinarities: intra, cross, multi, inter, trans*. Retrieved from *https:// www.arj.no/2012/03/12/disciplinarities-2/*

Klein, J.T. (1990). *Interdisciplinarity: History, Theory, and Practice.* Detroit, Michigan: Wayne State University Press.

Lach, D. (2014). Challenges of Interdisciplinary Research: Reconciling Qualitative and Quantitative. *Environmental Management, 53*(1), 88-93. https://doi.org/10.1007/s00267-013-0115-8

McGregor, S.L. (2004, January). *The Nature of Transdisciplinary Research and Practice*. Retrieved from *https://www.researchgate.net/ publication/238606943_The_Nature_of_Transdisciplinary_Research_and_Practice*

National Academy of Science. (2004). *Facilitating Interdisciplinary Research, Committee on Science,*

*Engineering, and Public Policy.* Washington: National Academy Press. https://doi.org/10.17226/11153

Nicolescu, B. (1997). *The Transdisciplinary Evolution of the University Condition for Sustainable Development*. Retrieved from *https://ciret-transdisciplinarity.org/bulletin/b12c8.php*

Normaniza, O., Abdul-Rahman, P.S.. & Rahim, H.R. (2020). *Research Landscape in Universiti Malaya: Fostering Interdisciplinary Research Culture.* Kuala Lumpur: Unpublished.

Pejabat Kluster Penyelidikan. (2017). Garis Panduan Geran Penyelidikan Universiti Malaya (UMRG & Grand Challenge). *Garis Panduan*. Kuala Lumpur: Unpublished. Retrieved from https://researchcluster.um.edu.my/downloads

Prime Minister's Office of Malaysia. (2019). *Share Prosperity Vision 2030: Restructuring the Priorities of Malaysia's Development.* Kuala Lumpur: Percetakan Nasional Malaysia Berhad. Retrieved from https://www.pmo.gov.my/2019/10/shared-prosperity-vision-2030-2/

Research Cluster Office. (2019). *University Of Malaya: Impact-Oriented Interdisciplinary Research Grant (IIRG)*. *3*. Kuala Lumpur, Malaysia: Unpublished. Retrieved from https://researchcluster.um.edu.my/downloads

Science Europe. (2019). *Symposium Report: Interdisciplinarity'.* Belgium: Science Europe. Retrieved December from https://www.scienceeurope.org/media/yv2huvp1/report-of-2018-science-europe-symposium-on-interdisciplinarity.pdf

JRMG JOURNAL OF RESEARCH MANAGEMENT & GOVERNANCE

Vol. 4, Issue 1, pp. 10-23

CASE STUDY

# Enhancing Research Mechanisms and Institutional Processes in Malaysia: A Case Study of Universiti Malaya (UM)

Azrin Md Kasim[1,#], Lee Wei Chang[2,3,#], Nuratiqah Mohamad Norpi[4,#,*], Noor Hayaty Abu Kasim[5], Azirah Hashim[6]

[1] Research Data Management Unit (RDMU), Level 7, Research Management & Innovation Complex, University of Malaya, 50603 Kuala Lumpur, Malaysia

[2] Centre for Research Services (PPP), Level 2, Research Management & Innovation Complex University of Malaya, 50603 Kuala Lumpur, Malaysia

[3] Centre for Civilisational Dialogue, Level 1, Door C6, High Impact Research Building, University of Malaya, 50603 Kuala Lumpur, Malaysia

[3] Centre for Research Grant Management (PPGP), Level 4, Research Management & Innovation Complex, University of Malaya, 50603 Kuala Lumpur, Malaysia.

[5] Faculty of Dentistry, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia

[6] Department of English Language, Faculty of Languages & Linguistics, University of Malaya, 50603 Kuala Lumpur, Malaysia

# These authors contributed equally: Azrin Md Kasim, Lee Wei Chang, Nuratiqah Mohamad Norpi

*Corresponding author email: tqanorpi@um.edu.my

**Received date:** 23 Jul 2021
**Published date:** 31 Dec 2021

**How to cite:**
Md Kasim, A., Chang, L.W., Mohamad Norpi, N., Abu Kasim, N.H. & Hashim, A. (2021). Enhancing Research Mechanisms and Institutional Processes in Malaysia: A Case Study of Universiti Malaya (UM). *Journal of Research Management & Governance*, 4(1), 10-23. Retrieved from https://ejournal.um.edu.my/index.php/JRMG/article/view/31338

**DOI:**
https://doi.org/10.22452/jrmg.vol4no1.2

## ABSTRACT

Malaysia's research and development landscape has grown tremendously over the last decade. The growth of scholarly output in Malaysia has also risen significantly compared to countries such as China, Singapore and Australia. Malaysia has made it a target that research output and quality will increase through an expenditure of 1.3% of the GDP allocated to Research and Development (R&D). Thus far, Malaysia has achieved phenomenal growth within the research sector, with a four-fold increase in the number of citations and has generated approximately RM1.25 billion through 11% yearly growth in the number of patents from Malaysian Universities. This case study aims to provide, firstly, an overview of research governance in Malaysia, and secondly, a discussion of research governance practices at Universiti Malaya (UM). Data is obtained from the 11th Malaysian Plan (2016-2020) and linked to the Malaysian Transformation Program. The Malaysian Education Blueprint for Higher Education (2015-2025) launched in 2015 also outlined a comprehensive transformation for research in higher education programmes. In addition, other published documents on research governance practices by agencies providing research funding were also reviewed. This case study highlights best practices in research management and governance to strengthen and further enhance the current research management and governance in support of the Malaysian government's initiative towards achieving a high-income nation status.

