

Original Article

Research collaboration between global North and global South assessed in terms of published output: a case study of Australia and Vietnam

Hiep-Hung Pham¹, Thanh Thao Phan²✉, Minh-Trang Do², Dinh-Hai Luong³

¹Center for Research and Practice on Education, Phu Xuan University and REK Institute, Thanh Do University, Hanoi, Vietnam

orcid.org/0000-0003-3300-7770

²Reduvation Research Group, Thanh Do University, Hanoi, Vietnam

phanthaotdu@gmail.com

orcid.org/0000-0002-2574-0166

orcid.org/0000-0001-9190-5726

³The Vietnam National Institute of Educational Sciences, Hanoi, Vietnam

orcid.org/0000-0003-0167-2645

Received: 24 May 2023

Revision: 30 Aug 2023

Revision: 10 Oct 2023

Accepted: 25 Oct 2023

Published: 8 Dec 2023

Declaration of Interests

The authors have no conflict of interest to declare.

Funding

The authors declared that this study has received no financial support.

Citation

Cite this article as: Pham H, Thao Phan T, Do M, Luong D. Research collaboration between global North and global South assessed in terms of published output: a case study of Australia and Vietnam. *Eur Sci Ed.* 2023; 49:e106882.

<https://doi.org/10.3897/ese.2023.e106882>



This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0).

Abstract

Background: Vietnam and Australia have a long-standing history of collaboration in various fields, notably education, science, and technology. However, the results of this partnership remain indeterminate.

Objectives: The aim of this study was to examine the current state of research cooperation between Australia and Vietnam with reference to the following aspects: (1) increase in the number of research publications over time; (2) proportion of open access (OA) publications in total publications; (3) collaboration involving countries other than Australia and Vietnam; (4) funding sources; (5) top institutions; (6) subject areas; and (7) research topics.

Methods: Scopus data set was analysed to identify those papers with two or more authors, with at least one author from Australia and at least one from Vietnam.

Results: Most (nearly 84%) of research papers arising out of such collaborative research were published between 2014 and 2022 (7020 of the total of 8460 documents), and almost half (49.6%) of those are OA. Besides Australia and Vietnam, the authors of those papers were from other countries as well nor were the agencies that funded the research reported in those papers limited to Australia or Vietnam. Among the countries involved in terms of co-authorship or funding, the United States was the most influential. The institutional collaborations formed three distinct clusters, each with a varying number of members and a different university at the core (Australian in two clusters and Vietnamese in the third). Medicine was the most frequent field of collaborative research, and the most frequent topics were Vietnam, coronavirus disease 2019, and climate change.

Conclusions: The findings offer useful insights to policymakers as well as to senior management of academic institutes in Vietnam and Australia. The study also extends our understanding of collaborative research between the Global North and the Global South.

Keywords:

Bibliometric analysis, co-authoring, intercountry research collaboration, North–South collaboration, science mapping

Introduction

Collaboration for research between the Global North and the Global South has received increasing attention from the academic community. Scholars have identified various motivations for both parties to engage in such partnerships. In the case of countries of the Global South (that is, the developing nations), the primary advantages are viewed as accessing research resources and encouraging capacity-building for local researchers.^{1,2} Conversely, for countries of the Global North (that is, the developed nations), the principal driving factors are opportunities to explore under-researched topics³ and augmentation of their ‘soft power’.³

Australia and Vietnam exemplify a prototypical Global North–South research collaboration. These two nations established formal diplomatic relations in 1973, and the year 2023 marks the 50th anniversary of their partnership.⁴ Although research collaboration is a pivotal aspect of their cooperation,⁵ the detailed outcomes of the Australia–Vietnam research alliance remain undocumented. Therefore, the purpose of this study was to fill this research gap by investigating the following aspects of research outputs between these two countries: (1) increase in the number of research publications over time; (2) proportion of open access (OA) publications in total publications; (3) collaboration involving countries other than Australia and Vietnam; (4) funding sources; (5) top institutions; (6) subject areas; and (7) research topics.

