
A BIBLIOMETRIC ANALYSIS ON SCIENTIFIC PUBLICATIONS OF PUBLIC- PRIVATE PARTNERSHIP IN EDUCATION, 1993–2019

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ABSTRACT

Public - private partnerships (PPPs) and public - private partnerships in education (ePPPs) have been more common than ever because of its great contributions to education development in terms of various aspects including management, maintenance and support services, operation services and infrastructure that especially this way of shared responsibilities and benefits. There are quite a few particular aspects of this sector that have been researched, but there has not been any research on PPPs in education with bibliometric method. Findings revealed that there was an upward fluctuated trend of publications published during the period, though several years had no publication. The themes of these publications were mainly macro issues relevant to policy, strategy, social-economic conditions and business-based activities. European publications had dominated the period, but there were some developing countries in Asia, Africa and America continents that had published the numbers of research papers equal to or even higher than the numbers of publications of developed countries. PPPs in education may be the effective method to be globally used as education systems have been more in the process of internationalism and globalization.

Key words: Bibliometric analysis, education, public -private partnerships (PPPs), public - private partnerships in education (ePPPs).

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1. INTRODUCTION

Public private partnerships (PPPs), as cooperative institutional arrangements between government and one or more private partners for the delivery public goods that they together develop products and services and share risks, cost and resources (G. A. Hodge and Greve, 2005; G. A. Hodge and Greve, 2007; Garvin and Bosso, 2008; Verger and Moschetti, 2017; Languille, 2017), have emerged popular tools to deliver public services around the world such as transportation, water and sewage, energy, environment protection, public health, and others (Liu et al., 2014; G. A. Hodge and Greve, 2016; Wang et al., 2018; Xiong et al., 2019). PPPs have been established and developed over decades and exist in different forms of a mix of public and private collaborations (G. A. Hodge and Greve, 2005; Wettenhall, 2010). In a study about the public-private interface, Wettenhall (2005) indicated nine theaters of the corporation throughout history, consists of privateer shipping; mercenary armies; trade, commerce, and colonial expansion; treasury organization; public (government-owned) enterprises; mixed enterprise; intersect oral collaboration on agriculture, health, and education; private provision of public infrastructure; a note on hallmark event.

In the context of globalization and governing, the term “public private partnership”, which has become increasingly popular in public investment-related discourses around the world, has received momentous attention from many scholars from various disciplines over the past four decades (Roehrich et al., 2014; Wang et al., 2018). Therefore, research on PPPs is particularly various. According to G. Hodge and Greve (2018), numerous aspects of PPPs have seen research: the economics of PPPs (Blanc-Brude, Goldsmith, and Vällilä, 2006; Boardman and Vining, 2010; de Bettignies and Ross, 2010; Vining, Boardman and Poschmann, 2005; Yescombe, 2007), project finance and management (Grimsey and Lewis, 2004; Hellowell and Vecchi, 2012; Klijn, 2008) and social and political aspects (Wettenhall, 2005, 2010). These facets are studied at five levels: project delivery, organizational form, policy, governance tool, and as a phenomenon within a broader historical and cultural context (G. Hodge & Greve, 2018). Along with study results of Ke et al., (2009), it also presented that the three traditional topics—risk, procurement, and financing, have been classified into seven research topics as follows: investment environment, procurement, economic viability, financial package, risk management, governance issues, and integration research.

In education, private sector participation in the provision of public education services for all types of communities—from high-income to low-income families is playing a progressively important role (Patrinos et al., 2009; LaRocque, 2008). Since the 1990s PPPs mechanisms have been encouraged to improve the provision of education in some countries (LaRocque, 2008; S. Robertson et al., 2012; Pestoff et al., 2013). Consequently, a range of different kinds of partnerships is formed. These forms include the traditional components of public education systems as policymaking, education provision, inspection, school management by contracts between the public and private sectors (Hatcher, 2006; Ball and Youdell, 2009; Saltman, 2010), sponsorship through vouchers or other financial arrangements of governments for learners in private education institutes, philanthropy in a range of support educational policies and building of public schools, and governance mechanisms which include partnerships between government, profit and non-profit third sector organizations (Unterhalter, 2017).

Although PPPs in public education are accepted later than other sectors (such as energy, water supply, transportation, health) (Verger & Moschetti, 2017), in recent decades, many countries around the world have adopted it more and more extensively intending to make their education system more competitive and effective in the current context (WorldBank, 2020). Because Education Public Private Partnership (ePPPs) is an economically viable solution that still provides quality education, especially for low-income countries, where governments are challenged with balancing between increasing access to education and limited public spending (S. L. Robertson and Verger, 2012; Verger, 2012). This mechanism is also expected to make available access to education for families of different social circumstances, including poor families, and promotes competition among education service providers (Termes, 2019).

Many researchers and practitioners have been interested in and researched aspects of ePPPs. However, these reviews mostly only focused on a few aspects of ePPPs, and the discipline continues to lack a comprehensive one. However, these reviews mostly only focused on a few aspects of ePPPs. Therefore, the field needs a comprehensive empirical picture to see how research publication from educational research is reshaping the alignment of the ePPPs literature.

The purpose of this article is to review research in the field of public private partnerships in education from 1993 to 2019 using science mapping review methodology. The review addresses the following research questions (RQ):

RQ 1: How has the growth trajectory of ePPPs journal publications changed across the decades between 1993 and 2019?

RQ 2: Who are the most influential authors and what is the intellectual structure of ePPPs? What authors and documents in the literature on ePPPs have had the greatest impact on citations over the past 25 years?

RQ 3: What journal articles have had the greatest influence on public private partnerships in education research over the past 25 years?

RQ 4: What topics in public private partnerships in education literature have been studied with the greatest frequency and are currently attracting the greatest attention between 1993 and 2019?

