Scientometric Study: Trends and Patterns in Global Partnership Research

Prima Naomi
Iqbal Akbar

Management, Universitas Paramadina, Indonesia
Author's correspondence: prima.naomi@paramadina.ac.id

Abstract. This paper aims to understand the emerging pattern of significance and correlation of the partnership research topics covering all countries. Our study used the scientometric method to reveal the trends and patterns in partnership research. The database was sourced from the scientific literature databases of the Web of Science (WoS). The study recorded 53,800 scientific papers on the partnership in general between 2000 to 2017. GDP and HDI were used to analyze the raison-d'être of the research on partnerships at the macro level. We examined the top 20 countries with the highest GDP, Research Productivity Indicator (RPI), and HDI. A country with a lower Human Development Index (HDI) and higher RPI tends to think that partnerships are essential in supporting national socio-economic development. This study showed that among the two main partnership theories, the resource-based view (RBV) theory was discussed more than the stakeholder theory. Observing the motivation to develop partnerships, innovation-seeking was discussed the most in scientific productions. Innovation is used to enhance financial performance and leverage competitive advantage.

Keywords: Global research; Partnership; Resource-based view (RBV) theory; Sciento-
metric analysis; Stakeholders theory.

Abstrak. Penelitian ini bertujuan untuk memahami pola signifikansi dan korelasi yang muncul dari topik penelitian kemitraan yang mencakup semua negara. Studi kami menggunakan metode scientometric untuk mengungkapkan tren dan pola dalam penelitian kemitraan. Basis data ini bersumber dari basis data literatur ilmiah Web of Science (WoS). Kajian ini mencatat 53.800 makalah ilmiah tentang kemitraan secara umum antara tahun 2000 hingga 2017. PDB dan IPM digunakan untuk menganalisis raison-d'être penelitian kemitraan di tingkat makro. Kami memeriksa 20 negara teratas dengan GDP, Research Productivity Indicator (RPI), dan HDI tertinggi. Negara dengan Indeks Pembangunan Manusia (IPM) yang lebih rendah dan RPI yang lebih tinggi cenderung menganggap kemitraan sangat penting dalam mendukung pembangunan sosial ekonomi nasional. Hasil penelitian ini menunjukkan bahwa di antara dua teori kemitraan utama, yaitu teori Resource-based View (RBV) lebih banyak dibahas dari-pada teori pemangku kepentingan (stakeholder theory). Melihat motivasi untuk mengembangkan kemitraan, pencarian inovasi paling banyak dibahas dalam produksi

ilmiah. Inovasi digunakan untuk meningkatkan kinerja keuangan dan memanfaatkan keunggulan kompetitif.

BACKGROUND

The term 'partnership' has existed in line with the existence of human presence. Its emerging presence brings various meanings and practices. The term 'partnership' is interchangeable with the term 'alliance' (Iyer, 2003). In the field of economic and public policy, it can be associated to synergy, transformation, and budget enlargement (Mackintosh, 1992). Social power also shapes partnerships (Shemer & Schmid, 2007). If we look at the understanding above, the meaning of partnership can be seen both at the individual and organizational levels. Our concern for this research is partnerships at the organizational level.

At the organizational level, partnership has also been implemented for both profit-oriented and non-profit organizations. However, partnership issues have surfaced and feel increasingly important in line with the emergence of sustainability issues. At the Earth Summit, sustainable development was discussed in the context of a 1987 definition of sustainable development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Marshall & Toffel, 2005). Sustainability is a complex and multifaceted issue, but individuals or organizations often do not have the resources needed to deal with this issue on their own. The partnership has been a strategic issue to maintain sustainability and improve organizational performance. Because the issues faced are multi-aspect, multi-disciplinary, and multi-perspective, multi-sector partnerships are therefore a must. Many researchers have looked into how the practice of strategic partnership can be used to support the acceleration of sustainable development (Chunling, Memon, Thanh, Ali, & Kirikkaleli, 2021; Filatova, Nikolaichuk, Zakaev, & Ilin, 2021; Upvall & Leffers, 2018; Pirelli, Chiumenti, Morese, Bonati, Fabiani, & Pulighe, 2021). Dialogue leadership in strategic partnership is essential due to the nature of leadership influencing the decision via intellectual and organization approach (Hlehel & Muhammad, 2022).

The necessity of partnership that became an integral part of sustainable development is also seen from countries' agreements throughout the world. In September 2000, the United Nations conferences and summits adopted the United Nations Millennium Declaration. One of the eight Millennium Development Goals (MDGs) was to develop a global partnership for development. In 2015, or the end of the MDG's term, the sustainable development agenda was continued by providing SDGs. The SDGs also significantly broadened the scope of action with 17 goals covering a wide range of human activity across the three sustainable development dimensions (economic, social, and environmental): people, planet, prosperity, peace, and partnership, the five Ps of the new agenda–an agenda for all countries. A successful sustainable development agenda

requires partnerships between governments, the private sector, and civil society. These inclusive partnerships that build upon principles and values, a shared vision, and shared goals that place people and the planet at the center are needed at the global, regional, national, and local levels (United Nations, 2019).

The importance of partnership in various aspects of people's lives in the world is undeniable. The partnership concept involves multidisciplinary framework development and is used in across a wide range of public and private sectors. International development cooperation often deploys the term partnership in their public taglines to reflect the importance of organizational strategy in providing the shared and mutual benefits for their stakeholders and shareholders. However, partnership development needs to be structured on an individual basis. In the case of North-South partnerships, the funding context in which the partnership is developed poses a significant barrier for engaging the partnership (Hatton & Schröeder, 2011). Local partnership in the US public services plays important role in the delivery of workforce and economic development (Eberts & Erickcek, 2002).

