

THE STATUS OF EDUCATIONAL SCIENCES IN VIETNAM: A BIBLIOMETRIC ANALYSIS FROM CLARIVATE WEB OF SCIENCE DATABASE BETWEEN 1991 AND 2018

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Abstract

Since 2013, Vietnam has implemented a plan to reform the whole education sector. However, there is little understanding on the status of educational research in Vietnam, which may lay the foundation for such plan. Thus, this research aims to analyze the whole picture of educational research from Vietnam, as seen from the Clarivate Web of Science (WOS) database: 215 publications were recorded, ranging from 1991 to 2018. These 215 publications were further analyzed from five perspectives: 1) number of publications by year; 2) research fields and levels of education; 3) top institutions with the highest number of publications; 4) international collaboration; and 5) quality. Some of the most notable results are: 1) the educational sciences in Vietnam have been still under-developed until recently; 2) among different research topics research among educational sciences, some (e.g., Vocational Education and Training or Early Childhood Education) seemed to be overlooked whereas others (e.g., Higher Education and Teaching and Learning) seemed to receive more attention from educational scholars; 3) all the most

major education – specialized universities did not appear among the top five institutions with highest number of publications; 4) Australia, Thailand, the USA, New Zealand and China were the countries with the highest number of co-publications with Vietnamese researchers; and 5) The majority of publications belonged to low-ranked journals. Implications would be withdrawn for Vietnamese policymakers, education leaders, educational researchers and teachers in order to adjust their policies and/or action plans; thus, enhancing the performance and impacts of educational research in the future.

Keywords: *academic database, bibliometrics analysis, Clarivate WOS, educational sciences, international publishing, Vietnam.*

Introduction

Bibliometrics analysis is regarded as a highly established research methodology, which has been appreciated by both academic scholars and practitioners (e.g., see Cheng et al., 2014; Dehdarirad et al., 2015; Ellegaard & Wallin, 2015; Orfa & Alejandro, 2020; Valencia-Arias et al. 2019). Academic scholars use bibliometric analysis as it provides a quantitative review of a selected topic without so much time consumption. Academic scholars may also learn about new trends and high-profile researchers within their research interests through this type of research. Meanwhile, practitioners use bibliometrics analysis to reflect their prior knowledge in their fields. In Vietnam, bibliometric analysis has received growing attention among academic scholars over previous decade. The earliest study using bibliometric analysis approach published by a Vietnamese researcher was the work of D. H. Pham (2010). In this research, Pham compared the research capabilities of 11 countries in East and Southeast region, including Vietnam, using Clarivate WOS database between 2002 and 2008. Another early bibliometric work conducted by Vietnamese researchers was T. L. Nguyen and Pham (2011). Specifically, T. L. Nguyen and Pham (2011), who also employed Clarivate WOS database, in coupled with the World Bank's database, estimated the relationship between scientific output and knowledge economy index among 10 ASEAN countries. In recent years, high profile works using bibliometrics analysis by Vietnamese researchers were the series published by Vuong and his associates (see T. M. Ho et al., 2017; Vuong, Ho, T. T. Nguyen et al., 2017; Vuong, Ho, T. M. Nguyen et al., 2017; Vuong, Ho, Vuong, Napier et al., 2017; Vuong, La et al., 2018; Vuong, Napier et al., 2019). However, a common drawback of the above works is that their scopes of study were too broad: all fields of sciences (Pham, 2010; Nguyen & Pham, 2011) or social sciences (T. M. Ho et al., 2017; Vuong, Ho, T. T. Nguyen et al., 2017; Vuong, Ho, T. M. Nguyen et al., 2017; Vuong, Ho, Vuong, Napier et al., 2017; Vuong, La et al., 2018; Vuong, Napier et al., 2019). It is lack of prior studies focusing on only one single subject. Thus, this research aims to overcome this research void by conducting a bibliometric analysis on the subject of educational sciences.

As a Confucianism-based society, education is always placed at the highest priority of Vietnam's government and families (Huong & Fry, 2004; London, 2011). Annually, the Vietnamese government commits to spending 20% of its budget on education, which is among the most substantial pies of government expenditure (VietNamNet Online Newspaper, 2019). The most recent statistics showed that, in 2019, Vietnam had a system of 112 education/pedagogy-related universities and three-year colleges across the country, in which 43 are education/pedagogy specialized institutions and 69 others are comprehensive institutions having degree programs in education/pedagogy (Quy & Le, 2019). The function of this system is not only to prepare future teachers but also to conduct research in educational sciences.

Thus, educational sciences are paramount for the development of the national education system as they provide an academic foundation and implications for policymakers, education administrators, teachers, parents, to name a few.

