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Negotiation Strategy in The International Research Collaboration

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Abstract

Negotiation is one of the endeavours undertaken by academic institutions in Indonesia to enhance their bargaining position, aiming to optimize the performance of scholarly publications as the primary outcome in international research collaborations. The success of these negotiations is significantly influenced by the strategies employed and the contributions offered to potential collaboration partners. In addition to strategic considerations, the proficiency in drafting Memoranda of Understanding (MOUs) and Technical Agreements is equally crucial in determining the outcomes of the negotiation process. This study examines the negotiation strategy undertaken by Indonesian partner institutions and its positive impact on scientific publication performance. The research adopts a qualitative approach. Primary data were collected through structured in-depth interviews using purposive method. Risk management analysis has been applied as theoretical framework to explain the implementation of research partnership carried out by Indonesian partner institutions. This study is considered important to provide a policy recommendation for Indonesian partner institutions.

Introduction

Research institutions often necessitate supplementary expertise, financial resources, or other scientific opportunities to align their research outcomes within international collaborative research. Collaborative research agreements represent contractual arrangements between two or more entities concerning the Research and Development. Considerations regarding the development, acquisition, or assignment of intellectual property (IP) among involved parties, as well as how they are monetized, accessed, and utilized by third parties, are frequently pivotal in such agreements. Negotiating and achieving consensus in these matters can prove challenging (Cadogan, At. Al., 2024).

A comprehensive understanding of each party's role in the collaborative process, their interests, expectations, and viable alternatives is instrumental in structuring and guiding the contract negotiation process (Cadogan, et. al., 2024).

The challenges and benefits of international research collaboration, particularly in the context of developing countries, Eduan and Jiang (2018), stated that African countries have the lowest research funding levels globally (0.3% of GNP). Researchers in these countries suffer from poorly defined research policies, inadeqFauziuate research management structures, political instability, and brain drain, which affect their ability to generate higher education knowledge, manage international collaborative research, and participate in global research networks (Teferra and Greijn, 2010). Similar views echoed by Blom et al. (2015) indicate that research in Sub-Saharan Africa is characterized by low financial capacity, covering only

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operational costs; salaries and research operations are often funded through international research cooperation, and the quality of research often depends on collaboration.

Poor performance in funding management is not surprising. Research collaboration often provides the necessary funding and access to research infrastructure in partner countries, thus enhancing the impact of collaborative research. In contrast to the research funding and infrastructure issues in Africa, China seeks international cooperation with developed countries to advance research in specific fields such as nanotechnology. International collaboration contributes significantly to China's qualitative and quantitative research growth.

The quality of research outcomes is often associated with international research collaboration. Researchers, working together with their partners, can enhance the value and impact of research more effectively through international cooperation. Collaborations allow the pooling of expertise and sharing, enabling faster resolution of global challenges. Shi states that to advance the development of science and technology in a country, and even globally, collaboration among scientists is crucial (Shi, et al., 2020).

The increase in international research collaboration indicates a comprehensive global network centered around a group of core countries (developed countries). This network is driven by generic socio-economic factors in which the global system influences all outcomes at the national and institutional levels. The total research output for Africa increased from 13,271 publications indexed in Thomson Reuters Web of Science in 2000 to over 35,000 publications in 2012 (34,528 catalogued as of December 15, 2012). Research in Africa can be boosted by international collaborative partnerships, as observed by Onyanche (2011). The countries most frequently collaborating with partners in Africa are the United States (39,292 articles between 2000 and 2012), France (31,421), the United Kingdom (25,753), Germany (13,879), and Canada (7,604) (Adams, et al. 2013). The role of developed countries in driving the global research network and the potential benefits for developing countries, such as increased research output is very essential.

The policy regarding Indonesia's international science and technology cooperation has been formulated within Law No. 11 of 2019 concerning the National System of Science and Technology. The S&T network constitutes an interactive nexus of human resources, amalgamating institutional elements of S&T to yield performance and benefits greater than those produced by each institutional element in a partial and sectoral manner, through S&T partnerships.

Every institutional element of Indonesian S&T is obligated to engage in partnerships within the implementation of science and technology to develop the network. Moreover, S&T partnerships are encouraged to be established with foreign institutional elements.

Within international research collaboration in Indonesia, the number of scientific publications produced by Indonesian Collaborating Partners in general is still not optimal. This can be measured by the productivity of scientific publications produced. When comparing the number of international research partnerships with the indicator of the number of Research Permits issued by the Ministry of Research and Technology of the Republic of Indonesia, the overall performance of international scientific publications by Indonesian Collaborating Partners, especially joint scientific publications (co-authorship) between Indonesian researchers and foreign researchers, is still very low. Based on the MoRTHE data for the period 2010-2020, a total of 5,439 Research Permits have been issued, while the number of scientific publications produced by foreign researchers who have received Research Permits is 2,192 scientific publications. The number of scientific publications by researchers from the Indonesian Collaborating Partners (local counterpart) is only 1,221 scientific publications mentioning the name of the Indonesian Collaborating Partners. This number includes both as first authors and co-authors.