**Keywords:** Research Governance; Research Mechanisms; Best Practice; University; Research Ecosystem

## 1. Introduction

The Universiti Malaya (UM), Malaysia's oldest university, was established in Singapore in 1949 when the King Edward VII College of Medicine (founded in 1905) merged with Raffles College (founded in 1928). Its 890-acre campus is strategically located within the heart of Kuala Lumpur, making it ideal for international students and visiting academics. UM is the premier multidisciplinary research university in Malaysia with more than 28,000 students and 2,000 academic staff. There are 14 faculties, 2 academies, 4 research clusters and more than 75 research centres in the disciplines of Medicine, Engineering, Sciences, Arts and Humanities. UM's alumni of over 200,000 have amongst them renowned and illustrious Malaysian personalities and leaders. UM, ranked 59th in the QS World University Rankings 2021, is the first choice of Malaysia's top students and more than 3,800 international students from over 80 countries. The university's strength lies in the creativity, talent and dynamism of its people built on its illustrious history (Universiti Malaya, 2021a).

As a research university, UM focuses on developing strategies to benefit from the new global environment. UM has been, and remains, at the forefront of landmark scientific and medical discoveries as is evidenced by the numerous awards that have been won both locally and internationally (Universiti Malaya, 2021a). UM researchers are in collaborative partnerships with various institutions at national and international level and internationally working on diverse topics from HIV-AIDS, infectious diseases, biodiversity, nanotechnology to law, intellectual property, culture, religion, gender studies and poverty eradication studies (Universiti Malaya, 2021b). In the coming years, the university is projected to have a further quantum leap in high-quality research activity and publications as a result of the huge research funding being channeled to the university from numerous sources and the strive for excellence among students and staff.

UM researchers involved in research development have long-term experience in strengthening the research capacity of partner institutions via the increasing bilateral partnerships or the signing of MoU/ MoA (Universiti Malaya, 2021b). This support is provided through human resource development (curriculum development), exchange of expertise and experience between institutions, support of research methodology and equipment, student exchange, field-based interdisciplinary, intercultural courses and through strengthening of the partner institutions participation in international scientific networks in this region. As a university in the Association of Southeast Asian Nations(ASEAN), a region that has committed itself to the goals and aspirations of the ASEAN Community Vision 2025, intra-regional cooperation is important to UM. The ASEAN University Network (AUN), of which UM is a member, has goals for strengthening and promoting educational and research cooperation in the region. Therefore, education and research have become one of the focal points in capacity building and UM has been involved in capacity building activities since 2011 under Malaysia's Global Outreach Programme (Azirah Hashim et al., 2018). This programme is part of the internationalisation initiatives by the Ministry of Higher Education, Malaysia which also strives to contribute towards narrowing the development gap among member states in ASEAN.

Following the success of UM's collaboration and engagement in capacity building activities, including research seminars, teaching workshops, and curriculum development, collaboration in research capacity building for novice researchers both in the Science, Technology and Innovation (STI) and Non-STI, a

similar international capacity building programme initiated by UM researchers was recognized and supported by a UM research grant (2015-2017) (Azirah Hashim et al., 2018). This case study fits in with what UM has been doing which is to develop human capital and facilitate individual learning and institutional mechanisms in STI and Non-STI research in higher education institutions in Malaysia through research training and capacity building, including research governance, leading to sustainable high-quality research, conditions for cooperation and potential for policy impact.

This case study aims to give an overview of the research governance in Malaysia. In addition, information on research governance practised at UM is also described. Information on Malaysia's research focus and initiatives was gathered from the 11th Malaysian Plan (2016-2020) and linked to the Malaysian Transformation Program. The Malaysian Education Blueprint for Higher Education (2015-2025) launched in 2015 also outlined a comprehensive transformation for research in higher education programmes. Other published documents were also reviewed on research governance practised by agencies providing research funding. Through this case study, best practices in research management and governance to strengthen and further enhance the current research management and governance in UM to support the Malaysian government's initiative towards achieving a high-income nation status are highlighted.

The report aims at highlighting the research initiatives and implementation of research governance practices as stated in the Malaysia's policies and strategic plans, explains the processes in research management in Malaysia taking UM as a case study, highlights challenges faced in research governance and puts forwards some proposals for changes needed to further enhance research governance practices that may be suitable to be applied in UM.

## 2. Methodology

Three (3) major referred policies and strategic plans were studied and the processes for research management and governance in Malaysia were reviewed. Results were recorded and reported.

Three (3) major referred policies and strategic plans:

1. The 11th Malaysia Plan 2016 – 2020: Anchoring Growth on People. (Economic Planning Unit, 2015)
2. The Malaysia Education Blueprint 2015 – 2025 (Higher Education). (Ministry of Education Malaysia, 2015)
3. The Malaysian Science, Technology & Innovation (STI) Indicators Report 2016. (Ministry of Science, Technology and Innovation, 2017)

## 3. Research and Development Landscape in Malaysia

Malaysia's research and development landscape has grown tremendously over the last decade. The growth of scholarly output (publication, articles, reviews) in Malaysia has also risen significantly at the rate of 7.2% compared to countries such as China (4.2%), Singapore (3.6%) and Australia (4.6%) (Figure 1). Malaysia aims to continue increasing research output and quality with 1.3% of the GDP spent on Research and Development (R&D). Thus far, Malaysia has achieved phenomenal growth within the research sector, with a four-fold increase in the number of citations and generated approximately RM1.25 billion through 11% yearly growth in the number of patents from Malaysian Universities.