Methods

Scopus was selected as the source for data analysis because it is among the most extensive and reliable academic databases and is also widely used by the Australian and Vietnamese academic communities. Specifically, on 31 August 2023, beginning

at 17:30 hours, we conducted the following search query on the Scopus database, which retrieved a total of 9634 documents:

(AFFILCOUNTRY ('Australia')) AND
(AFFILCOUNTRY ('Viet Nam' OR Vietnam))

Subsequently, several additional criteria were used for selecting the final set of documents for empirical analysis:

- Documents published in 2023 were excluded.
- Only those documents written in English were included.
- Documents of the following types were included: Article OR ‘Conference Paper’ OR Review OR ‘Book Chapter’ OR Letter OR Editorial OR Book OR ‘Data Paper’
- Only those documents with at least two authors – with at least one affiliated to an institution in Vietnam and at least one to an institution in Australia – were selected.

These criteria left us with a set of 8460 documents (6829 journal articles, 646 conference papers, 565 review papers, 293 book chapters, 48 editorial letters, 46 letters, 22 books, and 8 data papers).

This data set was subjected to a bibliometric analysis focusing on descriptive statistics, co-authors, and co-word analysis. The descriptive statistics (number of documents, number of citations, percentage, and frequency of subjects and keywords) were used for identifying patterns in the increase in the number of publications, proportion of OA publications (as classified by Scopus) in the total number of publications, collaborations with countries other than Australia and Vietnam, major sources of funding, the most productive institutions, the most frequently represented subject areas, and the most frequent topics of research. Co-author analysis was used for plotting the collaborations among authors from Vietnam, Australia, and other countries. Moreover, a co-word analysis,

which reveals connections between keywords found in the documents⁶ that formed the data set, was conducted to represent the research topics. All bibliometric analyses were carried out using Microsoft Excel, Bibliometrix (www.bibliometrix.org), and VOSviewer (www.vosviewer.com).

Results

Temporal growth

Figure 1 shows the increase in the number of publications with Australian and Vietnamese co-authors over time (1990–2022). The first publication, titled ‘A new *Bothriolepid antiarch* (Pisces, Placodermi) from the Devonian of Do Son Peninsula, northern Vietnam’ based on such collaboration between the two countries, was published in 1990. The publication was authored by four authors, two from Australia, one from Vietnam, and one from France⁷.

As shown in Figure 1, the timeline can be split into four periods.

- The first period (1973–1989): no publications
- The second period (1990–2013): only a few publications; the increase was linear but slow (from 1 in 1990 to 218 in 2013).

- The third period (2014–2020): exponential increase, with the highest number – 1316 publications – in 2020
- The fourth period (2021–2022): a slight dip.

Open access publications

Open access publishing is an indispensable component of the current science landscape, and Scopus makes it easy to identify OA and non-OA publications. As seen in Figure 1, since the first five OA publications in 1996, research collaboration between Australia and Vietnam has always resulted in a significant proportion of OA publications. Overall, out of the 8406 documents, nearly half (4166, or 49.6%) are OA—a proportion far greater than that for publications from either country without a co-author from the other, namely 34.7% for Australia and 38.5% from Vietnam. The corresponding absolute numbers were a total of 2 010 645 documents, of which 697 381 were OA in the case of Australia and 115 651, with 44 496 OA, for Vietnam.

Funding sources

A substantial proportion (51.8%, or 4339 documents) of the documents made no mention of any financial support, whereas the rest