In this review, the authors used quantitative tools of science mapping (Small, 1999) to analyze bibliographic data associated with 353 PPPs in education-related documents published in the Scopus-indexed between 1993 and 2019 by bibliometric methods (Börner et al., 2003; Cobo et al., 2011; Aria and Cuccurullo, 2017) and using Scopus analytical tools, Excel, and VOSviewer (van Eck and Waltman, 2017; Moral-Muñoz et al., 2019). The article seeks to offer an understanding of the evolving global PPPs in education. The results of this review can give researchers and practitioners an overview of the current situation of study in the field and thus future research direction.

2. BACKGROUND

The public private partnerships (PPP) notion has become a popular global strategy for delivering public goods with a range of meanings (G. Hodge & Greve, 2004, 2016, 2018). Several scholars viewed PPPs as a new governance tool (Savas, 2000; Van Ham and Koppenjan, 2001), others saw PPPs as a new expression in the language of public management (Linder, 1999; G. Hodge and Greve, 2010). The OECD, for example, defines PPPs as ‘long term contractual arrangements between the government and a private partner whereby the latter delivers and funds public services using a capital asset, sharing the associated risk’ (OECD, 2012, p.18). At the broadest level, PPPs can be defined as collaboration between public-private actors, in jointly developing products and services and

share risks, costs and resources (Van Ham and Koppenjan, 2001). Thus, in this study, the term PPPs is preferred as including many different policy tools and mechanisms of governance, which is long-term contractual arrangements between the public and private sectors that seeks mutual benefits through the private sector providing management and administration services and/or placing private financial risks (Garvin and Bosso, 2008; OECD, 2008).

In recent decades, with changes in the governance of education systems, ePPPs have been adopted as a favored management tool, corporations, and international development agencies by many governments around the world to expand education systems in a more competitive and efficient, flexible and effective way (S. Robertson et al., 2012; Termes et al., 2020). ePPPs can be broadly defined as ‘legal arrangements through which the public sector contracts the private sector for the delivery of educational services for a certain period of time’ (Verger et al., 2020, p278). Several forms of PPPs are indicated, including private philanthropic initiatives, private sector management initiatives, private school funding programmes (e.g. subsidies and vouchers), adopt-a-school programmes, capacity building initiatives and school infrastructure partnerships (LaRocque, 2008). In this definition of PPPs, the educational services may include (i) management, maintenance and support services; (ii) operation services (such as pure management); and (iii) infrastructure (S. Robertson et al., 2012). Several scholars reviewed ePPPs focused on one PPPs category: numerous forms of ePPPs (LaRocque, 2008), education vouchers (Epple, Romano, and Urquiola, 2015), main study streams (Languille, 2017). Numerous of scholars have conducted an overview of ePPPs (eg., see LaRocque, 2008; Gurn, 2016; Languille, 2017; Unterhalter, 2017). However, no prior reviews have examined the ePPPs literature from the broader perspective in terms of authors, journals and documents, and topics. This gap in the literature frames the current bibliometric review.

In this review, ePPPs are analysed by a framework base on four dimensions: size, time, space, and composition. “Size” is the first dimension. It concerns the volume of published studies on ePPPs offers understanding into whether a critical mass of conceptual and empirical research has accumulated (Kovačević and Hallinger, 2019). ‘Time’ refers to the growth publication trajectories. This dimension talks about a research topic, size of the knowledge base, citation impact, or geographic distribution of studies (Hallinger and Suriyankietkaew, 2018). A third dimension is ‘space’. It mentions the geographic distribution of documents, thereby providing an understanding of the academic capacity as well as breadth and depth knowledge of ePPP globally (Hallinger, 2020). The fourth dimension highlights ‘composition’ of ePPPs. This dimension refers to the ‘intellectual structure’ of the knowledge base (Kovačević and Hallinger, 2019), which defined as “the examined scientific domain’s research traditions, their disciplinary composition, influential research topics, and the pattern of their interrelationships” (Zupic & Čater, 2015, p. 435). In this review, “composition” is analysed throughout aspects such as authors, journals and documents, and topics.

3. METHODOLOGY

Bibliometric analysis was a literature reviewing approach that have been used to analyze scientific output based on a set of previous research papers (Aria & Cuccurullo, 2017). This method was conducted in this study to present the growth of publication of PPPs in education over time, the most influential authors, the most impact journals, and the most interested research topics.

3.1. Data Gathering

The Scopus database was selected as the source of documents for the analysis process. Scopus was chosen because it had a wider range of documents than the Web of Science in education

and more information indices than Google Scholar (Hallinger & Nguyen, 2020). The string search had two terms "public private partnership" and "education" to collect the initial dataset in the social science area. The queries used in the Scopus search were as follows:

TITLE-ABS-KEY ("public private partnership" AND education) AND (LIMIT-TO (SUBJAREA, "SOCI"))

The initial dataset from Scopus yielded 438 documents. PRISMA, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, was examined to exclude all the documents which were not eligibility question research. Following this guideline, 85 papers were removed from the dataset by filter off document types (e.g. notes, data, and editorials), language (e.g. France, China, Korea), published year (2020). In the next step, researchers excluded 184 ineligibility documents by checking the title and abstract of each document to determine its topical relevance. Thus, the final dataset included 169 papers for bibliometric analysis (see Figure 1). This process gathered all documents which were in the "public private partnership" topic of social science and education areas. Time frame of the dataset was in the period from the earliest relevant document and the end of 2019. Four document types (article, book, book chapter, conference paper) in English were in the final dataset.



Figure 1 PRISMA presents processing of exclude all ineligibility documents from the initial dataset

3.2. Data Analysis

Bibliometric analysis applied a combination citation analysis, co-author analysis, co-citation analysis, co-occurrence. This research used Biblioshiny tool (a package of R statistic application) and MS Excels for citation analysis, VOSviewer for science mapping based on co-author analysis, co-citation analysis, co-occurrence analysis (Hallinger & Nguyen, 2020).

Meta-data of 169 document dataset were exported from Scopus into a master MS Excel file which then was subsequently sync to Biblioshiny tool and VOSviewer to conduct all analysis methods. Citation analysis, applied in R, computed the number citation of authors, documents which have been cited in the final dataset. Co-author analysis, applied in VOSviewer, presented science mappings with visualization relationships among frequently co-authors (Hallinger & Nguyen, 2020). Co-occurrence author keyword analysis, applied in VOSviewer, showed the relationship among author keywords with the times they occurrence together.