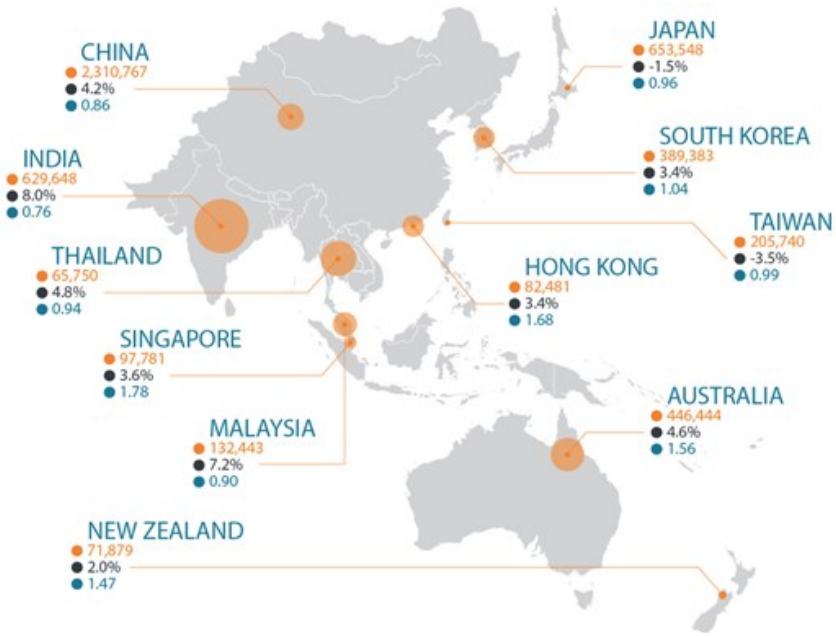



**Figure 1:** Growth of Scholarly Output in the Asia Pacific Region. (Elsevier, 2018)

Research & Development (R&D) activities in Malaysia are carried out by R&D professionals in three sectors: universities, research institutions and private R&D companies/industries. Currently, there are 20 public universities and 467 private institutions of higher learning in Malaysia (universities, branch universities, university colleges and colleges).

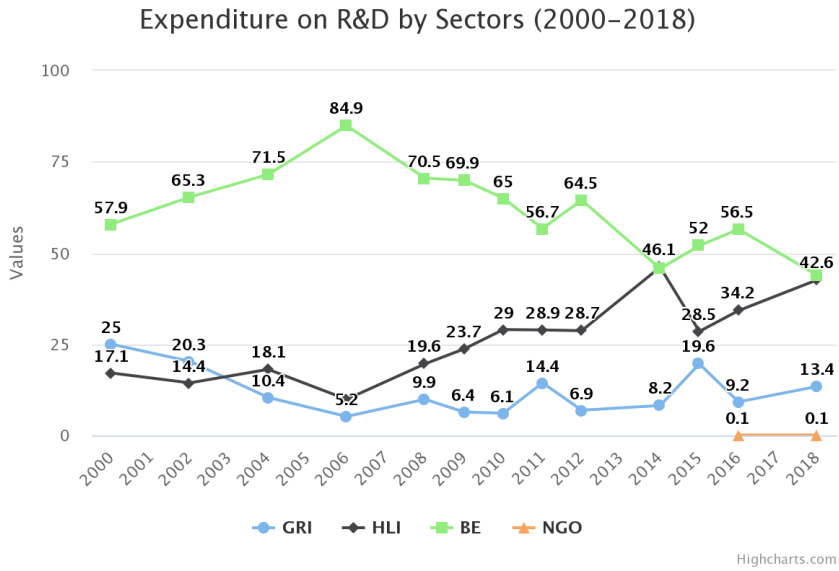



**Figure 2:** Expenditure on R&D by Sectors (2000–2018). (MASTIC, 2018)

Figure 2 shows that the Business Enterprise (BE) sector has remained as the largest contributor to spur of R&D activities in Malaysia until 2018 . The Business Enterprise (BE) sector is the major exploiter on that year (RM6,614 million, 43.9%). The second major contributor in R&D is Higher Learning Institution (HLI), with the value of RM6,412 million (42.6%). Vice versa, the minor contributor goes to Government Research Institutes (GRI) RM2,019 million (13.4%) and Non-Governmental Organisation (NGO) RM15 million (0.1%). The average percentage of funds received by a research university to finance innovations and research activities for the year 2006 to 2011 is also shown in Figure 3.