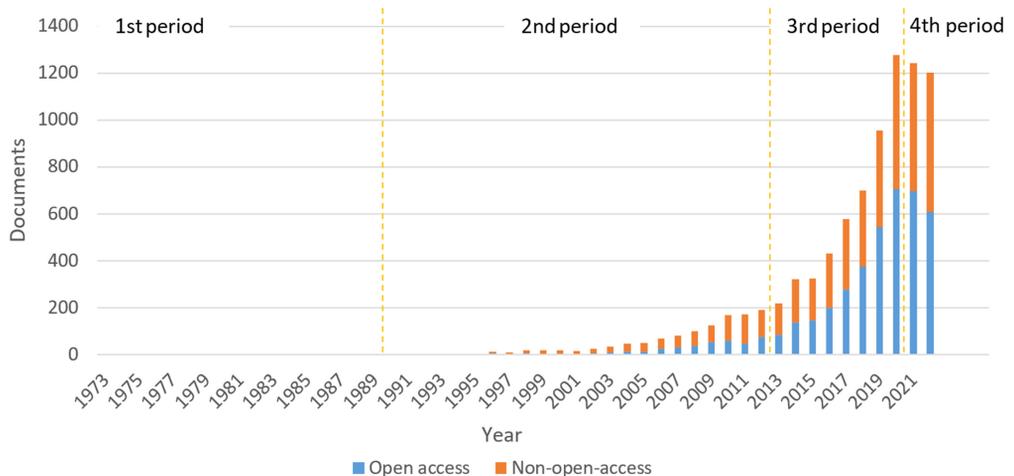


Figure 1. Increase in the number of publications with at least one affiliation each from Australia and Vietnam.

Table 1. Top 10 sources of funding declared in publications arising from Vietnam–Australia collaborative research (1990–2022)

No.	Funder	Country	Open access		Non-open access		Total
			Number	%	Number	%	
1	Australian Research Council	Australia	328	53.0	291	47.0	619
2	National Foundation for Science and Technology Development	Vietnam	194	46.1	227	53.9	421
3	National Health and Medical Research Council	Australia	296	82.9	61	17.1	357
4	Wellcome Trust	UK	209	95.0	11	5.0	220
5	National Institutes of Health	USA	209	96.8	7	3.2	216
6	National Natural Science Foundation of China	China	129	61.7	80	38.3	209
7	National Science Foundation	USA	163	89.1	20	10.9	183
8	Japan Society for the Promotion of Science	Japan	124	80.0	31	20.0	155
9	Bill and Melinda Gates Foundation	USA	154	100	0	0	154
10	Australian Centre for International Agricultural Research	Australia	53	37.1	90	62.9	143
Total (top 10)			1859	69.4	818	30.6	2677
Funded by at least one source			2637	65.3	1401	34.7	4038

mentioned at least one source of funding. These sources included three Australian agencies (ranked first, third, and ninth in Table 1) and one Vietnamese agency (ranked second in Table 1). Six sources from other countries, such as China, UK, USA, and Japan, were also identified.

Some funding sources appear to have favoured policies towards OA; these include the National Health and Medical Research Council, Wellcome Trust, National Science Foundation, and Bill and Melinda Gates Foundation.

Collaboration with countries other than Australia and Vietnam

Not all the documents were outputs of exclusive collaboration between Australia and Vietnam; a large number also involved authors from other countries, predominantly countries of the Global North such as USA, UK, Japan, Korea, Germany, and France (Table 2), although emerging countries such as China, India, Thailand, and Malaysia also contributed. More than half of the total

documents (55.8%, or 4671) also featured at least one co-author from a country other than Australia and Vietnam.

All the top collaborating countries accounted for a significantly higher proportion of OA publications than non-OA publications. For example, of publications with at least one author from the UK, about 85% (or 1136 of 1325) were OA. Also, the corresponding proportion for any of the other nine collaborating countries was always greater than 67%.

Collaboration at institutional level

Figure 2 shows the patterns of co-authorship among Australian and Vietnamese institutions. Each node corresponds to one institution, and the size of the node is proportional to the number of publications from that institution. The line connecting any two nodes represents papers with researchers from the two respective institutions as co-authors.

The analysis revealed three distinct clusters.