Many scholars in economics and business management had recognized the importance of partnership as a mode of the business process in the modern economic system. Interdependence, interlinked, and interrelated business process both domestically and internationally impede the effectiveness for organizational to work alone. Moreover, the blurring of industrial boundaries raises the unexpected new competitor within the product-market industry. As a consequence of that, the intensity of competition increases, and it makes the marginal cost overrides marginal revenue. This situation forces companies to more collaborate than before. Considering resources and budget constraint owned by the organization, and the increasing of competition cost thus it makes partnership is an alternative mode of doing business instead of merely compete in the market. The growing interest of research in this field is shown by the publications of research findings in economics and business academic journals. However, we need a map, meta-analysis, of academic research realized by scholars to understand a general pattern of significance and correlation of the partnership research topics. Thus, this paper is designed to emerge the unseen pattern of research agendas, topics, and publications of partnership and other importance factors.

However, up till the present, to the best of our knowledge, there has been no research conducted to understand the trends and patterns in global partnership research. Some are interested to investigate a particular facet of partnership (Oliveira, Nunes, Mattiello, Barros-Ribeiro, Souza, Coelho, & Collevatti, 2019; Osei-Kyei, Jin, Nnaji, Akomea-Frimpong, & Wuni, 2022) This study aims to analyze how trends and patterns in the partnership research have been discussed scientifically since partnership was declared as part of the MDGs. We use the scientometric method. This method has been widely used to identify the trend of the scientific research activities. Outputs from the research activities will be extracted from Web of Science (WoS) database. We will then examine the extracted data based on different set of parameters, namely the geographical distribution and the most occurred terms. The trend that will be studied is the number of research globally and the geographical distribution of the top 20 publications on partnership to extract the trends on partnership. Our contribution to the literature will be evident to reveal which theory is commonly used by organizations in developing the partnership in various sectors and across countries. This paper focuses on the two widely used theory to explain partnership, namely stakeholder and resource-based view

theory. We will present the motivation to engage in partnership, either for business or government sector. We will examine the relationship between the number of partnership publications and GDP and HDI and the patterns in scientific publications in terms of the dominant themes discussed, the theoretical bases used, the sub-themes of each theory, and the motivation to implement partnerships.

Our paper is organized in the following order: Theoretical Review provides a general literature review on the partnership, Research Method presents the method and data used in this paper, Results and Discussions provides the results and discussions, and Conclusions and Recommendations outlays the conclusions and avenues for future research.

THEORETICAL REVIEW

Single sector approaches have been tried and have proved disappointing, working separately, different sectors have developed activities in isolation–sometimes competing with each other and or duplicating effort and wasting valuable resources (Tennyson, 2011). By partnering, organizations gain additional access to external resources in terms of investment, technology, membership, public image, and/or political influence. Partnering with multiple sectors further grows the organization because it recognizes the quality and competency across sectors, finding new ways to accomplish its goals through its partners' capabilities and experience. The synergy among its partners in the partnership bond can create a collaborative advantage. Lasker, Weiss, & Miller (2001) developed a framework serving as diagnostic tools that could help to identify strengths and weaknesses in search of partnership synergy. The notion of partnership between businesses with government, multilateral bodies, and/or social actors for promoting development is deemed to be important worldwide (Reed & Reed, 2009). The importance of collaboration and partnership gives special concerns to the public policy in term of the notions of governance and the public interest. Hall (2009) argued that the predominance of narrow corporatist notions of collaboration and partnership in network structures might serve to undermine the development of the social capital required for sustainable development. In the era of nowadays evolving and dynamic globalization, many countries have found benefits from the existence development of partnership, either bilateral or multilateral, to achieve the great potential of collaborations (Bernal, 2022; Huwaidin, 2022; Lai, Holland, & Kelly, 2019).

In a scientific discussion, there are two main theories that are used in discussing the partnership, i.e.: (1) resource-based view (RBV) and (2) stakeholders. RBV theory views that resources are the key success of an organization to achieve and maintain sustainability that leads the organization to be excellent (Rothaermel, 2012). In RBV, the main driver in organizations for implementing partnerships is the prospect of accessing and co-creating new resources and capabilities (Selsky & Parker, 2005). Resources include strength, excellence, or assets, including know-how techniques, management skills, human resources, and reputation, which can be used by organizations to develop and implement their strategies. Included in capabilities is the ability to adapt, integrate, and reconfigure skills for internal and external organizations, as well as functional competencies. Organizations are encouraged to collaborate, especially concerning scarce and non-replicable resources, such as tacit knowledge and other special competencies. In an era where technology development is so fast and the

uncertainty of the natural environment and marketing environment is getting higher, the organizational challenges to survival and sustainability are also higher. To be sustainable, integration between economic, social, and environmental aspects is needed. It requires resources more varied, all of which cannot be fulfilled by one independent organization. Therefore, the need to partner becomes higher.