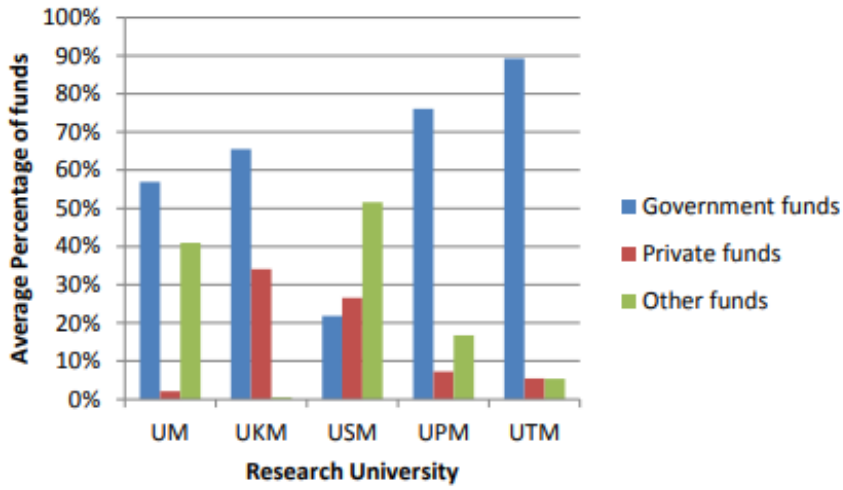
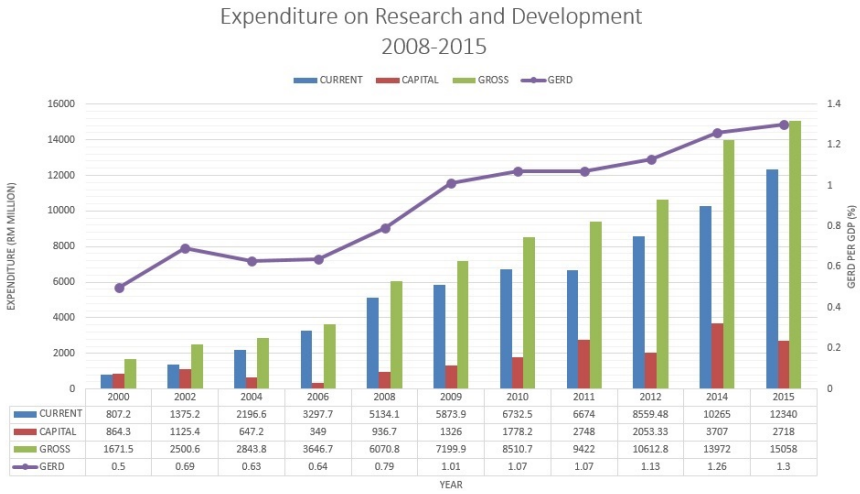



**Figure 3:** The average percentage of funds received by a research university to finance innovations and research activities for the year 2006 to 2011. (Amran et al., 2014)

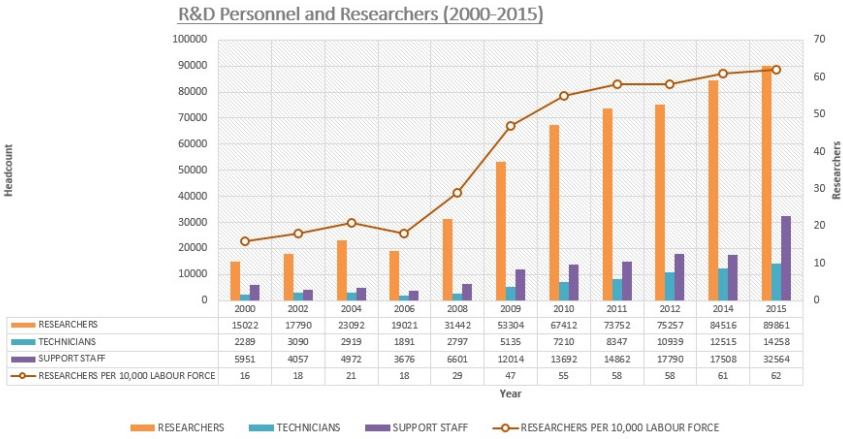



| | 2000 | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CURRENT | 807.2 | 1375.2 | 2196.6 | 3297.7 | 5134.1 | 5873.9 | 6732.5 | 6674 | 8559.48 | 10265 | 12340 |
| CAPITAL | 864.3 | 1125.4 | 647.2 | 349 | 936.7 | 1326 | 1778.2 | 2748 | 2053.33 | 3707 | 2718 |
| GROSS | 1671.5 | 2500.6 | 2843.8 | 3646.7 | 6070.8 | 7199.9 | 8510.7 | 9422 | 10612.8 | 13972 | 15058 |
| GERD | 0.5 | 0.69 | 0.63 | 0.64 | 0.79 | 1.01 | 1.07 | 1.07 | 1.13 | 1.26 | 1.3 |

**Figure 4:** Expenditure on R&D 2008 – 2015 in Malaysia. (MASTIC, 2018)

Figure 4 shows that the Gross Domestic Expenditure on R&D (GERD) in Malaysia has been steadily increasing since 2000 . For the fiscal year 2015, Malaysia recorded the highest GERD at RM15,058 million, an increase of 148.04% over the GERD value in 2008 (RM6,070.8 million). The intensity of R&D, a

measure of the percentage of GERD to GDP (GERD/GDP) also shows an increment as the GERD value had continuously increased since 2004. In 2015, the GERD/GDP was 1.30%, an increment of 64.56% compared to the year 2008 (0.79%).




| | 2000 | 2002 | 2004 | 2006 | 2008 | 2009 | 2010 | 2011 | 2012 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RESEARCHERS | 15022 | 17790 | 23092 | 19021 | 31442 | 53304 | 67412 | 73752 | 75257 | 84516 | 89861 |
| TECHNICIANS | 2289 | 3090 | 2919 | 1891 | 2797 | 5135 | 7210 | 8347 | 10939 | 12515 | 14258 |
| SUPPORT STAFF | 5951 | 4057 | 4972 | 3676 | 6601 | 12014 | 13692 | 14862 | 17790 | 17508 | 32564 |
| RESEARCHERS PER 10,000 LABOUR FORCE | 16 | 18 | 21 | 18 | 29 | 47 | 55 | 58 | 58 | 61 | 62 |

**Figure 5:** R&D Personnel and Researchers (2000 – 2015) in Malaysia. (MASTIC, 2018)

Figure 5 shows that the number of active researchers progressively had increased since 2006 . The highest number of researchers was recorded in 2015, with a total of 89 861, an increase of 185.80% over the number of researchers in 2008 (31,442). On the other hand, the number of researchers per 10,000 labour forces in 2015 had also increased to 62 people.