- **Red**, with Monash University (Australia) at the core, comprises 22 institutions

Table 2. Top 10 countries collaborating in research ranked by the number of publications with at least one author each from Vietnam and Australia and at least one author from a third country (1990–2022)

No.	Country	Open access		Non-open access		Total
		Number	%	Number	%	
1	USA	1095	73.6	393	26.4	1488
2	UK	1136	85.7	189	14.3	1325
3	China	783	67.2	383	32.9	1166
4	Japan	660	75.8	211	24.2	871
5	South Korea	548	67.2	268	32.8	816
6	India	542	70.5	227	29.5	769
7	Germany	627	83.7	122	16.3	749
8	France	579	83.9	111	16.1	690
9	Malaysia	466	73.3	170	26.7	636
10	Thailand	448	75.8	143	24.2	591
Total (top 10)		2323	62.2	1410	37.8	3,733
Total number of documents with co-authors from Australia and Vietnam and at least one co-author from another country		2771	59.3	1900	40.7	4671

(9 Australian, 4 Vietnamese, and 9 from other countries).

- **Green:** with Ton Duc Thang University (Vietnam) at the core, comprising 20 institutions (15 Australian and 5 Vietnamese).
- **Blue:** with La Trobe University (Australia) at the core, comprising 8 institutions (5 Australian, 1 Vietnamese, and 2 from other countries).

Table 3 shows the details of each cluster.

Field or discipline of research

Table 4 presents the major subject areas, as classified by Scopus, represented in the publications. The top subjects in terms of the number of publications were medicine, engineering, and agricultural and biological sciences, accounting for nearly 60% of

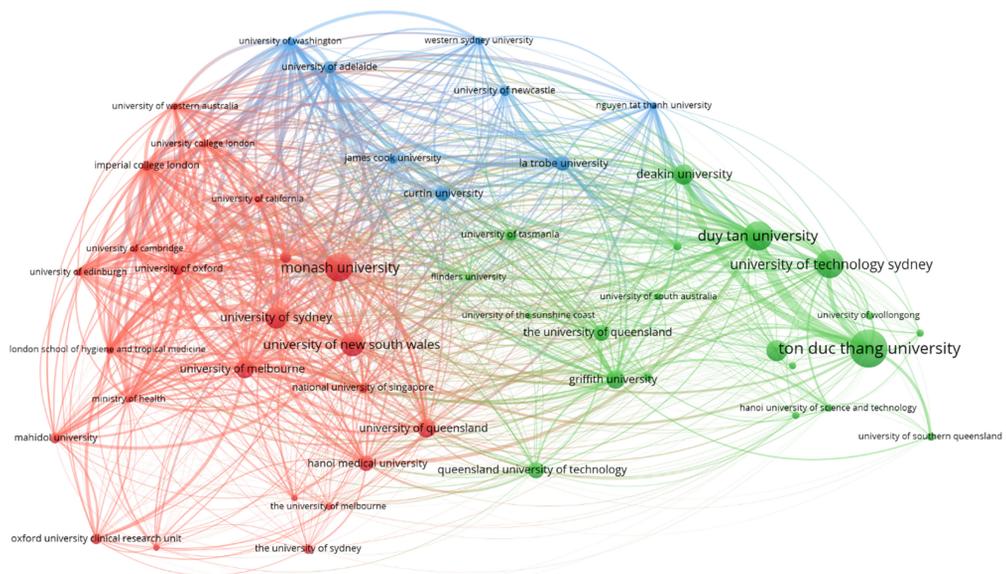


Figure 2. Collaborations (1990–2022) between institutions in Vietnam and Australia with those from other countries (51 institutions, each publishing at least 100 documents).

Table 3. Clusters of collaborating institutions in Australia and Vietnam along with those from other countries

Cluster	Institution (number of publications)			Top collaborating pair within the cluster (number of publications)
	Australia	Vietnam	Other countries	
Red	Monash University (425), University of New South Wales (354), University of Sydney (337)	Hanoi Medical University (236)	University of Oxford (192), Mahidol University (165)	Imperial College London and University of Oxford (75)
Green	University of Technology Sydney (428), RMIT University (324), Deakin University (310)	Ton Duc Thang University (573)	Not available	Duy Tan University and Ton Duc Thang University (102)
Blue	La Trobe University (241), Curtin University (230), University of Adelaide (193), University of Newcastle (166)	Nguyen Tat Thanh University (119)	University of Washington (127)	University of Adelaide and University of Washington (40)

the output. Among the top 10 subject areas, eight were the so-called science, technology, engineering, and mathematics (STEM) areas, whereas the rest included the social sciences and business, management, and accounting.