Stakeholder theory views organizations as the center of a network of stakeholders that influences each other in achieving organizational goals (Freeman, 2010). The organizational challenge is how to deal with the claims of each stakeholder and recognize the importance of their sustainability towards interdependence among stakeholders. Organizations must identify their stakeholders and manage them and respond to their claims well. In this perspective, building partnerships is an effort for business organizations to be more socially responsible in responding to stakeholder requests and to build and maintain the sustainability of competitive advantage (Selsky & Parker, 2005). In addition, experts also discussed the importance of paying attention to the differences in each stakeholder's cultural aspects (Jones, Felps, & Bigley, 2007), life-cycle and industrial context (Jawahar & McLauglin, 2001), motivation and capacity (Lawrence, 2002), and leadership (Maak, 2007). Partnerships direct organizations to study and handle stakeholder issues and are oriented to conduct two-way communication and make consensus in decision making (Ferrel, Gonzales-Adron, Hult, & Maignan, 2010). In the context of dealing with wicked problems such as uncertain climate change and rapid technological change, partnering with multiple stakeholders will allow for mitigation of and sharing risks, thereby increasing the ability to survive and be sustainable.

Wassmer, Pain, and Paquin (2017) examined what was sought from partnering. Their study interviewed 17 company executives from various types of industries in North America and studies on publishing and media in the past 15 years. The research formulated that basically there were three main objectives of the environment partnership that organization sought from their partner, i.e.:

- Innovation-seeking. Organizations seek new sources of income or try to find ways to reduce costs, by combining resources owned by partners with internal resources, both tangible and intangible, and by creating value and competitive advantages in the market.
- Legitimacy-building. Included in this category are when companies seek social license support when they will operate by showing environmental reputation and extensive social legitimacy. Partners sought for this purpose usually have a good reputation in the area of interest, are able to raise the company's reputation for the activities being carried out, have a history of success in collaboration, and are able to collaborate with other organizational partners to resolve emerging issues.
- Policy Influencing. Governments and legislators or organizations are capable of influencing policy. The partners sought in this context are partners who are able to influence norms, rules, and legislation that are relevant to the industry, have the same focus, or who are willing to dialogue and collaborate.

In partnership, the organization may have more than one objective, but certainly, there is one major objective.

RESEARCH METHODS

This study used the scientometric method by reviewing and analyzing the scientific papers related to partnership in an attempt to answer its research question. Scientometric method has been widely used to develop a quantitative measure on the development of science including the measurement of quality, impact, citation process, research themes mapping, current and future state of research direction, and other indicators for research management (Ittipanuvat, Fujita, Sakata, & Kajikawa, 2014; Mingers & Leydesdorff, 2015). The scientific papers were sourced from the worldwide scientific literature databases of Web of Science (WoS), which is managed by Thomson Reuters Institute of Scientific Information (ISI). Among the various databases provided by WoS, the Web of Science Core Collection was chosen in this study given its accessibility to the world's leading scientific publications ranging from scientific journals, books, and proceedings in the various disciplines ranging from sciences to arts and humanities. The WoS Core Collection covers the citation index from the Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts and Humanities Citation Index (A&HCI), Conference Proceedings Citation Index–Science (CPCI-S), Conference Proceedings Citation Index–Social Science and Humanities (CPCI-SSH), Book Citation Index–Science (BKCI-S), Book Citation Index–Social Sciences & Humanities (BKCI-SSH), Emerging Sources Citation Index (ESCI), Current Chemical Reactions (CCR-Expanded), and Index Chemicus (IC). In comparison to its rival, Scopus databases, WoS provides the world's oldest scientific literature citations with a strong point of a deeper probing to the high-quality scientific publications (Boyle & Sherman, 2006; Chadegani, Salehi, Yunus, Farhadi, Fooladi, Farhadi, & Ebrahim, 2013). It is worth noting that both WoS and Scopus databases are considered to have poor coverage in the area of social sciences and humanities compared to Google Scholar (Chavarro, Ràfols, & Tang, 2018; Mongeon & Paul-Hus, 2016; Van Leeuwen, Moed, Tijssen, Visser, & Van Raan, 2001). However, Google Scholar has not been widely used for bibliometric analysis due to the low practicability of data collection for large-scale citations (Martín-Martín, Orduna-Malea, Thelwall, & López-Cózar, 2018). This study does not limit the reputation of the journal since the WoS collection used in this study has been regarded containing the world class scientific publications.

Using the keyword of "partnership" for the research topic and the years 2000 to 2017 for the year publication, 53,800 scientific papers around the globe were recorded in the first extraction. If the attribute of the year was changed to 1990 to 2017, the study recorded 59,730 scientific papers – 20 % papers more than the years 2000 to 2017. Given that the main research question of this study is to analyze the theoretical background of the partnership development where the scientific discussions were developed in the late 1990s (Barney, 1991; Jawahar & McLaughlin, 2001; Peteraf, 1993; Rowley, 1997; Rowley & Moldoveanu, 2003), this study used the years 2000 to 2017 as the time period in the data collection. The keywords for the theoretical background were "resource-based" and "stakeholder theory." The second extraction recorded 260 scientific papers consisting of 221 papers discussing the RBV and 39 papers discussing the stakeholder theory. From 260 scientific papers, 19 of them discussed both theories.

Specific content from the extracted scientific papers was then analyzed using a freely available software tool, VOSViewer, developed by the Centre for Science and Technologies Studies of Leiden University. The software extracts the scientific terms

from the title, abstract, and keywords. The terms are then counted, and the most occurred terms are placed in the clusters according to their degree of relation. The software has an in-built algorithm that obeys the network theorem to give the visualization how the terms are placed in a cluster based on their proximity and how the clusters are connected to each other (Van Eck & Waltman, 2010). The research terms and clusters can then be identified as certain research interests or focus. The interpretation of the network depends on the research objectives. Rizzi, Eck, and Frey (2014) recognized different clusters of technology maturity on their bibliometric study about scientific knowledge on renewable energies. Ramirez and Devesa (2019) associated the clusters with the groups of scientific leadership on their bibliometric study about mathematics education.