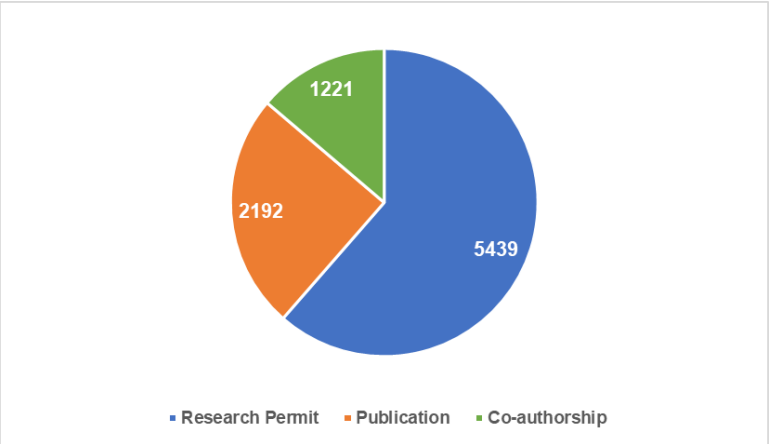

Figure 1. Comparison of Permits, Publications, and Co-authorship (Wahyono, 2022); (Ministry of Research, Technology, Higher Education, 2020)

On the contrary, the performance of scholarly publications as an outcome of international research collaboration can be optimally achieved by Indonesian collaborating institutions participating in international research consortia. This is attributable to the research management and negotiation capabilities of these Indonesian collaborating institutions.

International research consortia are supported by professional research management that provides strong management, negotiation skill and financial support for each stage of the research activities, starting from planning, negotiating, drafting MOUs and Technical Agreements joint research proposal development, field data collection, data processing, laboratory research sample processing, report compilation, scientific publication manuscript writing, and ensuring that scientific publications are published by international scientific journals.

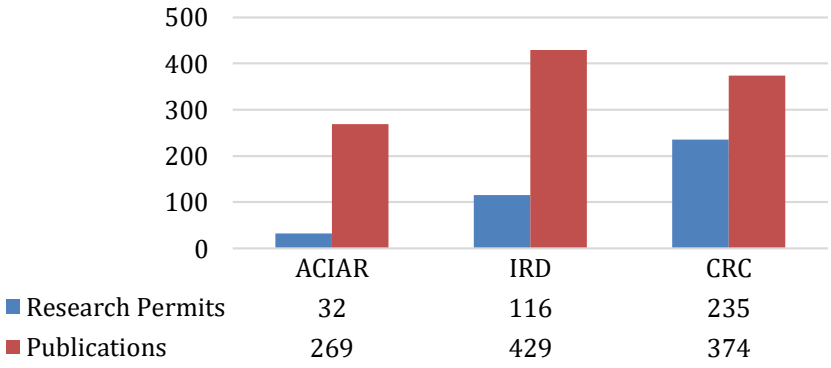

Figure 2. Comparison of the Number of Permits and Publications in the Research Consortia (2012 – 2023) (Wahyono, 2022); (Tjoa, 2023)

The data indicates that, although regulators do not significantly intervene in policies, with professional research management and negotiation skill, several universities and research institutions in Indonesia that have joined research consortia, such as *Institut de Recherche pour le Developpement* (IRD), Australian Centre of International Agriculture Research (ACIAR), and Collaboration Research Centre (CRC 990), have been able to produce highly significant scientific publications. The number of scholarly publications produced by Indonesian

researchers collaborating with foreign research partners exceeds the partnership count calculated based on the number of research permits.

In Indonesia, the study of negotiation strategy carried out by Indonesian partner institutions pertaining to international research collaboration, particularly utilizing Research Permits as an indicator of international research partnership, represents a nascent field of study.

The purpose of this research is to understand how negotiation strategies have been implemented by Indonesian counterpart institutions in international research collaboration and its positive impact on scientific publication performance. This is undertaken as a means to enhance and optimize the international scientific publications within collaborative research endeavours in Indonesia.

Literature Review

Negotiation is a process where two parties with differences seek resolution and attempt to reach an agreement through exploring options and exchanging offers – culminating in a deal (Fells, 2009). Fells (2009) argues that on the journey towards an agreement, negotiators have alternative strategies. The terminology used by authors for each strategy varies, but fundamentally, there are four. Firstly, a negotiator can insist on the issue and continually state their offer or position without variation (referred to as competitive, assertive, and dominant). Secondly, negotiators can do the opposite, tending to yield, abandoning their own position, and agreeing with the other party (yielding, surrendering, adjusting, conforming). Thirdly, negotiators can split the difference between them (which some refer to as yielding or compromising), and fourthly, parties can create an entirely new solution (problem-solving, integration, collaboration), although in this case, the term creative compromise is more aptly used.