In Table 4, the output from each subject area is split into OA and non-OA. The proportion of OA documents was higher in medicine, biochemistry, genetics, and molecular biology and lower in engineering and mathematics.

Topics

Table 5 and Figure 3 present the main topics (the keywords given in each of the documents

that made up the data set) of the publications. A sample of the studies clearly showed the dominance of issues and challenges specific to Vietnam and its neighbouring regions, namely Asia and Southeast Asia, being addressed through collaborative research between Australia and Vietnam—a pattern manifest in the ranking of keywords by their frequency: ‘Vietnam’ was the most frequently found keyword, followed, in that order, by ‘Asia’ (fifth rank), ‘Southeast Asia’ (seventh rank), and ‘Mekong delta’ (ninth rank). In contrast, the keyword ‘Australia’ appeared in only 36 publications and was in the 15th position.

Table 4. Top 10 subject areas in terms of the number of publications arising from Australia–Vietnam collaboration (1990–2022)

No.	Subject area	Open access		Non-open access		Total
		Number	%	Number	%	
1	Medicine	1497	71.4	599	28.6	2096
2	Engineering	527	36.1	934	63.9	1461
3	Agricultural and biological sciences	549	41.8	763	58.2	1312
4	Environmental science	562	47.2	629	52.8	1191
5	Computer science	418	38.8	660	61.2	1078
6	Social sciences	353	37.2	596	62.8	949
7	Biochemistry, genetics, and molecular biology	431	63.7	246	36.3	677
8	Mathematics	242	41.4	343	58.6	585
9	Physics and astronomy	303	53.1	268	46.9	571
10	Business, management, and accounting	151	27.9	391	72.1	542

Table 5. Top 20 keywords found in publications resulting from Vietnam–Australia collaboration (1990–2022)

Rank	Keyword	Frequency	Rank	Keyword	Frequency
1	Vietnam	921	11	Tuberculosis	38
2	COVID-19	119	12	Australia	37
3	Climate change	88	13	Sustainability	37
4	HIV	76	14	Depression	37
5	Asia	70	15	GIS	36
6	Machine learning	67	16	Optimization	36
7	Southeast Asia	59	17	Adaptation	35
8	Epidemiology	47	18	Risk factors	34
9	Deep learning	41	19	Antioxidant	32
10	Mekong delta	41	20	Public health	31

To understand how these topics combine to evolve into major research themes, we conducted co-word analysis, using VOSviewer, which yielded eight themes in the Vietnam–Australia research collaboration: four in medicine and one each in computer science, agricultural and biological sciences, environmental science, and education (Table 6). In Figure 3, each of these themes is represented by a different colour.

Discussion

The year 2023 marks the 50th anniversary of the partnership between Australia and Vietnam, and the present study sought to conduct a comprehensive review of the research outputs arising from this partnership. The study also served to extend our knowledge of the global North–South collaboration in research with Australia and Vietnam as a case study.