Many existing studies in various disciplines have used this method to understand different research interest or focus within a given topic and to finally interpret the trends of the current and future research activities (e.g., Bandara & Wijewardene, 2018; Kabanov & Chugunov, 2018; Kullenberg & Kasperowski, 2016; Leydesdorff, Carley, & Rafols, 2013; Peykari et al. 2018; Poreau, 2016; Ramirez & Devesa, 2019; Repanovici and Landøy, 2018; Repanovici & Nedelcu, 2018; Rizzi et al., 2014; Saravanan & Basu, 2014; Saritas & Burmaoglu, 2015). Utilizing software such as VOSViewer is useful when dealing with a large number of scientific papers to automate the process of measuring and analyzing the research themes.

This study extracted two datasets from WoS database: (1) the partnership in the general, and (2) the theoretical framework for partnership covering two main theories – the resource-based view (RBV) and the stakeholder theory. The dataset for the partnership in the general contains all papers discussing the theories and practices of partnership in all sectors including those related to the public and private sectors. Another dataset covers only the theoretical framework for partnerships with theoretical and practical explanations.

Using the keyword of "partnership" for the research topic and the years 2000 to 2017 for the year publication, 53,800 scientific papers around the globe were recorded in the first extraction. If the attribute of the year was changed to 1990 to 2017, the study recorded 59,730 scientific papers – 20 % papers more than the years 2000 to 2017. Given that the main research question of this study is to analyze the theoretical background of the partnership development where the scientific discussions were developed in the late 1990s (Barney, 1991; Jawahar & McLaughlin, 2001; Peteraf, 1993; Rowley, 1997; Rowley & Moldoveanu, 2003), this study used the years 2000 to 2017 as the time period in the data collection. The keywords for the theoretical background were "resource-based" and "stakeholder theory." The second extraction recorded 260 scientific papers consisting of 221 papers discussing the RBV and 39 papers discussing the stakeholder theory. From 260 scientific papers, 19 of them discussed both theories.

The data from these two extractions were supplied into VOSviewer to visualize the network of the most occurred terms. Due to the size of the metadata in the first extracting counting to 53,800 papers, the lower limit of the most occurred terms was set to 250. It means that the network will only show the terms that appeared more than 250 times. This setup gave a better and more focused overview with respect to the large data size. On the other side, the lower limit of the most occurred terms was set to 15 in the

second extraction. The limit was lower than the first extraction to the smaller data size (only 260 papers). Then, the network was constructed for both extractions. The terms in the same cluster are displayed in the same color. The font size of the terms determines their frequency of the occurrence. The line between the terms, regardless of the cluster, represents the network connection.

RESULTS AND DISCUSSIONS

Production Trends of Scientific Papers on Partnership

Between 2000 to 2017, the study observed the rapid growth of scientific publication for partnership in the general and the slow growth of scientific papers discussing the theoretical framework for partnership (Fig. 1). The highest increase in the number of scientific papers was observed in 2015, contributing to a total accumulated production of 39,444 scientific papers on partnership in general since 2000. The annual production of scientific papers discussing the two main theories of the partnership was 14 publications per year. This number is quite significantly lower than the annual production of scientific papers on partnership in general (2,989 papers per year).
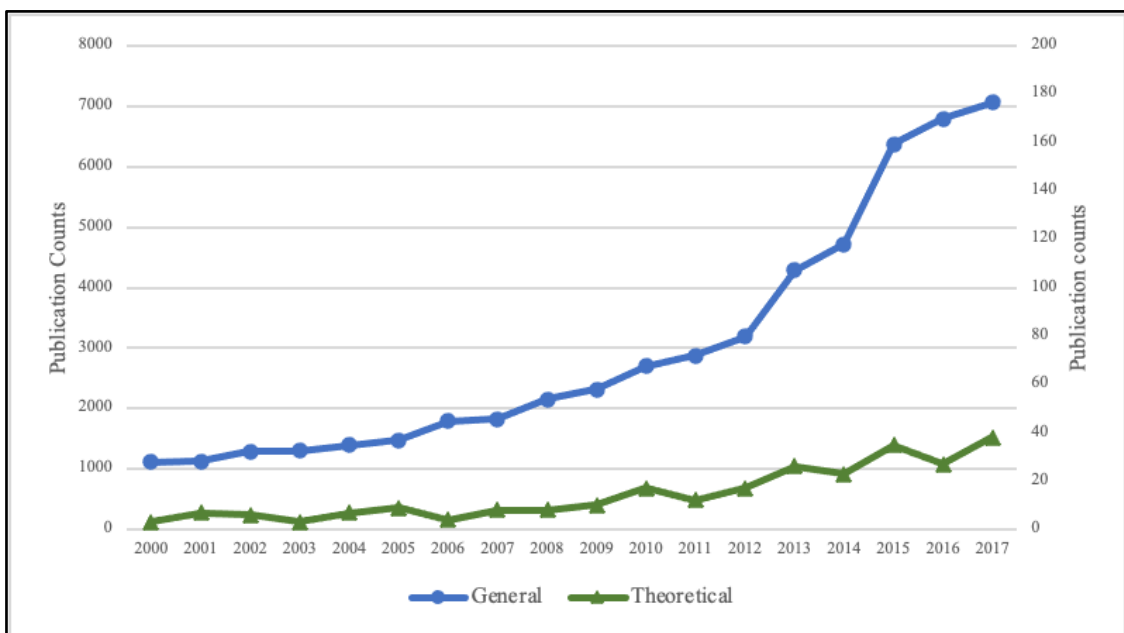
Source: Excel, processed WoS data (2019).