Furthermore, Fells (2009) employs the terminology 'Creative Collaboration,' which might sound like a more captivating term for the strategy. However, even though parties must collaborate, there is still a level of competitiveness rather than harmonious and united activities.

In making informed choices, Pruitt (1983a) and his colleagues developed the Dual Concern model of strategic choices, suggesting that a negotiator should consider two factors - concern for oneself: how important it is for their institution to get what they want, and concern for the counterpart: how important their institution feels for the counterpart's institution to get what they want. With high or low levels of concern in each case, the model indicates suitable strategies. For example, if it is crucial for a negotiator to achieve their goals and they have little concern for how well the other party does, then they should insist, be firm in their demands, and expect the other party to agree with them. If the issue is not important, they should yield (referred to by Pruitt as 'giving in'). (Pruitt also mentions 'doing nothing' when there is low concern on both dimensions but is not considered a distinct issue strategy here.)

This Dual Concerns model has intuitive appeal and has been developed by others. For instance, it has become increasingly clear that relationships are an integral part of successful business and negotiation. Therefore, the Dual Concerns model has been modified to suggest that a negotiator should, on one hand, consider the importance of outcomes and, on the other hand, the importance of relationships (Savage, Blair, & Sorenson, 1989; Lewicki and Hiam 2006). (As in the Lewicki & Hiam model, the middle strategy, 'compromise,' is often included in the presentation of the Dual Concerns approach (Fells, 2009).

When analyzing the impact of relationships on negotiations, it is beneficial to distinguish between the relationship required by a negotiator with individuals across the table to reach an agreement and the relationship needed between parties to implement the agreement

over time. The relationships around the negotiation table (or through online means if negotiations are conducted virtually) allow negotiation values to evolve – reciprocity, trust, and information exchange specifically. Negotiators need not necessarily like each other; they only need to have a relationship that facilitates exchange. More importantly, being outcome-oriented, especially in negotiations between organizations, is crucial as the relationship between the parties that need to implement the agreement becomes paramount. These individuals might not be present at the negotiation table (Fells, 2009).

Behavior tends to breed behavior, and often, a negotiator who is assertive will receive a similar response from the other party simply because the other party feels the need to protect their interests and avoid being stepped on. This can lead to confrontational clashes of desires that result in an environment suppressing creativity and collaboration (Lyons, 2007).

Conversely, a good relationship on both sides provides an opportunity for ongoing collaboration between the parties for their sustained mutual benefit (Halpern, 1994; 1997); Valley, Neale, and Mannix, (1995) as cited by Lyons, (2007). If negotiators resist the temptation to yield, they may achieve better outcomes for the parties involved. Close relationships can also raise expectations.

According to Lyons (2007), positional negotiation does not contribute to the establishment of lasting relationships because individuals may leave feeling exhausted from the battle, rather than having achieved a wise agreement. This is unlikely to make parties comfortable enough to return at a future time. Often in such a climate, people rarely pay enough attention to planning, implementation, and may find issues in the details or leave negotiations with the impression that they could have done better in the next stage. Therefore, an agreement is considered good if it fulfils the following: 1) Meeting the interests of the parties as much as possible; 2) The solution produced is the best among identified options — no wastage; 3) The agreement is reached efficiently; 4) It is possible and practical to implement; 5) The agreement can last long; 6) The relationship can be managed positively; and 7) The agreement is constructive.

Collaboration agreements are used in community-engaged scholarship (CES). We consider the variability of Memorandum of Understanding (MOUs) in regard to trust building and maintenance, the timing of their implementation, their levels of formality, and different institutional pathways for processing and administering them. We also discuss various elements that may be included in MOUs (e.g. recitals, scope of work, agreement term, fiscal terms, reporting, confidentiality, IP ownership, joint publication), including potential challenges to consider for each element (Shapiro, et. Al, 2023).

MOUs are a crucial tool for community-engaged scholars involved in research-practice partnerships. There is an art to formulating the right type of MOU, with an appropriate level of formality, that is appropriate to the scope of work, and mitigates risk inherent in inter-institutional partnerships (Shapiro, et., 2023).

Methods

This research utilizes a qualitative approach. The research sample is purposively selected, employing internal sampling techniques. The sample is intentionally chosen based on specific criteria and categories that are strictly defined to be relevant to the qualitative research design, as they are considered to have specific characteristics that can enrich the research data. Furthermore, in the technique of internal sampling, qualitative research will decide who will be interviewed, what documents and how many need to be examined (Agustinova, 2015).

In this study, the primary data collection technique involves structured in-depth interviews with 31 key informants, following strict criteria. Key informants selected for interviews are based on several criteria as follows: a) regulators or Directors of IP Management at the MoRTHE (2015–2019); b) researchers or lecturers with a minimum of 10 years of experience in international research collaboration; c) Foreign researchers with a minimum of 20 years of experience in international research collaboration in Indonesia; d) Senior officials of foreign research institutions/foreign research funding institutions with a minimum of 15 years of experience in research management; e) Officials of research and development agencies or universities with a minimum of 10 years of experience in international research collaboration; f) Heads of research and development agencies of Ministries or universities with a minimum of 10 years of international research management experience; and g) Coordinators of international research consortia with a minimum of 20 years of experience.