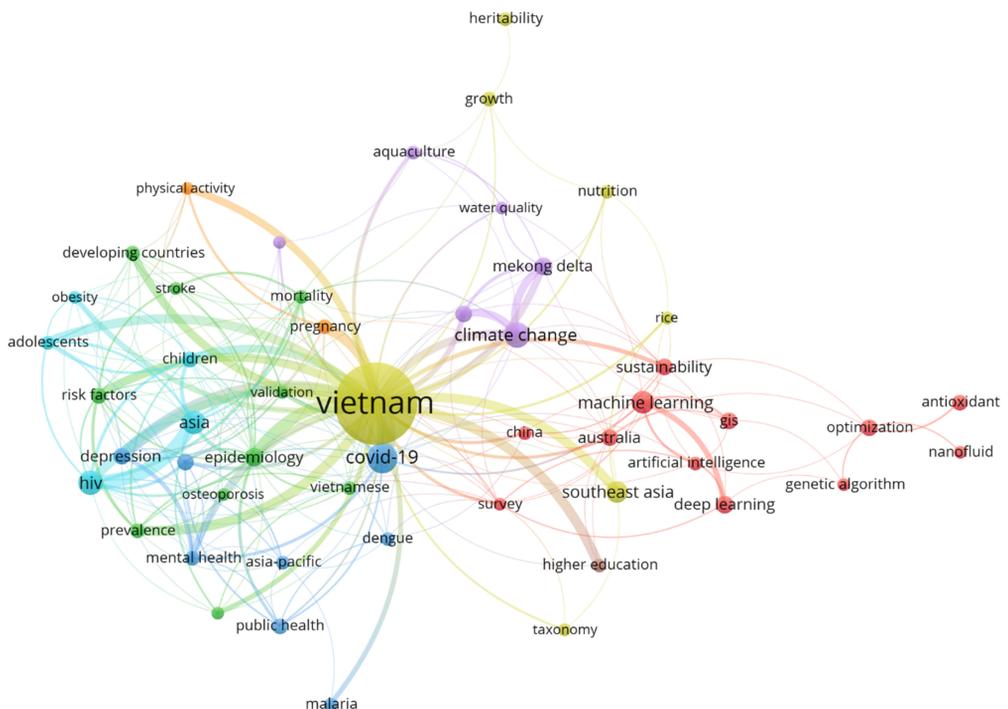


Figure 3. Science mapping analysis of 51 keywords found in publications from Vietnam–Australia collaboration: 1990–2022. Note: Only those keywords occurring at least 20 times were included.

Table 6. Top research themes identified in publications from Vietnam–Australia collaboration: 1990–2022

Subject area	Theme	Keywords in the theme (frequency of occurrence)
Computer science	Machine learning	Machine learning (67), deep learning (41), Australia (37), sustainability (37), GIS (36), optimization (36), antioxidant (32), China (26), artificial intelligence (25), genetic algorithm (23), nanofluid (23), and survey (22)
Medicine	Epidemiology issues	Epidemiology (47), risk factors (34), developing countries (29), prevalence (27), mortality (26), Vietnamese (26), culture (22), stroke (21), validation (21), and osteoporosis (20)
Medicine	Issues relate to COVID-19	COVID-19 (119), tuberculosis (38), depression (37), public health (31), mental health (30), Asia–Pacific (26), dengue (26), and malaria (26)
Agricultural and biological sciences	Heritability and nutrition	Vietnam (921), Southeast Asia (59), growth (28), heritability (25), nutrition (24), rice (21), and taxonomy (21)
Environmental science	Climate change adaptation	Climate change (88), Mekong delta (41), adaptation (35), aquaculture (26), antimicrobial resistance (21), and water quality (20)
Medicine		HIV (76), Asia (70), children (31), adolescents (26), and obesity (20)
Medicine	Issues relate to HIV	Pregnancy (29) and physical activity (21)
Education	Higher education	Higher education (26)

Four phases in the 50 years of collaboration

The 50 years of collaboration can be split into four phases or periods in terms of the number of publications arising out of the collaborative research: (1) Period 1 (1973–1989): no publications; (2) Period 2 (1990–2013): linear but slow growth; (3) Period 3 (2014–2020): rapid and exponential growth; and (4) Period 4 (2021–2022): a slight dip. Period 1 encompasses wartime in Vietnam (1973–1975) and the pre-Doi Moi era (1975–1989). During this phase, research collaboration between the two countries was not the primary focus, as other sectors such as economics and foreign affairs took precedence.⁸ The limited research output during this period can be attributed to these circumstances. Period 2 corresponds to the first two decades of *Doi Moi* and economic reforms in Vietnam. In particular, the academic system in Vietnam improved greatly during this period. Better-qualified researchers were recruited during this period; many of them trained in Australia through fellowships offered by the Australian government.⁸ The slow, but steady, linear growth

during this period can be attributed to these factors. Period 3 aligns with further advances in Vietnam's academic system. In particular, Vietnamese institutions began to achieve rankings in such prestigious global university rankings as those by Times Higher Education and Quacquarelli Symonds. This period also witnessed a significant surge in research output across the entire academic system,⁹ and the rapid exponential growth of publications is probably a reflection of these developments. Lastly, the slight dip may be due to the impact of the COVID-19 pandemic on the overall productivity of the two countries.