4. RESULTS

4.1. The Scientific Publications of PPPs in Education in the Period of 1993 and 2019

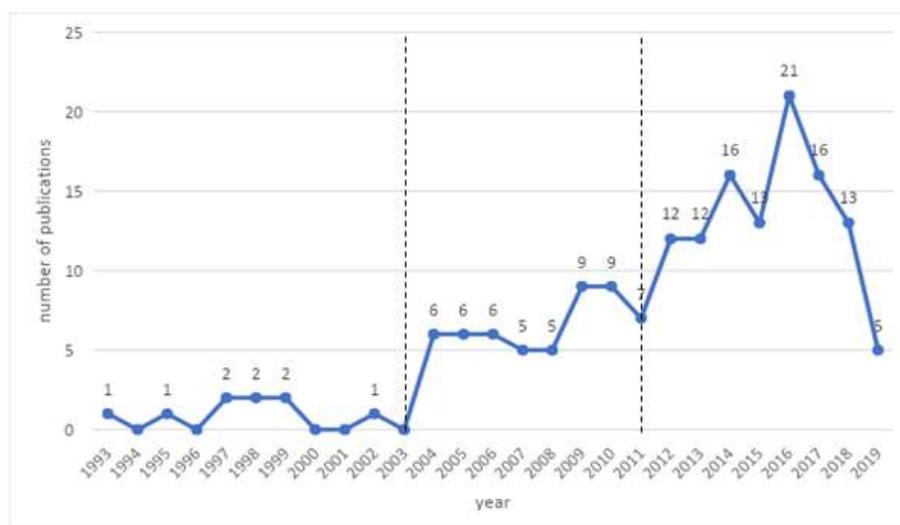


Figure 2 Production over the time

Figure 2 shows the fluctuation of number of publication on PPPs in education over 26 years from 1993 to 2019 with total number of publications was 170. The average number of publications on PPPs in education in this period was 6.53 per year. These publications were selected from 129 sources including journals, books, etc, included 140 articles. Over the period from 1993-2003, the number of publication on PPPs in education was relatively small with 1-2 publications each year and even no publication was published in some years. In the following stage, from 2004 to 2012, the number of publication increased to 5-9 publication per year. This number doubled (12-21 publication per year) in the period from 2012 to 2016 with a peak of 21 publication published in 2016.

Figure 3 shows the distribution of scientific publications on PPPs in education by countries. Each color in this figure presents for an amount of publications in each countries. The accomplishments on PPPs in education were conducted in 39 countries and Europe had the most scientific publications. The red area is the United States which got the most publications with 80 publications, accounting for 31.75%. The green area is the United Kingdom which had 34 publications, approximate 13.49%. The blue is shown for the countries which had 10 – 11 publications who were Canada and Rwanda with 11 publications, equal to 4.37%, Australia, Spain and India with 10 publications, accounting for 3.97%. Six countries mentioned above had published 132 publications, equal to 52.38% of total number of publications on PPPs in education all over the world.

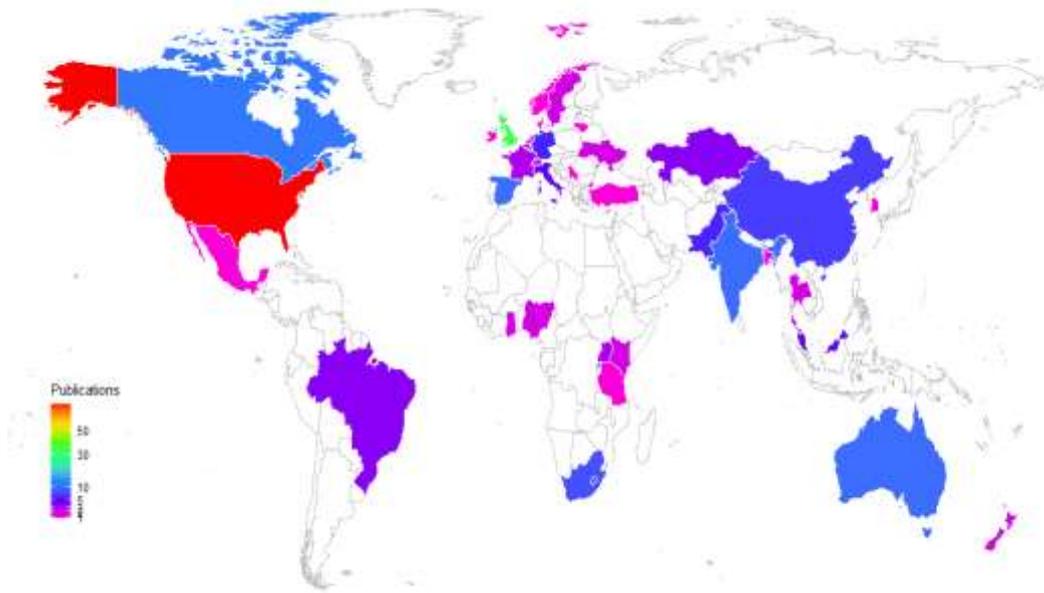


Figure 3 Scientific Publications by Countries

The purple rose presents for the countries which had 5 – 9 publications who were South Africa with 8 publications, accounting for 3.17%, China with 7 publications equal to 2.78%, Germany and Pakistan with 6 publications, equal to 3,5%, Italy and Malaysia with 5 publications, accounting for 2,9%. The purple is for the countries which had 1 – 4 publications.