To complement the primary data obtained through the interview technique, secondary data collection will also be conducted by gathering relevant documents to the research questions and objectives. The documents include a) legislation; b) scientific publications in the form of books, journals, and scientific proceedings; c) reports from the MoRT; d) Research Collaboration Agreement (RCA) manuscripts such as MoU and Technical Agreement; e) Strategic Plan of the MoRT f) List of Budget Implementation (DIPA) of the MoRT.

Results And Discussion

Indonesian collaborating institutions, in their efforts to obtain and optimize benefit sharing, must also consider optimizing the negotiation strategies. Alongside the benefits gained in international research collaborations such as IPR, particularly in scientific publication

In advanced countries like Germany, when universities or research institutions draft MoUs, Technical Agreement (TA), and Material Transfer Agreements (MTAs), they can afford to hire legal experts in civil law to structure these agreements. In contrast, Indonesian researchers are supported not by professional lawyers but by diplomats from the Ministry of Foreign Affairs (MoFA) who possess the negotiation skills to assist in preparing draft technical agreements.

The understanding of research substance by diplomats is very limited, yet their negotiation skills and experience are actually highly needed. Despite this, negotiations are eventually not conducted by the MoFA diplomats. They argue that researchers understand the scientific substance better, therefore allowing researchers, as potential research collaborators, to directly negotiate with their foreign counterparts. Some prospective foreign research partners are coincidentally alumni associates, which facilitates smoother negotiations. Nevertheless, there is indeed a gap between mastery of the legal aspects and the scientific substance.

Understanding legal language and formulating it into legally binding clauses agreed upon by all parties is challenging. Accommodating researchers' interests while protecting their rights, as well as those of the research funding institutions, government, and country, and communicating these to all parties involved, is also not an easy task. Before MoUs and TA are signed, negotiations can be an extensive and lengthy process, sometimes spanning years.

In negotiation, research institutions and Indonesian universities, as collaborating institutions with foreign scientific institutions, have established standards on negotiable issues and aspects. However, there are non-negotiable fundamental principles that are set by the leaders of research institutions and universities.

Fundamental standards, which are non-negotiable, include aspects related to law. For instance, compliance with and respect for the national legislation of the respective countries

involved and the resolution of disputes. Another non-negotiable aspect is the status of research materials transferred abroad, which remain the property of the Government of Indonesia, represented by research institutions or universities as the entities representing the Indonesian Government. However, these materials can be jointly used for research collaboration purposes in scientific development. Recognition of natural resources, genetic resources, cultural and social wealth, and ownership status originate from and belong to Indonesia. The transferred research materials to recipient countries are considered either loans or permanent loans. Therefore, research materials such as samples or specimens remain Indonesian property even when loaned or sent abroad. The status of use is temporary borrowing for return or permanent loans.

Negotiable aspects with foreign research partners include the scope of cooperation, the duration of the agreement, and the settlement of disputes.

Once an MOU is established, parties can begin negotiating research collaborations. Within these negotiations, each side seeks agreement on their expectations. Even within the MOU, and further detailed within the scope of cooperation in the Letter of Agreement (LOA), which represents the TA, the rights and obligations stipulated need consultations with various entities, including the MoFA

Indonesian research negotiators have consulted with MoFA to incorporate provisions into the MOU or LOA. If the clauses within the LoA remain considerably weak, negotiations may not proceed. The MoRT, as the regulator, should be present to assist in overseeing negotiations intended for inclusion in the MOU and LoA. In practical research collaboration, there are often many clauses within the MOU that foreign research partners cannot implement themselves. Thus, it's advisable for future research collaboration negotiation strategies to be guided by a government-formed ad hoc team to optimize benefits sharing or the outcomes of ongoing international collaborative research or to streamline the research collaboration itself.

Drafting Collaboration Agreements

The weakness of partner institutions in drafting MOUs or Implementing Agreements (IAs) lies in their lack of precision due to researchers, as negotiators, having deficiencies in legal drafting skills and understanding of civil law. Indonesian partner institutions have never engaged the services of civil law experts or lawyers specialized in research areas as consultants and negotiators during discussions with their foreign research counterparts.

Indeed, achieving optimal output requires significant costs and funding. Even during the negotiation stage of research collaboration, prospective partners have incurred expenses without producing anything tangible, while partner institutions lack specific budget allocations. This should be viewed as an investment.

The standard formulation of counterpart agreements by Eijkman Institute of Molecular Biology with foreign researchers depends on the type of collaboration that will take place between the foreign researchers and those from Eijkman Institute. Whether the foreign research partner is a postdoctoral researcher, a student researcher, or a senior scientist, each has a different level of agreement. For instance, a Postdoc researcher might have a collaborative research agreement between Eijkman Institute and the affiliated foreign research institution. However, for foreign student researchers, their level may not be an agreement but more of an endorsement letter from their supervisor. When a researcher supports the scientific substance of a foreign student, the student assumes an internship status. Under this status, they are not entirely independent and must always adhere to the established terms and conditions, under the guidance of an LBM Eijkman researcher, thus not necessitating a high-level agreement.