## 4. Research Governance

### *4.1 Management and monitoring of research*

Stakeholders from various sectors (Government Agencies, Industrial Partners, International Agencies and Institutions) provide various types of funding and resources to support research in UM. The Deputy Vice Chancellor (Research & Innovation) is responsible for the overall research agenda in UM. Units under the portfolio manage research grant management in UM and this includes the initiative of seeking funds (in terms of research grants/sponsorship) from respective funding bodies.

Generally, research governance on management and monitoring research process is divided into pre-award and post-award processes. Different funding bodies may impose different processes and guidelines depending on the objectives of the funding given. The pre-award process involves several steps such as the announcement of funding, evaluation of proposed projects internally at the institutional level, evaluation by funding bodies and followed by awarding grants. Meanwhile, at the post -award phase, research activities are monitored at the respective institutional level. Monitoring of research project performance at the institutional level is done through desktop monitoring. Funding bodies may conduct different monitoring activities to assess the performance of projects. Another aspect of monitoring projects is the financial project report. All principal investigators or project leaders have to report their financial expenditure to ensure that the use of the grant awarded is in line with what has been proposed in the proposal. Some funders may request the project leaders to present the outcome and results after the project duration has ended.

In UM, the protocols and procedures in research grant management are divided into pre-award and post -award. There are various units involved directly and indirectly in the research governance of UM. Major units involved include the office of the Deputy Vice-Chancellor (Research & Innovation), Institute of Research Management & Services (IPPP), Research Clusters, Centre for Research Grant Management (PPGP) and Centre for Research Services (PPP). At the pre-award level, all internal funds are evaluated at either the central or faculty level while for external funds, the central level collates and verifies the application. At the post-award level, researchers are responsible for their research activities and expenses related to their research activities from application to process related to payment and this is managed by their respective department or faculty.

## *4.2 Research funding*

Public R&D funding and programmes indicate the commitment of the Malaysian government towards strengthening the country's overall scientific and innovation performance. The R&D funding programmes are designed and implemented by various ministries and agencies to support R&D activities at different stages; (a) pre-R&D or the stage of ideation; (b) research stage; (c) development stage; and (d) commercialisation stage. Examples of such funds are tabulated below in Figure 6:

| Stage | Name of Fund | Ministry / Agency |
|---|---|---|
| Pre R&D | 1. Cradle Investment Program Catalyst - Seed<br>2. Cradle Investment Program Catalyst – Pre Seed<br>3. Cradle Seed Venture Fund 1 | Ministry of Finance;<br>Cradle Fund Sdn Bhd. |
| Research | 1. Sciencefund<br>2. Fundamental Research Grant Scheme<br>3. Long Term Research Grant Scheme<br>4. Transdisciplinary Research Grant Scheme<br>5. Prototype Research Grant Scheme<br>6. Research Acculturation Collaborative Effort | Ministry of Energy, Science, Technology, Environment & Climate Change;<br>Ministry of Education. |
| Development / Pre-Commercialisation | Techno Fund<br>InnoFund | Ministry of Energy, Science, Technology, Environment & Climate Change. |
| Commercialisation | Commercialisation of R&D Fund<br>Technology Acquisition Fund<br>Biotechnology Commercialisation Fund | Ministry of Energy, Science, Technology, Environment & Climate Change;<br>Malaysian Technology Development Corporation Sdn Bhd. |

**Figure 6:** Examples of available research funding in Malaysia

Some universities also provide internal research funding for researchers. In UM, this type of research funding is made available for basic, applied and interdisciplinary research. The process of awarding grants is either at central (PPGP & Research Cluster) or at faculty level i.e., Research Management Unit (RMU) depending on the research grants offered.

There are also other private/industry funding besides public R&D funding offered by the Malaysian government and the requirements, assessment and criteria/selection process of these private/industry funding differ according to the grant provider.

## *4.3 Support services for research*

The Government of Malaysia provides support services for research to ensure that research activities are conducted in a conducive ecosystem. There are policies and institutions established to focus on high

quality research and to support the R&D based on industry demands. For example, the National Institute of Biotechnology (NIBM) under the Ministry of Science, Technology and Innovation (MOSTI), is established to support and spearhead the commercialization of activities of R&D. In line with Malaysia's biotechnology agenda through activities, research, development, innovation and commercialization, three national biotechnology agencies are also established: Malaysia Agro-Biotechnology Institute (ABI), Malaysia Institute of Pharmaceuticals and Nutraceuticals (IPHARM) and Malaysia Genome Institute (MGI). Another example of government support for research is the Nuclear Malaysia Agency that provides facilities through the establishment and development of important laboratories that can support the needs in nuclear science and technology, hence playing a significant and important role in the national development programme.