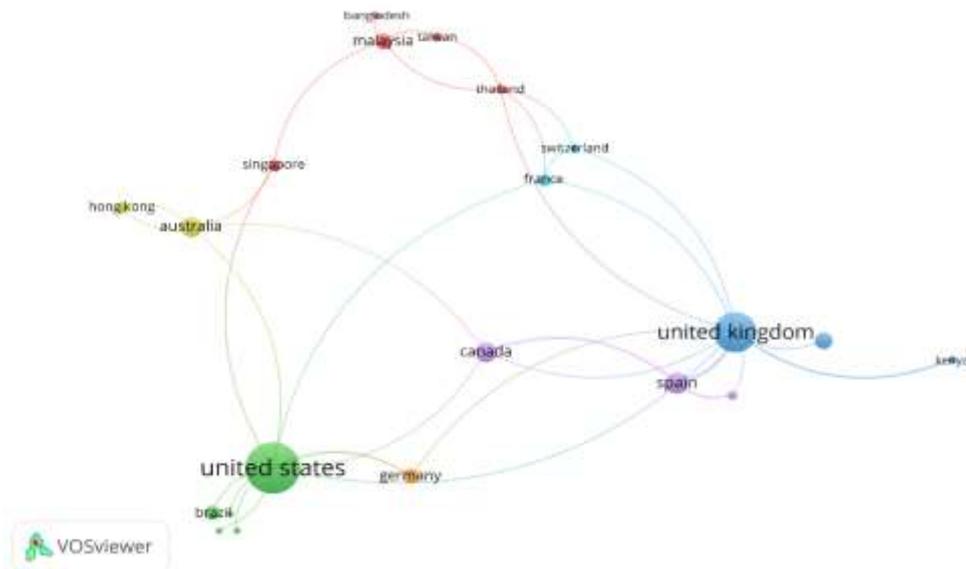


Figure 4 Mapping of author collaboration group by countries (23 countries with number of each author’s publication at least 1 document and its citation at least 1)

Figure 4 visually shows the interconnected and collaborative network of 364 authors in 23 countries that had published at least one scientific publication and had been cited at least once. The size of the nodes is proportional to the number of publications in each country. The chart above clearly shows that the United Kingdom and the United States had the most collaborative studies with others (had at least 10 links). Through the use of colors, two scientific camps on the United Kingdom and the United States could be distinguished. The

thickness of the connection links represents for how strong of the cooperation between the authors in each country. There are 7 clusters of the countries with similar colors represented for the same issues, who are the United States, the United Kingdom, Australia, Malaysia, France, Spain, and Germany. For example, blue in the cluster of the United Kingdom, Kenya, Switzerland, France show their highest cooperation with the United Kingdom.

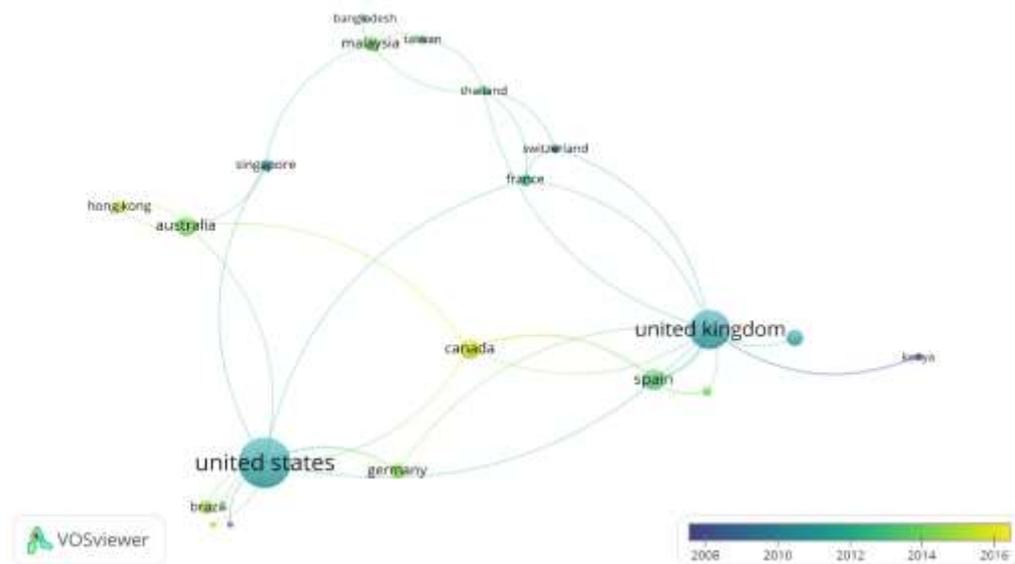


Figure 5 Mapping of author collaboration by countries base on published year (23 countries with number of each author’s publication at least 1 document and its citation at least 1)

Figure 5 represents for the author collaboration by countries base on published year. It is clear that the two biggest nodes of the United Kingdom and the United States had shown the countries which had the most collaborative scientific publications. The node color from dark blue to yellow used to present for the first time of published document. The links showed the cooperation between the countries which have been researching in PPPs in education. The thickness of the links represented the strength of connection between countries. It is clear that the United States and the United Kingdom are both had lots of cooperation with many countries before 2010 (about 10 connections). Ranked behind in the number of research connections are Thailand, Canada, Australia (had at least 4 – 5 connections). The chart also figured out 3 color clusters indicated for 3 period of time, namely the United States, Australia, Canada. The dark blue clusters are represented for the long-term cooperation between the authors. For example, the United Kingdom was deeply linked with Spain since 2010 as well as strong co-authored with Kenya since 2008. The green clusters of Spain which had shown for the author collaboration from 2013, illustrated for Spain, Australia, Malaysia, Taiwan, Thailand. Similarly, the yellow cluster presents for Canada, Honking, Brazil who had expressed the youngest country in PPPs researching field since 2015.