Figure 1. Total Scientific Papers on Partnership in the General and on the Theoretical Framework for Partnership between 2000 to 2017

One cluster from the text mining is represented in one distinctive color and contained the co-occurrence research themes on partnership based on the relation of paper authors. For example, the cluster red, as show in Fig. 2 was dominated with research themes for the Public-Private Partnership (PPP), policy, lesson, challenge, case study, etc. The network also visualizes the co-occurrence of the three regions (Africa,

India, and China) in the set of publications. Therefore, the red cluster discussed mostly these three regions within the context of the previously mentioned research themes.

In the general, the scientific literature on partnership between 2000 to 2017 showed the trends of four clusters of research themes with two distinctive contexts: (i) individual and (ii) organizational. The individual context is represented by the clusters in blue and green. The research themes for the improvement in the quality of family life is shown by the cluster in blue. Most of the studies related to the health and well-being (e.g., women's health, HIV, sexual reproduction) is shown by the cluster in green. The clusters in red and yellow represent the organizational context. The research themes in the area of infrastructure development using PPP mechanism are shown by the cluster in red. The cluster in yellow contains the research themes on the area of education quality and community engagement. There is a possibility that these clusters overlap, that is, themes that are in the individual context are also themes in the organizational context. For example, the theme of HIV risk might be a partnership discussion at the individual level, but it could also be a discussion of organizational partnerships. However, our study revealed limited numbers of research on the partnership tools and strategies in handling climate change. Hennessey, Pittman, Morand, & Douglas (2017) suggested that public-private partnerships provided co-benefits of climate change adaptation and mitigation integration to the Canadian energy market sector.
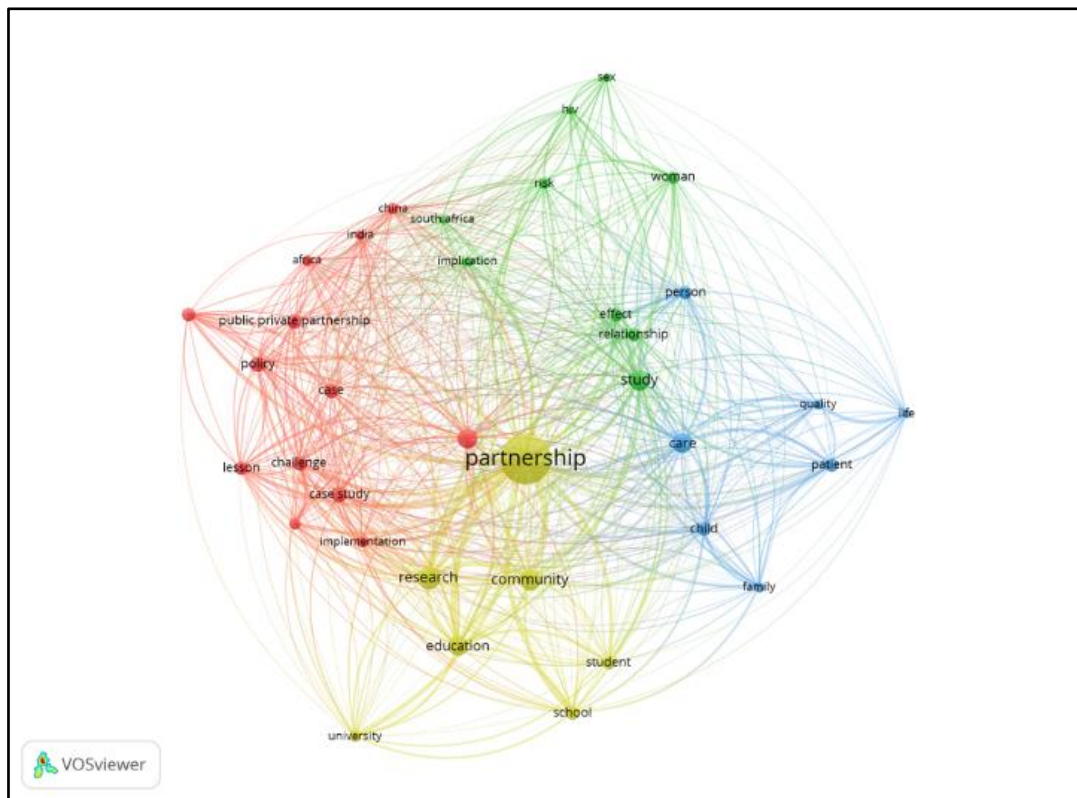
Source: Word, processed WoS data (2019).

Figure 2. The Network Visualization for the Scientific Papers on Partnership in the General between 2000 to 2017

Geographical Distribution of Scientific Productions on Partnership in the General

The evidence from this study showed that the geographical distribution of scientific papers on the partnership between 2000 to 2017 was dominated by OECD countries (Table 1). EU-27 countries contributed 21,485 scientific publications with the UK, Germany, and France leading the scientific productions. This number was calculated by summing up all 27 EU country members to reflect the presence of the EU's policy direction in creating a single harmonized knowledge production. Some of the BRIC countries, e.g., China, Brazil, India, and Russia, were among the top 20 countries contributing to the global knowledge productions on partnership in the general. Most scientific productions in China, South Africa, and India were the case studies with a focus on rural healthcare improvements or on the utilization of the PPP mechanism for infrastructure development as seen in Fig. 3.