Bogor Agriculture University (IPB's) research management has previously discussed the possibility of hiring on-call legal experts specifically focusing on international issues. This

consideration arises from the acknowledgment of certain weaknesses in understanding international civil laws.

During the initial phase of collaboration, IPB involves environmental and legal experts. For the past decade, IPB has engaged legal experts to train researchers who act as negotiators. The training encompasses real case studies like drafting MOUs, agreements, project proposals, including aspects to consider and negotiation tactics.

In negotiations, there are terms such as "high call" and "low call." IPB negotiators typically aim for a "low call" initially until reaching a mutual agreement. They then scrutinize specific clauses, considering some as acceptable while paying careful attention to others. Once IPB's side comprehends the nuances, they scrutinize the MOU section by section. If deemed secure, they proceed; however, encountering a deadlock may result in the non-signing of the MOU or Technical Agreement (TA) by the involved parties. IPB has refused to sign a collaboration contract, despite complaints from IPB researchers, when a potentially disadvantageous clause for the partner institution exists—such as the complete transfer of IPR to the foreign partner institution—wherein IPB gains nothing from the research collaboration.

At times, researchers from partner institutions prefer expedited and simplified negotiation processes, aiming for immediate joint research without considering the complexity. Yet, IPB's negotiating researchers recognize and acknowledge that IPR resulting from research collaboration should be jointly owned.

Indonesian counterpart institutions need to establish clear standards as Indonesia has enacted the Patent Law, Copyright Law, ratified the Convention on Biodiversity, Nagoya Protocol, and the United Nations Convention on the Law of the Sea (UNCLOS). Negotiators must outline all applicable laws in Indonesia. If they still haven't accepted and are yet to comprehend, an agreement won't be reached. It's highly unfair if all IPR resulting from research collaboration are owned by foreign researchers, especially when all primary data is sourced from Indonesia's jurisdiction, involving Indonesian respondents and researchers conducting their work in Indonesia. Such practices violate both national and international laws. IPB's management has established a standard checklist where all clauses in each article of the draft agreement are collectively examined.

Negotiations in international research collaborations by IPB ne gotiators also aim to advocate for Access and Benefit Sharing (ABS), especially in acquiring IPR through academic publications, considering them as the primary research outcome in research collaborations.

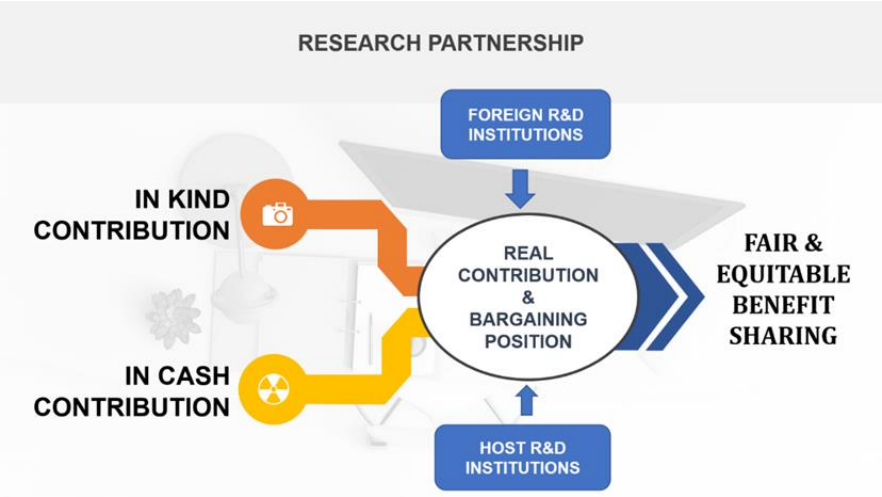

Figure 3. Negotiation Process in International Collaborative Research

Contributions of the Parties

The matching funds program is implemented by the MoRTHE to facilitate researchers and lecturers collaborating with foreign researchers. This program takes the form of a travel grant amounting to IDR 20 million per person, aiming to facilitate joint field research with foreign researchers in various research areas.

The allocated facilitation funds are still significantly insufficient. Although they have been aiding Indonesian research partners to accompany foreign researchers, there is a need for a counter-budget in international research collaborations in Indonesia. This goes beyond joint fieldwork and living expenses in the field, it encompasses a specialized research scheme. A substantial research scheme is required to enable Indonesian researchers to fully participate and focus on achieving target outcomes with research funds from Indonesian Government serving as an in-cash contribution. This would reduce the dependency of Indonesian research partners on the research funds provided by foreign researchers.