At the institutional level, the research support and services given vary according to the available resources and different cohort of researchers. In UM, different kinds of support are given to different target groups, for example, UM academics will be given opportunities to attend training, conferences, symposiums to improve skills in teaching and research. Training on Massive Open Online Courses (MOOCs) and Open Educational Resources (OER), training for academic staff; EMERALD (Early career researcher), INSPIRE (continuous professional development) and LEADER are other examples. As for students, research modules are designed to assist skills development among postgraduate students on research methodology, proposal defence, candidature defence and thesis defence.

## *4.4 Role of leadership in research development*

Universities in Malaysia are given the autonomy to plan their research directions and implement their research governance. However, it is encouraged that this is done in alignment with the policies and strategies of the Ministry of Higher Education. The Institute of Higher Education Excellence Planning Division is a unit under the Ministry of Higher Education that has a mission to drive excellence amongst institution of higher learnings through research development and commercialisation, producing talents and competitive research outcomes at the national and international level. This division works closely with the Research Management Unit of various institutions.

In UM, there are four Deputy Vice-Chancellors who answer directly to the Vice-Chancellor, one of whom is in charge of research and innovation – Deputy Vice-Chancellor (Research & Innovation). The DVC (R&I) is responsible for the overall research agenda in UM. The DVC is also responsible for formulating the strategic planning and research direction of the university.

The DVC (R&I) is currently assisted by two Associate Vice-Chancellors (AVCs): i) Industry and Community Engagement (ICE), and ii) Research & Innovation (R&I).

i. AVC (ICE) is assisted by three Directors; UM Centre of Innovation & Commercialization (UMCIC), University of Malaya Consultancy Unit (UPUM) and The Community & Sustainability Centre of UM (UMCARES).
ii. AVC (R&I) also acts as the Director of the Institute of Research Management & Services (IPPP). The AVC (R&I) administration is further assisted by four (4) Deans of Research Clusters, Head of Research Data Management Unit (RDMU), Research Management Policy and Strategy Unit (UDSI),

Centre of Research Grant Management (PPGP), Centre for Research Services (PPP) and Data Intensive Computing Center (DICC).

UM's levels of research management can be categorized as: i) Central level – Centre of Research Grant Management (PPGP) and Research Clusters; and ii) Faculty Level – Research Management Unit (RMU). However, not all faculties at UM have an RMU.

## *4.5 Research performance, benchmarking and portfolio*

MyRA, the Malaysian Research Assessment, is a comprehensive instrument developed to assess the research capacity and performance of all universities in Malaysia. It was introduced in 2009 by Ministry of Higher Education Malaysia as an instrument to assess the performance of the Research Universities (RU). Four public universities were granted the RU status, namely Universiti Malaya (UM), Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), and Universiti Sains Malaysia (USM), followed by Universiti Teknologi Malaysia (UTM) that joined the fraternity of RUs in 2010.

MyRA has set well-established standards which serve as benchmarks for aspiring universities such as Universiti Utara Malaysia to join the ranks of the present RUs. MyRA includes a 6-Star rating system and all participating universities are document-audited and site-audited by a panel comprising trained auditors. Malaysian research universities are among the top 1% in the world (out of 26,000 universities worldwide) based on the QS World University Rankings 2016/2017 and 2017/2018 (Star Online, 2017).

Subsequently, the assessment tool, MyRA, evolved into MyRA I and MyRA II in 2012 whereby different weightage is allocated for different sections of the assessment, as illustrated in Figure 7. While MyRA II is designed for research universities, non-research universities are also mandated to complete the assessment as stipulated in MyRA I. Moving forward, the focus of RUs and non-research universities is on the translational research approach, research that brings positive impact to local and international communities. Translational research programmes must be linked to the Government Transformation Programme.

**MyRA I**

| No | Section | Assessment Area | % |
|---|---|---|---|
| 1 | Section A | General Information | - |
| 2 | Section B | Quantity and Quality of Researchers | 25 |
| 3 | Section C | Quantity and Quality of Research | 30 |
| 4 | Section D | Quantity of Postgraduates | 10 |
| 5 | Section E | Quality of Postgraduates | 5 |
| 6 | Section F | Innovation | 10 |
| 7 | Section G | Professional Services and Gifts | 7 |
| 8 | Section H | Networking and Linkages | 8 |
| 9 | Section I | Support Facilities | 3 |

**MyRA II**

| No | Section | Assessment Area | % |
|---|---|---|---|
| 1 | Section A | General Information | - |
| 2 | Section B | Quantity and Quality of Researchers | 15 |
| 3 | Section C | Quantity and Quality of Research | 35 |
| 4 | Section D | Quantity and Quality of Postgraduates | 10 |
| 5 | Section E | Innovation | 15 |
| 6 | Section F | Professional Services and Gifts | 10 |
| 7 | Section G | Networking and Linkages | 12 |
| 8 | Section H | Support Facilities | 3 |

**Figure 7:** MyRA I and MyRA II Criteria. (Universiti Sains Malaysia, 2021)

## *4.6 The wider focus of research - bridging the academic with the industry, society and transnational boundaries*

Research in Malaysia has widened its research focus by bridging academics with industry and society at the national and international level. There are initiatives in place linking researchers and relevant partners. One of the initiatives spearheaded by the Ministry of Higher Education Malaysia, the Demand-Driven Project by the Public-Private Research Network (PPRN), is aimed to address the technological knowledge gaps and provide a platform through research between universities, industries and society.

Malaysian researchers are also encouraged to translate laboratory-scale research to contribute towards productivity and the nation's economic growth. This has attracted stakeholders such as micro, small and medium enterprises and associations (government and non-government) to be in partnership with researchers. The Malaysian Government supported this initiative by providing funds for these purposes as described in Figure 5.