Table 1. List of the Top 20 Countries with their Publications and Research Productivity Indicator (RPI) on Partnership in the General between 2000 to 2017

Country	Publication Counts	RPI
USA	21,823	1.125
UK	8,587	3.274
Australia	3,751	2.834
Canada	3,620	2.189
Germany	2,020	0.549
France	1,688	0.653
China	1,609	0.131
Netherlands	1,444	1.747
South Africa	1,213	3.471
Italy	1,182	0.611
Switzerland	1,096	1.614
Brazil	1,078	0.524
Spain	949	0.724
India	850	0.327
Sweden	752	1.398
Belgium	737	1.496
Russia	639	0.405
New Zealand	629	3.056
Japan	600	0.123
South Korea	500	0.327

Source: VOS viewer (2019).

Fig. 4 shows the geographical distribution of total scientific publications on partnership in the general and each country's GDP. There was an obvious observation of a positive correlation between the country's output on scientific publications on partnership and its GDP. This study assumed the 2017 GDP in USD. The correlation, however, was not observed for China and Japan.

Source: VOS viewer (2019).

Figure 3. The Network Visualization for the Scientific Literatures on Partnership in the General for China, South Africa, and India

Source: Excel, processed WoS data (2019).

Figure 4. The Trends of Countries' Total Scientific Publications on Partnership in the General and their GDP

Research productivity indicator (RPI) measures the number of scientific publications per billion USD of reference GDP. This indicator is able to compare fairly the scientific capability among the countries with different socio-economical dimensions (Confraria & Godinho, 2015).

$$RPI = \frac{\sum Publication}{GDP} \qquad \text{---[1]}$$

This study observed that the average RPI of the top 20 countries was 1.329. Some countries, e.g. China and Japan, had RPI below the average RPI. This may suggest that the magnitude of power from the central government hindered the scholarships to understand the benefits of partnerships in the national- and firm-levels, e.g., China with its centralized government. The relationship between democracy, rule of law, and socio-economic dimensions has been long studied by the various schools of thought. Aghion, Alesina, and Trebbi (2007), for example, predicted positive and significant correlation between democracy and innovation. South Africa, the UK, and New Zealand were regarded as the top three countries with the highest research productivity on partnership in the general, respectively 3.471, 3.274, and 3.055 (Table 1).

By contrast, there are limited descriptive and empirical studies to understand the correlation between partnership engagement and GDP level. Haibin (2010) suggested that the global partnership between Brazil and China as the two emerging major world powers was driven by their need to enhance economic growth. Despite China's lower research productivity on the partnership in the general (Fig. 4), Li et al. (2017) were able to estimate that the projected economic gains for China from the partnership framework among China and 15 other Asian countries were in the range of 1.1% to 1.2% of China's GDP. Another empirical study forecasted that Russia's involvement in the two major partnership frameworks, the Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RECP), was able to increase Russia's GDP by 0.74% in the long run (Knobel & Sedalishchev, 2017).
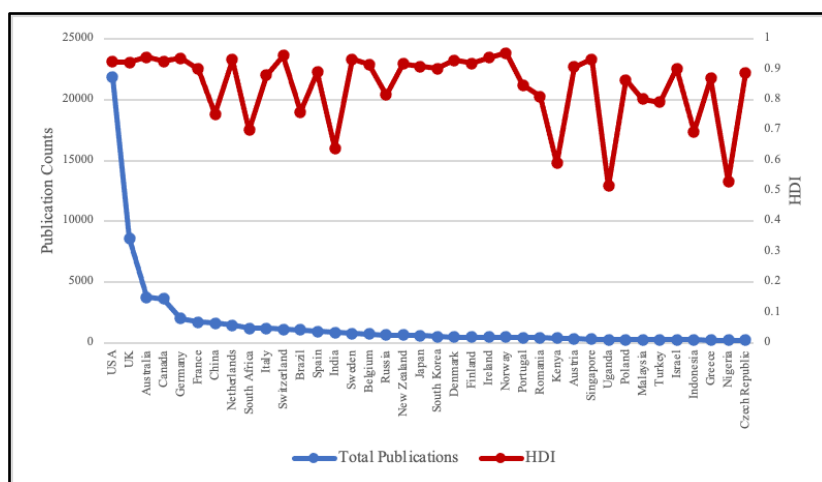
Source: Excel, processed WoS data (2019).

Figure 5. The Trends of Country's Total Scientific Publications on Partnership and its HDI