4.2. The most Impact Authors Published Scientific Publications of PPPs in Education in the Period of 1993 and 2019

Table 1 Top 20 authors with highest impact factor according to total citation

Ranking	Author	h_index	Total Citation	Number of Publications	First publication in this area
1	Verger A	6	217	7	2012
2	Robertson SL	2	75	2	2012
3	Ding L	1	72	1	2017
4	Li C	1	72	1	2017
5	Li H	1	72	1	2017
6	Ren M	1	72	1	2017
7	Wang H	1	72	1	2017
8	Menashy F	3	62	3	2012
9	Reeves E	1	62	1	2008
10	Mundy K	1	46	1	2012
11	Johnson H	1	45	1	2006
12	Wilson G	1	45	1	2006
13	Zancajo A	2	42	2	2016
14	Levin HM	1	37	1	1999
15	Davies B	2	34	3	2005
16	Beers B	1	34	1	2002
17	Fitz J	1	34	1	2002
18	Stovall D	1	32	1	2013
19	Robertson S	2	30	2	2007
20	Smith J	1	29	1	2006

The above table shows authors’ contribution to PPPs in education through their total citation and number of publication. According to final dataset, the leading contributors to PPPs in education were the authors with the highest total citation. As shown in the table, Verger A was the leading contributor with a dominant total citation of 217. Verger A’s publication number was 7 which was also higher than that of other authors with 3, 2 and 1. The authors with the following highest numbers of total citation were Robertson (75), Ding Li, Li C, Li H, Ren M, Wang H with 72 total citations.

The next analyses documented author contributions to the PPPs in education base from the perspectives of “productivity” and “citation impact”.

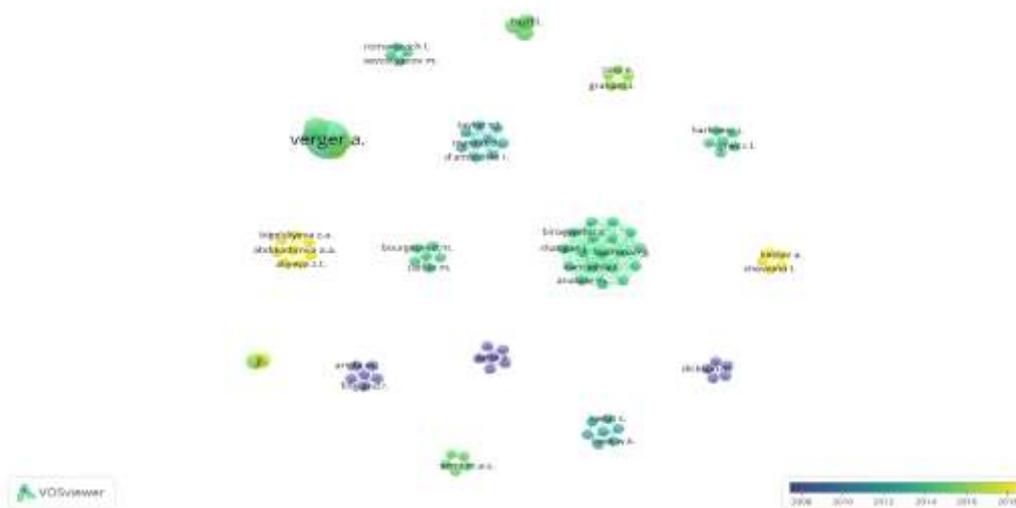


Figure 6 Mapping of author collaboration base on published year (100 authors with number of publications at least 1 document and their citation at least 1)

Figure 6 illustrates the collaboration of 100 authors with at least one publication and at least one citation of PPPs in education. Each node represents an author. The bigger the node means the more publications the author had. The links between the two nodes indicates the collaboration between the authors or co-authors. The colors of nodes indicate the years when the authors. In this figure, 16 groups of authors are shown, including groups of several authors and groups of only one author. Four colors which are purple, blue, green and yellow are used to show milestones in 10 years. The purple group includes authors with publications published before 2010 when publications of PPPs in education began to appear in relatively larger numbers. However, as seen in the Figure, during this period, there was little co-authoring as only one purple group of two authors who were Arighi. M and Fingland R. while each of the other two purple groups of only one author. Each of the three purple groups had 5 to 6 authors.

4.3. The most Impact Journals of PPPs in Education in the Period of 1993 and 2019

Table 2 Top 20 most impact journals by h-index

Ranking	Cite score 2018	Journal	Publisher	h_index	Total Citation	Number of publications	First publication in this area
1	1.69	International Journal of Educational Development - Anh	Elsevier	5	64	6	2010
2	3.60	Journal of Education Policy – The United Kingdom	Taylor & Francis	4	123	5	2010
3	1.07	Education Policy Analysis Archives - The United States of America	Arizona State University	3	23	6	2013
4	1.8	Compare - The United Kingdom	Taylor & Francis	3	42	3	2009
5	1.47	Evaluation and Program Planning - The United States of America	Elsevier	2	18	3	2004
6	2.46	Comparative Education- The United Kingdom	Taylor & Francis	2	37	2	2002
7	0.32	Contemporary Education Dialogue- India	SAGE	2	8	2	2016
8	2.67	Critical Studies In Education - The United Kingdom	Taylor & Francis	2	44	2	2013
9	0.23	Economic and Political Weekly - India	Sameeksha Trust	2	16	2	2009
10	1.23	Economic Development Quarterly - The United States of America	SAGE	2	11	2	1997
11	2.59	Educational Management Administration and Leadership - The United Kingdom	SAGE	2	26	2	2011
12	1.52	International Journal of Educational Management - The United Kingdom	Emerald	2	24	2	2008
13	3.42	Public Administration	Wiley-Blackwell	2	86	2	2008
14	1.67	Public Administration and Development	Wiley-Blackwell	2	68	2	2006
15	N/A	Public Private Partnerships in Education: New Actors and Modes of Governance in A Globalizing World	Edward Elgar Publishing	2	75	2	2012
16	1.16	School Leadership and Management	Taylor & Francis	2	49	2	2006
17	2.58	Journal of Entrepreneurship Education	Allied Academies	1	3	3	2018
18	0.38	Africa Education Review	Taylor & Francis	1	3	2	2015
19	0.45	Economic Affairs	Wiley-Blackwell	1	5	2	1998
20	0.25	International Journal of Learning	Common Ground Research Networks	1	5	2	2009

Out of four blue groups, the biggest one includes of five authors who were Binagwaho A., Rhatigan J, Bukhman G., Cancedda C., Anatole M. This is also the group with strongest collaboration with highest number of authors (18). This group started their collaboration between 2012 and 2014. The most special group during this period is groups of Verger A, had a relatively large number of publications as shown in the bold node as the other groups. This is consistent with our analysis of the 20 most impact authors with Verger A’s outstanding contribution to PPPs in education.