Comparatively, the amount of this supplemental funding is significantly small when compared to the research funds brought by foreign collaborating researchers. According to the MoRTHE data from 2019, 554 foreign researchers who received Research Permits for collaborative research in Indonesia brought research funds amounting to Rp 2,169,523,256,513.15. The disparity in financial contributions will subsequently result in the Indonesian researchers' bargaining position being less equitable.

Table 1. Comparison of Indonesian and Foreign Researchers' Research Funds Research Funds (Ministry of Finance, The Republic of Indonesia, 2016, 2017, 2018, 2019, 2020); (Wahyono, 2020a); (Wahyono, 2020b)

No.	Fiscal Year	R&D Budget (IDR)	Foreign Researchers Funding (IDR)	Number of Research Permits
1	2016	1,485,760,955,000	-	489
2	2017	1,501,626,637,000	443,533,347,594.67	557
3	2018	1,779,971,763,000	623,448,631,646.16	521
4	2019	1,942,749,327,000	2,169,523,256,513.15	554
5	2020	1,259,284,444,000	-	177

Table 2. Top Ten Partners' Research Funds by Country 2019 (Ministry of Research, Technology, and High Education, 2019)

Country	Amount of Research Fund (US$)
Germany	53.143.764,00
Japam	27.385.895,83
United States of America	20.352.892,47
Australia	18.333.846,33
Russia	7.479.704,00
Switzerland	6.000.000,00
United Kingdom	5.723.775,71
Canada	4.012.500,00
South Korea	2.264.050,00
The Netherlands	1.263.280,00

Courter Budgets

Foreign researchers are stronger and more dominant in incash contributions, while the Indonesian side plays a more prominent role in in-kind contributions. Over the past six years at LIPI, the Oceanography Research Center (ORC) and Research Center for Biology (RCB) have still been able to provide a counter budget because the Head of the ORC and BRC have the authority to manage research funds sourced from the DIPA budget. As long as the ORC and BRC have relevant research programs related to international collaborative research topics, they can provide a counter budget as agreed upon with foreign partners. For example, in a year, an allocation from the DIPA LIPI budget for about 18 to 25 sailing days for the Research Vessel Baruna Jaya VIII can be provided. However, through the International Research Collaboration scheme and with the financial contribution from the foreign research partner, the research activities in the marine waters can be increased to at least 150 sailing days per year.

Tabel 3. Foreign Research Partners' Funds Based on Field of Study in Indonesia 2019 (Ministry of Research, Technology, and High Education, 2019)

No	Field of Research	Foreign Researchers' Funda (US $)
1	Botany	2,147,483,647
2	Fisheries	861,287,400
3	Cultural Anthropology	286,095,689
4	Biology	57,797,902
5	Primatology	50,366,049
6	Oceanography	11,134,730
7	Ecologi	10,324,096
8	Public Health	9,326,913
9	Socio Economic Agriculture	9,060,415
10	Agriculture	8,194,000

To be able to engage actively, the university acting as a foreign research partner must also provide counter budgetss. As Legal Entity State University (PTNBH) sometimes establishes independent research fund affirmations. Such organizations may independently vet research proposals. With its authority, the management of these organizations occasionally allocates specific research topics to support studies proposed by foreign research partners. IPB also frequently allocates certain research topics funded by its management for collaboration with foreign research partners within the Collaborative Research Center (CRC 990) consortium. Indonesian professors and researchers also have the opportunity to become first authors due to the financial contribution of the collaborating institution, thereby enhancing their bargaining position. They attain equal bargaining positions by providing courter budgets.

Table 4. Financial Contributions from Partner Institutions (Fauzi, 2015)

No	Funds Resources	Amount (Rp)
1	Indonesian BOPTN 2013	779,000,000
2	Indonesian BOPTN 2014	820,000,000
3	Indonesian BOPTN 2015	1,131,000,000
4	Competitive Grant for Consortium 2014	100,000,000
5	DFG ABS FUND 2014	930,190,000
6	DFG ABS FUND 2015	115,015,000
7	Start up 2013 IPB	823,800,000
8	Start up 2013 UNJA	268,500,000
9	Start up 2013 UNTAD	207,325,000
Total		5,174,830,000

Negotiation of Research Topics

Indonesian collaborating institutions selectively accept international research collaboration proposals from foreign partners. The selection of research topics within international collaborations must be discussed jointly, as Indonesian parties will crosscheck these against the research agenda of the institution. Should the proposed research topics by foreign partners not align with the research agenda of the collaborating institution, Indonesia cannot allocate a counter budget for the collaborative international research project. The research programs proposed by foreign partners must align with the institution's research agenda. Indonesian partners must fund the collaborative research program as a counter budget, utilizing the research budget allocation from the available DIPA funds. They are required to adhere to the collaborating institution's programs.