Open access

Open access is an indispensable component of contemporary science publishing,¹⁰ and the outputs of research collaboration between Australia and Vietnam conformed to this trend: nearly a half (49.6%) of the 8406 publications are OA, a proportion significantly higher than that seen in publications from either country without a co-author from another country, given that the corresponding

proportions are 34.7% for Australia and 38.5% for Vietnam. This higher proportion must have been a function of (1) the field or subject, because a significant share in the publications was that of medicine, a discipline that encourages OA, and (2) funding by organisations that favour OA (such as the National Health and Medical Research Council, the National Institutes of Health, and the Bill and Melinda Gates Foundation).

Co-authors and funding agencies from countries other than Australia and Vietnam

A significant proportion (about 55%, or 4671 out of 8406 publications) had at least one co-author from a country other than Australia and Vietnam, a finding that highlights the current trend of multi-country collaboration in research across the world¹¹ and is consistent with the observation that in a significant proportion of cases in our data set, the funding agencies were neither from Australia nor from Vietnam but from other countries such as China, USA, UK, and Japan.

Our study shows that research collaboration between the countries of the Global North and the Global South may not be as infrequent as that reported earlier² and that countries of the Global South can also fund joint research endeavours involving researchers from both the North and the South. Two findings from the present study support this optimistic view: (1) Vietnam ranked second in the list of funding agencies (in the form of the National Foundation for Science and Technology Development), and (2) of the three research clusters (Figure 2), one is led by a Vietnamese institution rather than by an Australian institution.

Subjects from the STEM sector, especially medicine, appear to dominate the publications co-authored by scholars from Australia and Vietnam. This finding is in line with that reported in other studies that also noted

the preponderance of the STEM sector in both countries.^{12,13} In particular, the dominance of medicine may be explained by the paper from the *Lancet*²: after examining what motivates countries from the Global North to engage in research partnerships with countries of the Global South, the authors contend that the anticipation of encountering emerging diseases such as dengue or malaria (originating from developing countries) in the future serves as a significant impetus for the countries from the Global North.

The present study also expands our knowledge of research collaboration between the Global North and the Global South in general. We confirmed the motivations identified earlier,² namely the opportunity to explore under-researched but potentially useful topics, as evident in the several major research topics important not only to Vietnam but also to the region as a whole (Tables 5 and 6). We also identify new trends: whereas an earlier study¹ attributed the interest of the Global South countries primarily to funding opportunities, our study challenges this assertion by showing that the second most substantial funder was from Vietnam and not from Australia.

Lastly, a few limitations of the study must be mentioned. First, we analysed the collaborative research, in terms of published outputs from that research, at a broader level, focusing on subject areas covered by the outputs and the participating institutions, rather than at the narrower level that would have focused on identifying research units within the participating institutions or the individual authors. This limitation should be considered by future studies that aim to provide a more comprehensive analysis. Second, our analysis was confined to a subset of the published outputs, comprising only those published in English and indexed by Scopus. Future research may benefit from broadening the

scope to encompass a wider range of outputs, including works written in Vietnamese and indexed in more databases besides Scopus.

Within the study period (1973–2022), the present study identified four distinct subperiods of collaborations in terms of the rate of increase in the number of publications, with 2014–2020 being the most productive subperiod.

The proportion of OA research papers within those reporting the result of collaborative research between the two countries was much higher (49.6%) than that in research papers reporting the results of research carried out within either of the countries alone without such collaboration (34.7% for Australia and 38.5% for Vietnam).

The results of this study, and the latest trends it reveals in research collaboration between the Global North and the Global South, offer useful insights to policymakers and senior management of universities in general and to those in Australia and Vietnam in particular. The insights are quantitative in terms of (1) the increase in the number of research publications over time, (2) the proportion of OA publications in the total, (3) collaboration with countries other than Australia and Vietnam, (4) funding sources, (5) top institutions, (6) subject areas, and (7) research topics.