The yellow represents new groups of authors have recently published their research results of ePPPs since 2016, there are Russian authors (Kozlov A; Tamer O; Lapteva S; Poletaeva O; Shevnina T), Kazakhstan authors (Issayeva Gk; Abdikadirova Aa; Aliyeva Zt; Kalmenova Mt; Bigeldiyeva Za; Aitymbetova An; Kudaibergenova Zu; Yessirkepova Am)

Table 2 shows the number of publications of top 20 journals with highest impact factor in PPPs in education, according to its h-index. In terms of total number of publications of PPPs in education, these 20 journals had published 54 articles, equivalent to 31.76% of the total number of publication. According to the h-index, the top journals were International Journal of Educational Development with h-index 5, followed by Journal of Education Policy with h-index 4, Education Policy Analysis Archives and Compare with h-index 3. Those top with highest h-index 5, 4, 3 were British and American ones.

The rest of the list of 20 most impact journals are ranked according to h-index 2 and 1. However, in terms of citations, Journal of Education Policy was the leading one with 123 times, almost doubled that of Educational Development with 64 citations.

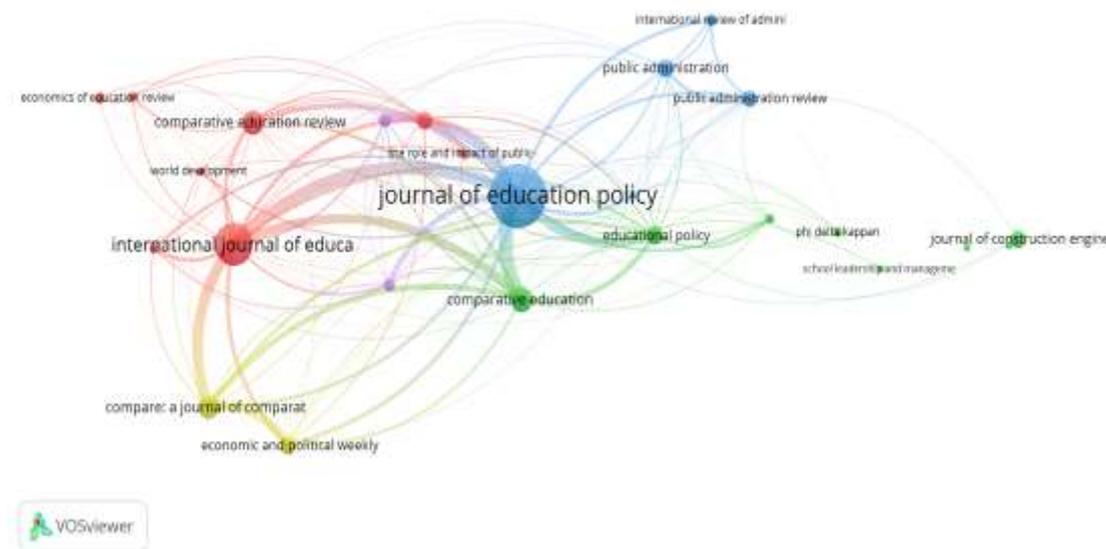


Figure 7 Science mapping of co-citation journals in PPPs in education in period between 1993 and 2019 (25 journals with 10 citations at least)

Figure 7 shows journals which had cited topics of PPPs in education from 1993 to 2019. 25 journals with 10 citations are shown in the Figure. The size of the node is proportional with the number of documents of each journal. The links show the relationship among journals. The thicker the links, the stronger the collaboration proves the higher number of co-citations. Top 5 collaboration journals with thier link strength are Journal of Education Policy - Comparative Education (104), International Journal of Educational Development - Journal of Education Policy (87), International Journal of Educational Development - Compare: A

Journal of Comparative and International Education (79), Journal of Education Policy - International Journal of Educational Development (76), Compare: A Journal of Comparative and International Education - Economic and Political Weekly (66).

4.4. Topics of scientific publications of PPPs in education in the period of 1993 and 2019

Table 3 Top 20 most cited topics

Rank	Author	Title	Journal/Publisher	LCS	GCS	PY
1	Verger A.	Framing and selling global education policy: the promotion of public–private partnerships for education in low-income contexts	Journal of Education Policy	11	80	2012
2	Verger A.	What Are the Role and Impact of Public-Private Partnerships in Education? A Realist Evaluation of the Chilean Education Quasi-Market	Comparative Education Review	5	28	2016
3	Smith and Wohlstetter	Understanding the different faces of partnering: A typology of public-private partnerships.	School Leadership & Management	4	29	2006
4	Davies and Hentschke	Public–private partnerships in education: insights from the field	School Leadership & Management	3	20	2006
5	Robertson and Verger	Governing education through public private partnerships	Edward Elgar	3	29	2012
6	Srivastava P.	Philanthropic engagement in education: Localised expressions of global flows in India	Contemporary Education Dialogue	2	4	2016
7	Chattopadhyay and Nogueira	Public–private partnership in education: a promising model from Brazil	Journal of International Development	2	5	2014
8	Tilak J.B.G.	Neither vision nor policy for education	Economic and Political Weekly	2	5	2010
9	Amjad and MacLeod	Academic effectiveness of private, public and private–public partnership schools in Pakistan	International Journal of Educational Development	2	9	2014
10	Williamson B.	Centrifugal schooling: Third sector policy networks and the reassembling of curriculum policy in England	Journal of Education Policy	2	13	2012
11	Acar and Robertson	Accountability challenges in networks and partnerships: Evidence from educational partnerships in the United States	International Review of Administrative Sciences	2	25	2004
12	Levin H.M.	The public-private nexus in education	Educational partnerships and the State: the paradoxes of governing schools, children, and families	2	37	1999
13	Reeves E.	The practice of contracting in public private partnerships: Transaction costs and relational contracting in the Irish schools sector	Public Administration	2	62	2008
14	Miller A.D.	The importance of public-private partnerships in education	<i>ACM Inroads</i>	1	1	2013
15	Subramanian V.K.	From government to governance: Teach for India and new networks of reform in school education	Contemporary Education Dialogue	1	4	2018
16	Gurn A.M.	Courting Corporate Philanthropy in Public Education: Multi-Disciplinary	SAGE Open	1	4	2016