UM has established centres, under the purview of the portfolio of research and innovation to link the UM researchers with external stakeholders, namely the UM Centre of Innovation & Commercialization (UMCIC), which acts as a centralised technology transfer and commercialization unit, the University of Malaya Consultancy Unit (UPUM) which specialises in undertaking joint venture works with industries and government sectors, and the Community & Sustainability Centre of UM (UMCARES) which focuses on community engagement and acts as the university community transformation centre (UCTC), bridging researchers to society through various programmes.

As Malaysia is moving towards the fully developed country status, it is important to inculcate the spirit of working together and across discipline amongst our expert to address real problems faced by our society and producing real-world impact. Thus, taking into consideration the potential impact of interdisciplinary research in aiding the acceleration of scientific discovery in innovative ways, UM has taken the initiatives by providing specific grants for interdisciplinary research with the aim to address real-world issues relevant to society and industry.

## *4.7 Diversity, innovation and sustainability in research*

The 11th Malaysia Plan 2016-2020 has, as its focus, people wellbeing and prosperity of the people. The Plan is also in the final leg in the journey towards realising Vision 2020 to achieve full development in Malaysia. Productivity and innovation are basic pillars of the Plan, which are based on six Strategic Thrusts, i) Enhancing inclusiveness towards an equitable society; ii) Improving wellbeing for all; iii) Accelerating human capital development for an advanced nation; iv) Pursuing green growth for sustainability and resilience; v) Strengthening infrastructure to support economic expansion, and vi) Re-engineering economic growth for greater prosperity.

In the enhanced innovation ecosystem, it is envisaged that there will be greater collaboration and integration across industry, academia and communities. Research will be closely aligned with industry demand and the private sector will be active partners in research and development, and commercialisation and innovation (R&D and C&I) by contributing funds, expertise and other resources

for greater return on investment. Communities will also be actively engaged with the researchers in addressing the social issues through a "whole of society" approach as social innovation is an essential process for the evolution of society and the search for sustainable alternatives. Furthermore, it adds an extra dimension to innovation, sustaining economic and social growth.

## 5. Recommendations to Enhancing Research Mechanisms and Institutional Processes in Malaysia

Malaysia's research output as shown in Figure 8 can be considered significant based on the number of publications published in high impact journals and the increase in citations. However, some local universities lack positive engagement with policymakers, especially in the sharing of data/findings for the policy-making process, and it would be an advantage for universities to learn strategies and best practices for successful engagement with policymakers from other successful universities abroad.

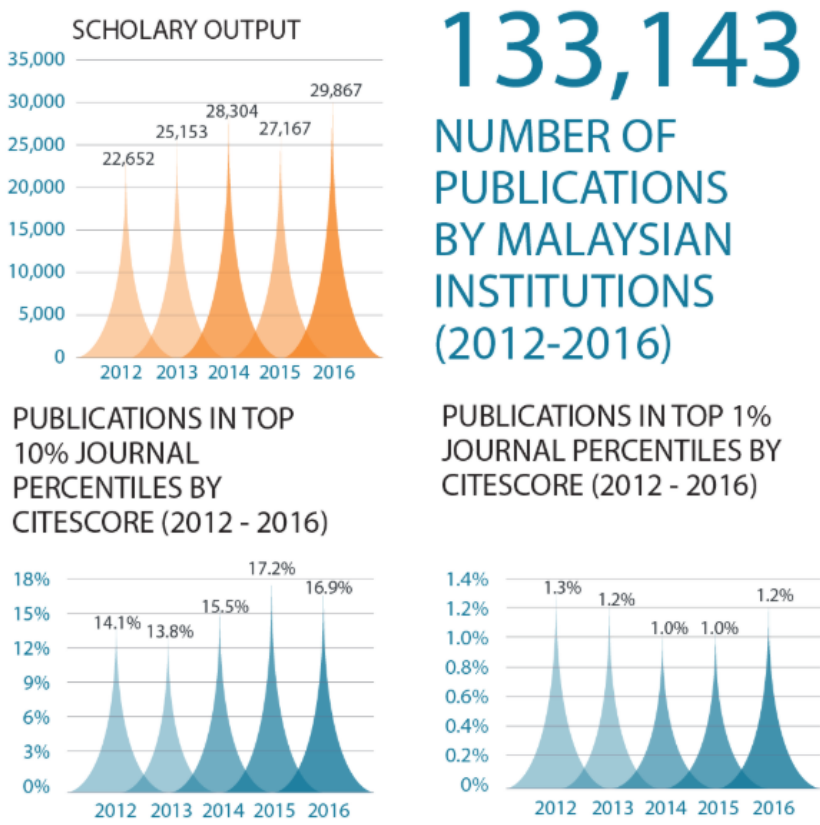



**Figure 8:** Number of publications by Malaysia Institutions (2012 – 2016). (Elsevier, 2018)

The current research management framework at Malaysian universities has been in place since the 7th Malaysia Plan. The typical structure involves functions organised under the university research management centre. Academics are seconded from their lecturer positions to head the centre and lead the functions. This Malaysia model poses pros and cons. The one biggest advantage of the model is the

level of understanding of the academics in the research processes. However, with academics allocating time to manage research, time for research and teaching is reduced. This could bring significant consequences to the individual's research development as well as the university outputs and achievements.