Another measure of the success of the country's development is the Human Development Index (HDI). The HDI is a summary measure of average achievement in the key dimensions of human development: a long and healthy life, being knowledge-able and having a decent standard of living. The HDI is the geometric mean of nor-malized indices for each of the three dimensions and was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the develop-ment of a country, not economic growth alone. Therefore, we are curious if is there a relationship between HDI and research on partnerships. The test results indicate that some countries with a lower HDI, e.g., South Africa and India, have a strong output in the scientific knowledge productions on partnership in the general (Fig. 5). This study assumed a 2017 HDI. The observation is relevant to the findings from the network visualization, where South Africa and India became the research playground for understanding the partnership engagement using case studies (Fig. 3). In addition, Gonzalez-Alcaide, Park, Huamani, and Ramos (2017) identified a high degree of international scientific collaborations for the countries with a low HDI. They further suggested that the countries with both a low HDI and emerging economies, e.g., China and Brazil, stand out due to the dominance they exerted in the scientific collaborations. Fig. 5 shows that China and Brazil, despite their low HDI, are among the top 20 countries contributing to the global knowledge productions on partnership in the general.
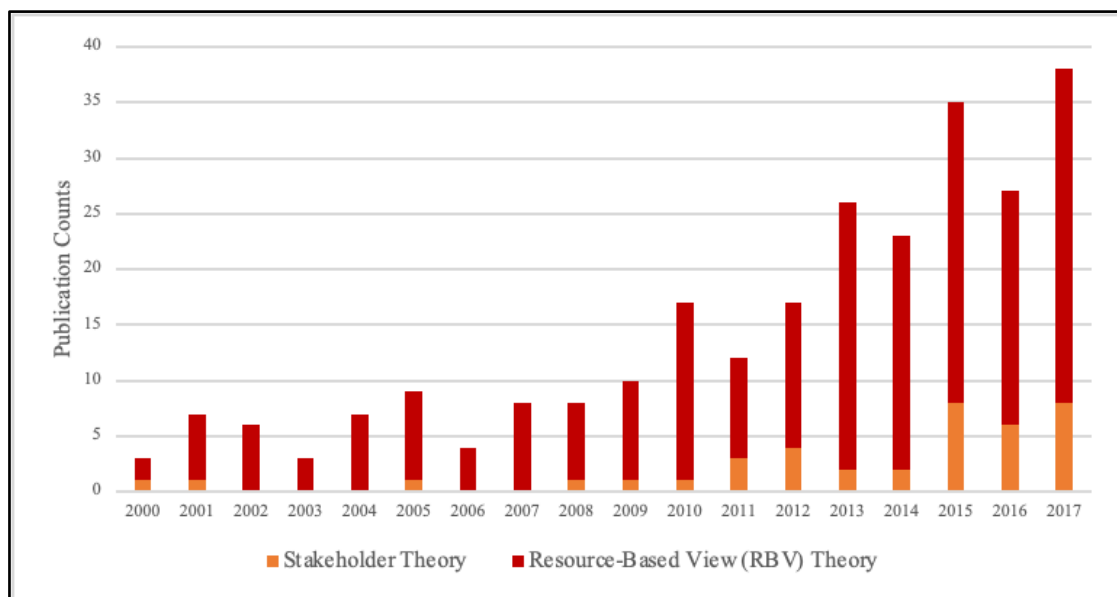
Source: Excel, processed WoS data (2019).

**Figure 6. The Total Scientific Literatures with the Focus on Stakeholder and RBV Theories between 2000 to 2017**

Resource-based and Stakeholder Theory on Partnership

This study observed that the production of scientific literature on the theoretical background of a partnership comprised only 0.48% of the total production of scientific productions on partnership in the general between 2000 to 2017, whereas there were 19

scientific publications discussing both theories. This study did not anticipate the analysis of the geographical distribution on the two main theories on partnership nor the motivation of partnerships. From 260 scientific publications, 221 of them studied the RBV theory and the remaining 39 scientific publications studied the stakeholder theory. The number of papers on the RBV theory always surpassed those for the stakeholder theory, with slow growth for both topics (Fig. 6). The annual production of scientific publications on the RBV theory was 12 papers per year, while the stakeholder theory publication growth was only two papers per year. This result implies that most researchers were interested in understanding the motivational background behind the creation of the partnership in creating a competitive advantage rather than the interaction of the stakeholders in influencing the partnership.

Three clusters of research themes were observed using the text mining analysis from the scientific productions on the theoretical partnership between 2000 to 2017 (Fig. 7). The research themes in the area of RBV are shown by the cluster in blue with the most-occurring terms, namely resource-view, capability, technology, market, and competitive advantage. The most-occurring terms are relevant to the main drivers in the RBV theory, as discussed by Selsky and Parker (2005). Organizations require access and the creation of capabilities to gain a competitive advantage in the market. The research themes in the area of descriptive and instrumental stakeholder theories are shown by the cluster in green with the most occurring terms, namely development, organization, company, and stakeholder. The other cluster shown in red represents the research themes in the area of company collaborative performance with the most-occurring terms, namely firm, perspective, implication, manager, and alliance.

Source: Excel, processed WoS data (2019).

Figure 7. The Network Visualization for the Scientific Papers on Theoretical Partnership between 2000 to 2017

In the view of recently emerging high technologies, companies are now able to identify and commercialize new business models. Yu-Jin and Jae-Yong (2022) observe that partnership for biotech start-up companies in Korea is imperative to deliver the costly radical innovations. The main challenge in radical innovations is that is it hard to convince well-established business counterpart to commercialize start-up's radical innovations. Other researchers find distinctive partnership model for each specific case (Cabacungan, Tonganan, & Cabacungan, 2020; Camargo, Morel, & Lhoste, 2021; Singer, Hack, & Hanley Jr., 2022).