		Literature Review of Public–Private Partnerships (PPPs) in Urban Public Schooling				
17	Wong T.H.	Social foundations of public–private partnerships in education: the historical cases of post-war Singapore and Hong Kong	History of Education	1	4	2015
18	Haug P.	The public–private partnership in ECEC provision in Norway	European Early Childhood Education Research Journal	1	4	2014
19	Lloyd J.M. et al.	Satellite teaching hospitals and public–private collaborations in veterinary medical clinical education	Journal of veterinary medical education	1	4	2008
20	Kumari J.	Public–private partnerships in education: An analysis with special reference to Indian school education system	International Journal of Educational Development	1	5	2016

Note: LCS: Local Citation Score, number of citation in final dataset; GCS: Global Citation Score, number of citation in Scopus database; PY: Published Year

Top 20 most cited topics include theoretical and empirical research on PPPs in education, emphasizing the important role of PPPs in education in the current development context. The key research topics of PPPs in education shown in Table 3 can be grouped as follows: (i) Firstly, the development of strategy and new policy framework as well as the model of governance of PPPs in education under which, PPPs in education is considered a chance for enhancing efficiency of public education and mobilizing new resources from enterprises and international organization, etc. to reduce education costs (Verger A., 2012; Verger A., 2016; Robertson & Verger, 2012). (ii) Secondly, based on analysis of political, policy and significance of PPPs in education in parallel with practical evidence of PPPs in education to gain a broader view to reflect the strategy of PPPs development in education in comparison with PPPs development in other sectors (Davies & Hentschke, 2006). (iii) Thirdly, identification of the development trends of PPPs in education through considering the PPPs in education on the historical, political – social background in post-war Singapore and Hong Kong (Wong T.H., 2015). (iv) Fourth, difficulties and challenges in education policy, governance, curriculum, cost and PPPs in secondary education (Chattopadhyay & Nogueira, 2014; Amjad & MacLeod, 2014; Williamson B., 2012; Acar & Robertson, 2004) and higher education (Tilak J.B.G., 2010; Reeves E., 2008; Subramanian V.K., 2018). (v) Fifth, a form of PPPs in education through charity based on a socio-economic assessment in India (Srivastava P., 2016; Gurn A.M., 2016). (vi) Sixth, challenges in the relationship of public and private education through analyzing typical models of PPPs in education in terms of implementation arrangements, form of partnership, involvement of different organizations, etc. (Smith & Wohlstetter, 2006; Levin H.M., 1999; Lloyd J.M et al., 2008; Kumari J., 2016). Six primary topics listed in Table 3 are the most cited and theoretical and empirical researches on PPPs in education which were based on educators' view of education system issues while researches on stakeholders' perspective of PPPs in education based on specific historical, political – social background are limited.

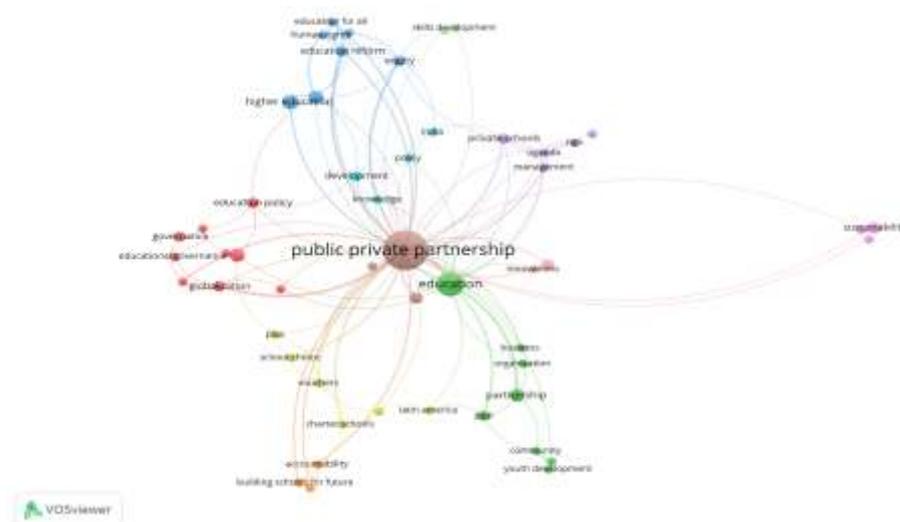


Figure 8 Mapping of author keyword (52 keywords with its occurrence at least 2 times)

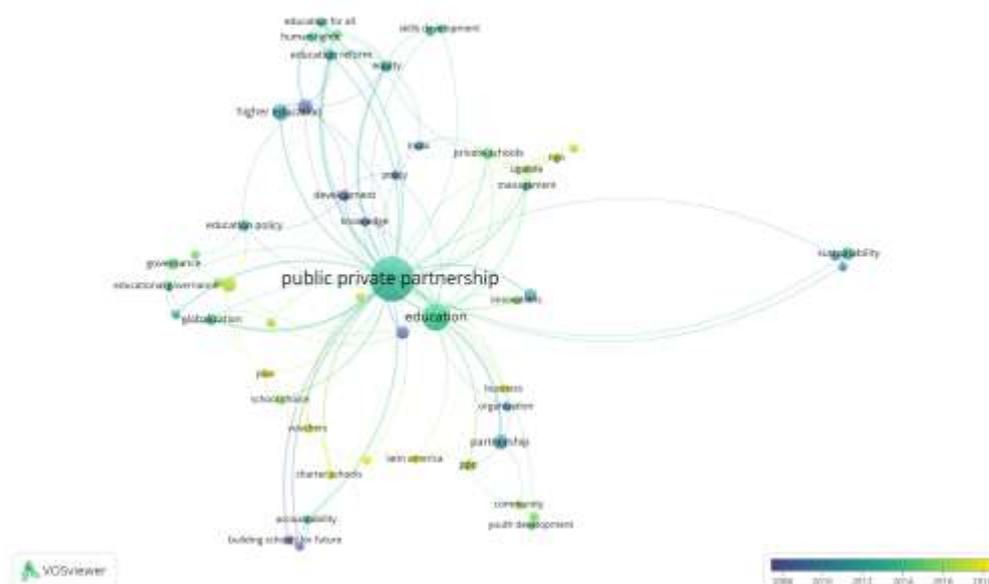


Figure 9 Science mapping of author keyword base on published year (52 keywords with its occurrence at least 2 times)