Compared to the Malaysian model, and from what is being practiced in some European, American or even East Asian universities (taking the University of Groningen as an example), professionals are hired for research management. This might be one good solution towards reducing the massive workload of Malaysian academics at the research management centre. UM, as an example, has started to adopt this concept a few years ago. However, it is still at the learning stage since research management is a special field that may not be supported as much by contemporary management theories but by the strength of the management and continuous evolving theories and expertise through experience. Thus, professional development such as training on specific skills and exposure of the professionals to best practices in the different regions and/or countries is important. Discussions and sharing of best practices in managing research by other international universities with the local universities would benefit Malaysian universities at large.

Towards the end of the study, the project has a wider objective which is to develop human capital and facilitate individual learning and institutional mechanisms in Social Science research through research training and capacity building, including research governance, leading to sustainable high-quality research, conditions for cooperation and potential for policy impact. Recommendations to improve the current mechanism/practices of research management and governance in the university have also been proposed to UM's management for further consideration and implementation:

a) Strategy I – Ensure that the environment in UM supports the conduct of research to the highest standards, and the governance of research management and mechanisms are in its highest efficiency and effectiveness.
b) Strategy II – Focus on building research excellence by creating and supporting next generation of research leaders/world-leading clusters of researchers, building on the research strengths of UM and harnessing the capacity that had been developed within the University's research environment over the previous 15 years (after UM being recognized as RU in year 2006).
c) Strategy III – Enhance the sustainability of the significant levels of research supports (grants, facilities, database etc.)

To read more on the strategies and action plans related to the proposed strategies, readers may refer to the "Pre-Seminar DEV2 - Building The Social Research Capacities In Higher Education Institutions In Lao PDR and Malaysia (BRECIL) Report" funded by Erasmus+ CBHE [Project number: 585852-EPP-1-2017-1-MY-EPPKA2-CBHE-JP].

## 6. Conclusion

Malaysia has, as one of its goals, to be the regional education hub. Thus, the creation of a vibrant research and innovation ecosystem is crucial for research universities to strive for as well as to be the preferred global research partner. To measure the achievements, a more qualitative-oriented performance assessment must be done comprehensively. Malaysia is encouraged to explore a different

method and criteria for evaluating the fulfilment of the strategy and benchmarking it with the leading universities. In addition, strengthening the methods for identification and landscaping of the industries' needs and the potential collaboration with the researchers at universities is imperative. For example, UM has engaged with various industries, however, the current outcomes need to be enhanced to achieve a win-win situation for both parties.

Research outcomes should impact the society. Therefore, the effectiveness of societal engagement programmes and initiatives should be evaluated. UM has tried to adopt methods from the Manual of Community Capacity Index (University of Queensland, Australia, 2002), however, its implementation in the Malaysian setting has been challenging. Thus, suggestions to overcome the challenges and/or alternative evaluation methods would be valuable.

## Acknowledgements:

Erasmus+ CBHE "Building Social Research Capacity in Higher Education Institution in Lao PDR and Malaysia" (BRECIL) [Project number: 585852-EPP-1-2017-1-MY-EPPKA2-CBHE-JP].

## Disclaimer:

This communication reflects the views only of the author(s), and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## References:

Amran, F.H., Abdul Rahman, I.K., Salleh, K., Syed Ahmad, S.N. & Haron, N.H. (2014). Funding trends of research universities in Malaysia. *Procedia - Social and Behavioral Sciences, 164*(2014), 126 – 134. doi: 10.1016/j.sbspro.2014.11.060

Azirah Hashim, Yee, C.L. & Azman Firdaus, A.N.F. (2018). Empowering the Academic Community with Knowledge and Skills in ELT and Education-Based Research: Capacity Building in Selected Public and Private Higher Education Institutions in Cambodia and Laos. In Abdul Rahman, S. & Shuib, M. (eds), *Success Stories of Malaysia's Global Reach and CLMV Programs*. KL, Malaysia: IIUM Press.

Economic Planning Unit. (2015). *The 11th Malaysia Plan 2016 – 2020: Anchoring Growth on People*. Retrieved at https://www.pmo.gov.my/dokumenattached/RMK/RMKe-11Book.pdf

Elsevier. (2018). Research Excellence and Beyond - In an age of globalization, will the Asian academic emergence continue in countries like Malaysia and beyond? Retrieved from https://www.elsevier.com/research-intelligence/campaigns/malaysia-research-excellence-and-beyond

Ministry of Science, Technology and Innovation (2017). *Malaysian Science, Technology & Innovation (STI) Indicators Report 2016*. Retrieved at https://mastic.mosti.gov.my/sti-survey-content-spds/malaysian-science-technology-innovation-sti-indicators-report-2016

Normaniza, O., Abdul-Rahman, P. S., & Rahim, H. R. (2020). Research Landscape in Universiti Malaya: Fostering Interdisciplinary Research Culture. Kuala Lumpur: Unpublished.

Star Online. (June 8, 2017). Five Malaysian public research varsities listed in top 1% universities worldwide. Retrieved from https://www.thestar.com.my/news/nation/2017/06/08/malaysian-universities-surge-in-world-rankings/

Universiti Malaya. (2021a). Universiti Malaya Official Web. Retrieved from https://um.edu.my/

Universiti Malaya. (2021b). UM International Relations Office Official Web. Retrieved from https://international.um.edu.my/mou-moa

Universiti Sains Malaysia. (2021). MyRA I & MyRA II Criteria. Retrieved from https://www.kpims.usm.my/v2/?p=myra-criteria

eISSN 2637-1103