Observing the motivational background for engaging in partnership (Wassmer et al., 2017), this study showed that the research themes discussed the most were innovation-seeking (73%), e.g., in order to grow revenue (Lin et al., 2013); to reduce transactional costs (Angel, 2002; Antolin-Lopez, Martinez-del-Rio, Cespedes-Lorente, & Perez-Valls, 2015; Hemphill & Vonortas, 2003); or to leverage the competitive advantage (Blind & Mangelsdorf, 2013; Dutta & Hora, 2017; Lin, 2014; Piening, Salge, & Schäfer, 2016; Spanos, Vonortas, & Voudouris, 2015). This was followed by the motives of legitimacy-building (23%) and policy-influencing (4%), as seen in Fig. 8.
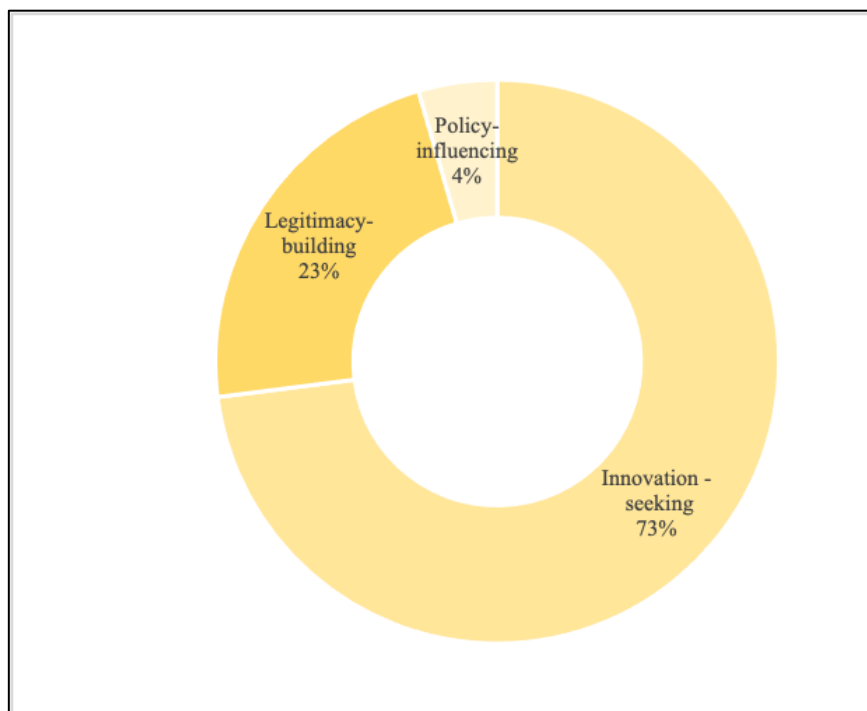
Source: Excel, processed WoS data (2019).

Figure 8. The Breakdown of the Motives for Developing the Partnership

CONCLUSIONS AND RECOMMENDATIONS

This study sheds light on the trends and patterns in global partnership research. The number of scientific papers on partnership in the general grew exponentially from 2012 to 2017. We identified that there were two contrasting contexts in research themes for partnership in the general, as seen in the 53,800 extracted scientific publications

from the WoS: (i) individual and (ii) organizational. Our literature review suggested that most scientific discussions on the theoretical partnership were focused on the organizational context. Looking at the two main theories on the partnership: resource-based view (RBV) and stakeholder theory, we observed that the RBV theory was discussed more by the scientific community to understand how partnerships can increase firm's competitive advantage.

Our study showed that OECD countries dominated the scientific publications on partnership in the general with the exception of some BRIC countries. To analyze the raison-d'être of partnerships at the macro level, we examined the publication trends with two generic macro socio-economic parameters: GDP and HDI. We didn't observe a positive correlation between high GDP for China and Japan and their output of publications on partnership in the general. The magnitude of power from the central government might hinder the publication outputs on partnership in the general. In fact, the RPI value for China and Japan was lower than the average RPI of the top 20 countries. Lower HDI countries, e.g., South Africa and India, were among the top 20 countries contributing to the global knowledge productions on partnership. Our study recognized South Africa as the only country with a lower HDI and the highest RPI, suggesting that partnership was essential in supporting South Africa's socio-economic development, especially as it relates to the improvement of rural healthcare.

The focus on 260 scientific publications related to the motivation to engage in partnerships demonstrated that innovation-seeking was discussed more than others with the aim of better positioning for the companies to compete in the markets. Latest business research concludes that partnership helps to commercialize the radical innovations in start-up companies (Yu-Jin & Jae-Yong). Less scientific publications on the study of the motives for legitimacy-building and policy-influencing were identified in this research. From text mining, we conclude that these scientific publications were mostly related to business organizations.

However, we recognized several limitations in this study. Firstly, our study used a large number of data from WoS that might introduce a confirmation bias due to the search queries, and thus the data might be restricted and lean towards certain views and opinions. Secondly, the analysis was limited due to the control variable of the most occurred terms. Third, the term partnership has a very broad meaning, which should be filtered more carefully to select partnerships in the organizational context. On the contrary, in the business sector, the term partnership also has many synonyms such as collaboration, cooperation which should also be included in partnership research, but we have not yet done so. We plan to incorporate these definitions in our next paper to provide insights for business sector in navigating strategic alliances. Some limited examples, however, have been elaborated in this paper.

This research has generated a number of thought-provoking opportunities for further research on partnership. Further investigations on why the US, China, and Japan have more publication outputs on partnership in the general can provide a more fine-grained understanding of the relationship between macro socio-economical dimensions and interests in publishing scientific literature on partnership. Descriptive and empirical studies to understand the motivation for the partnership in the individual context can supplement the narration of the two main theories of partnership in this study in light of the importance of its presence, as narrated in the SDGs. Research linking cultural

factors with partnership would also be an interesting discussion, and whether Hofstede's six cultural dimensions (collectivism-individualism, power distance, feminity-masculinity, uncertainty avoidance, long-term orientation, and indulgence-restraint) are related to the partnership both in practical and scientific contexts.

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