Figure 8 and figure 9 shows 52 keywords mentioned at least twice by the authors which are presented in different color lines to illustrate their links based on PPPs in education from 1993 to 2019. The size of the round nodes increases in accordance with the keywords occurrences. The big nodes surrounding the node “PPP” at the centers are “education”, “partnership”, “governance”, “education governance”, “education policy” and “higher education”. PPPs in higher education was most concerned during the period from 2008 to 2014; then the concern changed to governance, education governance and education policy during the period from 2014 to 2018. Specifically, three places appear in Figure 9 are India, Uganda and Latin America. The keyword “India” in the green-navy color stands in the period 2008-2010 and the keywords in the light colors link with keywords “Uganda”, “private schools”, “NGO”, “management”. The links between keyword “Latin America” and other keywords in lighter colors illustrate research in 10 years, from 2008 to 2018. Africa and

America regions associated with keywords “NGO”, “business”, “PPP”, “charter school”, “voucher”, “school choice”, “PISA” which were interested in different studies from 2014 to 2018. In addition, keyword “sustainability” in dark green color is far away from the “PPP” at the center shows the research around 2014. According to Sterling, “*since the Talloires Declaration the importance of sustainability education has been reflected in the UN Decade of Education for Sustainable Development (‘DESD’), which is now nearing its end.*” (Sterling, S. (Ed.). 2010).

5. DISCUSSION

Researching on PPPs in education from 1993 to 2019 could be separated in 3 period of time. The highest publications were established from 2012 to 2016 and the trend has reduced for recent years. PPPs in education had been studied by a number of authors since 2008-2010. The number of publications of PPPs in education tended to increase over time from the beginning, maintaining stable during 2012-2016 when there were large groups of co-authors and independent authors working parallelly on PPPs in education. In the following years, from 2016 to 2018, PPPs in education were mainly studied by small research groups. In terms of publication trend, there was a fluctuation during this period when no articles were published in some years. From 1993 to 2003 the research on PPPs in education just remained about with 1 – 2 publications per year, even some years had none of publications, but increased to the peak with 21 publications in 2016. Conversely, the research on PPPs in education went down dramatically in recent years (5 publications in 2019) for the reason that the first six months of 2019 is not the time for journals to be counted on the Scopus system.

Regarding regions and nations, researches published were mainly from developed countries, especially Europe (Spain, Germany and Italy). It is noted that developing countries like Rwanda, South Africa, Pakistan and Malaysia also had a significant number of publications. Europe was considered the continent of the most scientific publications, especially the United States and the United Kingdom. These two countries also had the richest collaboration among authors. In addition, the long-term cooperation with other countries with the same concerns before 2010 made these countries fall into the biggest cluster in the map of co-authors by countries based on published years.

The cluster including Canada, Hongkong, Germany, Spain, Malaysia, Brazil, Taiwan and Thailand had short-term cooperation and least connections with others. The collaboration in research among nations followed two trends, the first trend was among developed countries including the United Kingdom and the United States, the second one was among developing countries which were Kenya, Malaysia, etc. The collaboration among authors was similar to that among countries, meaning the UK’s and the US’s publications reveal the strong collaboration with others in the cluster of developed countries. The cluster of developing countries included Thailand, Taiwan and Hong Kong in Asia, Brazil in America and Kenya in Africa which had strong collaboration with others.

Research on PPPs in education mainly focused on macro-level topics including impact factors from other sectors or political – social background (Singapore, Hong Kong) (Srivastava P., 2016; Gurn A.M., 2016) and specific models of PPPs in education. However, as listed in Table 3 mentioning about 20 top most cited topics, research on PPPs in education were theoretical and empirical with educators’ point of view of education system concerns without much research on stakeholders’ perspective of PPPs in education based on specific historical, political and social background. In addition, keywords “governance”, “education policy” or “sustainable” showed the shift in education management when changes in education policies appeared to recognize the valuable and increasing involvement of different

stakeholders in the development of education. This also proved the principles of PPPs which required responsibilities of communities and stakeholders.

6. CONCLUSIONS

PPPs in education are an inevitable trend in the development of social services. In developed countries, private sector plays an important and undeniable role in the socio-economic structure, thus, research on PPPs in education accounts for a larger number. Researches also show that the involvement of private sector and other form of non-public ownership has been increasing not only in developed countries in but also in the central planning countries.

The limitation of this study lies in its coverage of only English language documents. This is relevant for a review of a field such as ESD where research documents may also be authored in other languages (e.g., Chinese, French, Spanish, Bahasa Indonesia, etc.). With this in mind, we acknowledge from the outset that developing a comprehensive global picture of the literature on ESD will require complementary reviews of alternate language literature.

There are some points that future research should focus on such as considering the research issues by geographic areas or nations with the same political institutions or countries having similar socio-economic and culture characteristics. In addition, there should be international comparative researches on PPPs in education to identify the similarity or differences in successful or failure models of PPPs in education when there is a change in stakeholders. Basically, PPPs in education aim to maximize all resources to successfully develop and implement education activities or projects with participation of one or more participants. Thus, the identification of core issues for successful PPPs in education is very important and meaningful.

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