References

- Ishengoma JM. North–South research collaborations and their impact on capacity building: A Southern perspective. In: *North–South Knowledge Networks Towards Equitable Collaboration between Academics, Donors and Universities* [internet]. Halvorsen T, Nossum J, eds. Cape Town: African Minds; 2016. Available at: https://library.oapen.org/bitstream/handle/20.500.12657/28917/AMT-South-North-Cooperation-Lighting-Source_LWed.pdf?sequence=1#page=165.
- McCoy D, Mwansambo C, Costello A, Khan A. Academic partnerships between rich and poor countries. *Lancet*. 2008;371(9618):1055–1057. [\[CrossRef\]](#)
- Yang R. Soft power and higher education: an examination of China’s Confucius Institutes. *Glob Soc Educ*. 2010;8(2):235–245. [\[CrossRef\]](#)
- Nguyen HH. Vietnam-Australia relations at 50 [internet]. *Centre for Policy Futures - The University of Queensland*; 2023. Available at: <https://policy-futures.centre.uq.edu.au/article/2023/03/vietnam-australia-relations-50>.
- . Nhan dan Newspaper. Vietnam - Australia relations: a new development era [Việt Qhệ. Nam - Australia Sang Trang Phát Triển mới] [internet]; 2023. Available at: <https://special.nhandan.vn/quan-he-Vietnam-Australia-sang-trang-phat-trien-moi/index.html>.
- Hallinger P. Applying bibliometric review methods in education: rationale, definitions, analytical techniques, and illustrations [internet]. 2015:546–556. Available at: <https://repository.li.mahidol.ac.th/handle/123456789/87013>
- Long JA, Burrett CF, Ngan PK, Janvier P. A new bothriolepid antiarch (Pisces, Placodermi) from the Devonian of Dô Son peninsula, northern Vietnam. *Alcheringa An Australas J Palaeontol*. 1990;14(3):181–194. [\[CrossRef\]](#)
- Nguyen TTH. Examining Vietnam-Australia political and economic relations. *Asian Aff Am Rev*. 2019;46(2-3):63–79. [\[CrossRef\]](#)
- Nguyen TTH, Pham H, Vuong Q, Cao Q, Dinh V, Nguyen DD. The adoption of international publishing within Vietnamese academia from 1986 to 2020: a review. *Learn Publ*. 2021;34(2):175–186. [\[CrossRef\]](#)
- Laakso M, Welling P, Bukvova H, Nyman L, Björk BC, Hedlund T. The development of open access journal publishing from 1993 to 2009. *PLoS One* 2011;6(6):e20961. [\[CrossRef\]](#)
- Jit M, Ananthakrishnan A, McKee M, Wouters OJ, Beutels P, Teerawattananon Y. Multi-country collaboration in responding to global infectious disease threats: lessons for Europe from the COVID-19

pandemic. *Lancet reg heal - Eur* [internet]. 2021;9:100221. Available at: <https://linkinghub.elsevier.com/retrieve/pii/S2666776221001988>.

12. McGuire A, Ishizaki Y, Huggett S, Karlsson A. Australia in the global research landscape and Elsevier in Australia - Elsevier's Analytical Reports

[internet]. 2022. Available at: https://www.elsevier.com/_data/assets/pdf_file/0008/1279286/2022-0407-Australia-Report.pdf

13. Manh HD. Scientific publications in Vietnam as seen from Scopus during 1996-2013. *Scientometrics*. 2015;105(1):83-95. [CrossRef]

ease / publications

ese / European Science Editing

European Science Editing is an official publication of EASE. It is an open access peer-reviewed journal that publishes original research, review and commentary on all aspects of scientific, scholarly editing and publishing.

<https://ese.arphahub.com/>
<https://www.ease.org.uk>
https://twitter.com/Eur_Sci_Ed
<https://www.linkedin.com/company/easeeditors/>



© 2023 the authors. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.