In the collaborative research project Ecological Functions and Socio-Economic Systems of Lowland Tropical Rainforest Transformation CRC 990 *EFForTS*, Sumatra (2012 – 2024) over 160 researchers from the University of Göttingen in Germany and three universities in Indonesia—IPB (Bogor Agricultural University), UNTAD (Tadulako University, Palu), and UNJA (Jambi University)—engaged in close collaboration. These researchers represent diverse disciplines, including Ecology, Forestry, Agriculture, Remote Sensing, Economics, Human Geography, and Cultural Anthropology (University of Goettingen, 2023)

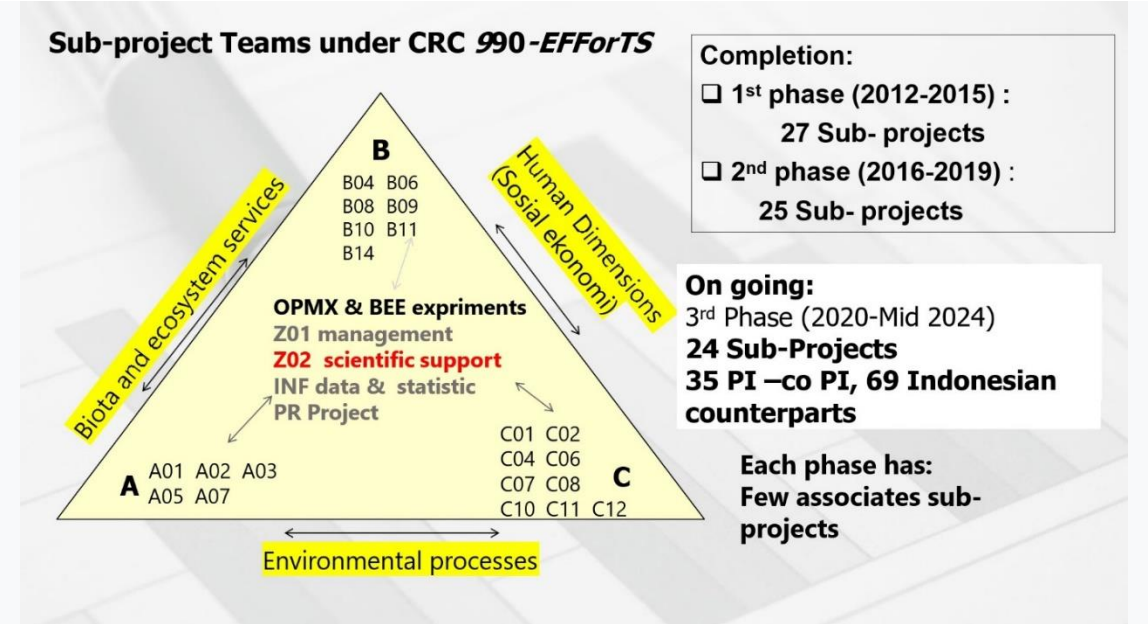

Figure 4. Research Group Distribution by Sub-project of CRC 990 (Tjoa, 2023)

Scientists, researchers, and students collaborate within overarching research topics divided into several sub-projects, each led by a Principle Investigator or research counterpart. This naturally forms research groups within the consortia.

Negotiation of Scientific Publication

Considering scientific publication as a primary research outcome, it warrants special attention in the context of international research collaboration. The negotiation of IPR at the RCB hasn't posed issues so far. During research proposal drafting, divisions are made based on agreements among involved parties. For instance, subdivisions like A (Insects), B (Mammals), C (Primates), determination of the Principal Investigator leading the research group, and identification of foreign researchers and their Indonesian counterparts are settled. Collaboration naturally progresses within these research groups up to the stage of scientific publication. In collaborative research publications, determination of the lead or first author typically occurs based on agreements and contributions of each collaborating researcher, given the specificity of their research field.

If an Indonesian researcher holds the core specimen, they become the lead author, while the foreign researcher becomes a co-author. Conversely, if the leading researcher is foreigner, they assume the lead authorship, and the Indonesian researcher becomes a co-author. This process generally functions automatically. Challenges with scientific publications are rare; however, in instances where Indonesian researchers lack expertise, foreign collaborators are consulted regarding the inclusion of Indonesian researchers as co-authors. Traditionally, those with expertise closest to the research field are included as co-authors.

All desires and agreed-upon targets between Indonesian partners and foreign researchers are typically documented in an MOU, LoA, or MTA. Regarding output and outcome targets, the definitive number of scientific publications may not be explicitly stated, but each involved researcher is expected to contribute to a minimum of 10 scientific publications, whether from Indonesian or foreign research parties. Ideally, in a collaborative research project involving 10 foreign and 10 Indonesian researchers, aiming for equal participation, if 10 publications are anticipated from each party, the combined outcome should yield around 20 scientific

publications. In multi-year research projects spanning 3 to 5 years, such targets are feasible considering each party's specialization within sub-projects. RCB LIPI has discussed that to achieve equal partnership, a minimum participation ratio of 10:10 for joint research is required.

During the signing of the TA, the BRC does not explicitly set specific targets for the minimum outcome achievement, such as the production of a certain number of journal articles resulting from international research collaboration. However, within the international research cooperation agreement, there's a clause stipulating that in each scientific publication, there must be co-authorship from the Indonesian side. Nonetheless, there is no explicit target, for instance, specifying the number of researchers from the BRC who must become first authors. In the collaborative research process, from data collection to scientific publication, the process flows naturally.

In essence, co-authorship is contingent upon the scientific contributions of researchers. Eventually, joint scientific publications resemble natural selection, wherein passive researchers do not gain co-authorship in the resulting scientific publications. Only actively and creatively contributing researchers have the opportunity for co-authorship with foreign colleagues, as this pertains to scientific ethics.

Indonesian Counterparts' Publications

Tangibly, international research collaboration has significantly contributed to boosting co-authorship in international scientific publications for Indonesian partner institutions.

Recently, almost all international academic publications driven by collaborative research efforts. The trend in international journal article writing has shifted from individual authorship to co-authorship, wherein an article is collectively written by several co-authors, involving researchers from various recognized countries. International research collaboration significantly and positively impacts the enhancement of Indonesia's academic publication quality.

The majority of publications emanating from the Eijkman Institute are the result of international research collaboration outputs, despite the institute conducting its own research projects. Eijkman collaborates extensively with foreign researchers in their pursuit of international scientific publications, leveraging the expertise, experience, and scholarly reputation of these foreign researchers. They possess a strong network with international journals, which has positively impacted over 60% of Eijkman Institute's international scientific publications being qualified as Q1-level publications indexed in Scopus-indexed scientific journals.

Over the years, there has been a significant increase in the number of international scientific publications, with an escalation of approximately 20%, 40%, 60%, and eventually reaching 50% to 60% annually since 2015. This is an exceptional performance considering Eijkman Institute comprises only about 25 researchers.

The bulk of these scientific publications represents contributions or research outcomes stemming from international research collaboration with foreign researchers.

Table 5. CRC 990 International Publications (2012 – 2023) (Tjoa, 2023)

No.	High impact publication	Total
1	P*eer* papers (80%) and *multidiciplines* papers (25%)	318
2	*Peer r*eviewed papers	254
3	Multidisiplines research outcome paper	79 (25%)
4	Indonesian counterparts' co-authorship papers	254 (80%)
5	Indonesian first author publications	86

The best practice in Indonesia's international research collaboration is defined by its achievements in scholarly publications. These comprised 339 articles published in various international scientific journals and 35 discussion papers originating from several sub-projects. It's important to note that the CRC 990 management calculated publications as "interdisciplinary (across multiple fields of study) or single (within a specific field)" within a single article.

Conclusion

The performance achievements in scientific publications by Indonesian researchers collaborating with foreign counterparts primarily stem from strengthened research negotiations between partnering institutions, encapsulated in clauses regarding IPR division within research collaboration agreements. This is more prevalent than as an outcome of foreign research permit policy, leading to their scientific publications accounting for nearly 50% of the total SIP (Scientific Indexed Publications) issued. This represents a significant achievement considering the limited policy intervention by regulators and the notably small budget allocation.

Although a matching fund facilitation program dedicated to researchers collaborating with foreign counterparts could potentially enhance scientific publication performance, it ironically receives a considerably small budget allocation.

Budget constraints in research remain a challenge for Indonesian researchers in achieving high-quality outputs publishable in international scientific journals.

The financial contribution ultimately determines the extent of Indonesian collaborating researchers' opportunities to participate in field research (joint research) that can be claimed as scientific contributions. Financial contributions not only increase the chances for scientific contributions but also enhance the bargaining position and institutional dignity of Indonesian partnering institutions in front of foreign research counterparts.

Suggestions

For Collaborating Institutions:

a) Developing negotiation strategies:

Developing negotiation strategies can begin with enhancing negotiators' competencies through training and technical preparation (coaching clinics) in negotiations, involving senior diplomats from the Mo FA and legal drafting experts, as well as experienced senior researchers as foreign research collaborators. The emphasis should focus on tactics in negotiation, bargaining to optimize the benefits sharing of IPR, particularly scientific publication.

Negotiation skills should also be complemented with the ability to draft research collaboration agreement texts (legal drafting), formulating negotiated agreements into legally binding clauses. In light of the crucial significance of negotiation and the drafting of research collaboration agreements, several research institutions and foreign universities are unhesitant in investing substantially in legal professionals. These legal practitioners are engaged to represent

the foreign scientific and technological institutions as negotiators and legal drafters of research collaboration agreement documents.

b) Providing Supplementary Funding

The provision of supplementary funding (counter budget) by collaborating institutions is a key success factor in international research collaboration. Despite the Indonesian partner institutions contributing in-kind, they should maintain a realistic approach. Supplementary funding remains essential for active participation in joint fieldwork activities. These funds are required for components such as transportation, accommodation, field logistics, and daily allowances. The availability of a counter budget is crucial to enable researchers from partner institutions to contribute scientifically in the field, thereby enhancing their bargaining position in joint publications.

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