In Vietnam since 2013, the Communist party and the government of Vietnam launched a reform agenda for the whole education system (Central Steering Committee, 2013). However, little research has been made to provide knowledge of what the status of educational sciences in

Vietnam is. Seeking the answer to this research problem is crucial as it would provide empirical foundation for the reform of education in Vietnam. In Vietnam, policymaking is often criticized of lacking empirical and evidence-based background (Vuong, 2018). Thus, this research aimed to address this research problem by using Clarivate WOS database between 1991 and 2018 to explore the current status of educational sciences in Vietnam. Specifically, this research sought answers to the following research questions (RQ):

1. RQ1: How many publications in educational sciences were published by Vietnamese researchers from 1991 to 2018?
2. RQ2: What are the prevailing research fields and levels of education in this period?
3. RQ3: Which institutions contribute the most publications in this period?
4. RQ4: Which countries do Vietnamese researchers collaborate the most in this period?
5. RQ5: What are the qualities of the publications in this period?

Research Methodology

General Background

Following Ellegaard and Wallin (2015), Orfa and Alejandro (2020), and Valencia-Arias et al. (2019), bibliometric analysis was employed to address the research questions. Empirical Data was obtained from Clarivate WOS. Several bibliometric indicators, including number of publications per year (from 1991 to 2018), research fields and levels of education, affiliations of Vietnamese educational researchers, countries of international educational researchers co-authoring with Vietnamese educational researchers and qualities of research outputs would be extracted for analysis.

Sample Selection

Clarivate WOS is one of the most reputable indexed database for scientific outcome (K. Li et al., 2018). Prof. Eugene Garfield founded Clarivate WOS in 1961 with the former name as the Institute for Scientific Information (Clarivate Analytics, 2017). Clarivate WOS nowadays is widely used for academic ranking or performance evaluation by policymakers and international organizations (Clarivate, n.d.). In Vietnam, since the launch of the Vietnam National Foundation for Science and Technology in 2008, an initiative inspired by the US's National Science Foundation, Clarivate WOS has been increasingly employed by policymakers and university leaders in academic evaluation and promotion (Vuong, Napier et al., 2019). Given this reason, Clarivate WOS was selected as source of data collection for this research.

Data Collection and Instruments

All publications indexed in the category of *Education and Educational Research* under Clarivate WOS, with at least one co-author having an address from Vietnam were downloaded. The search was conducted in September 2019. Initially, 242 papers were founded. However, after scrutinizing the preliminary data, we decided to eliminate 27 papers since their topics are not exactly related to educational sciences. For instance, The article, namely "*Alcohol use and HIV risk behaviors among rural adolescents in Khanh Hoa Province Viet Nam*" (Kaljee et al., 2004) belonging to *Health Education Research* journal was excluded since it matches with mental health rather than educational sciences.

Since data extracted from Clarivate WOS was still raw and incomplete, the 215 studied publications were further refined and cleaned manually by the research team in order to meet the research purposes. Besides, some additional information pertaining to the studied publications

was also collected from other different sources such as the researchers' university website, researcher's profile site (as in Google Scholar, ResearchGate, or other sources). Eventually, each studied paper would be featured with the 11 attributes represented in Table 1 below:

Table 1
Attributes of studied papers

No	Attribute	Source of information
1	Name of the paper	Clarivate WOS
2	Name of Vietnamese researcher*	Clarivate WOS
3	Vietnamese researcher's gender	Decided by the research team through verifying in researcher's profile website or researcher's institution website
4	Affiliation of Vietnamese researcher	Decided by the research team through verifying in researcher institution's website
5	Name of international co-author	Clarivate WOS
6	Country of international co-author	Decided by the research team through verifying in co-author institution's website
7	Year of publication	Clarivate WOS
8	Source of publication (name of journal, conference or edited book)	Clarivate WOS
9	Impact Factor**	Clarivate WOS
10	Research Field: Research Field is divided into 11 clusters: 1) Teaching and Learning; 2) Management, Leadership and Policy; 3) Technology in Education; 4) Psychology Education; 5) Curriculum; 6) Test and Assessment; 7) Research; 8) Special Education; 9) International Education; 10) English Education and 11) STEM Education	Decided by the research team through reading papers
11	Level of Education: Level of Education is divided into six clusters: 1) Higher Education; 2) Lifelong Learning and Continued Education; 3) Technical and Vocational Education and Training; 4) Early Childhood Education and 5) Primary and Secondary Education; and 6) All***.	Decided by the research team through reading papers

* Vietnamese researcher in this research refers to the researcher with a Vietnamese affiliation. The researcher is not necessary for a Vietnamese citizen as he or she might be a foreign citizen and works for a Vietnamese institution.

** Impact factor is extracted from Journal Citation Reports 2019; the Impact factor of 0 is assigned for Emerging Sources of Citation Indexed (ESCI)-indexed journal publication, conference publication, and edited book's chapter.

*** Publication, which relates to all levels of education, would be categorized as "All."

Data Analysis

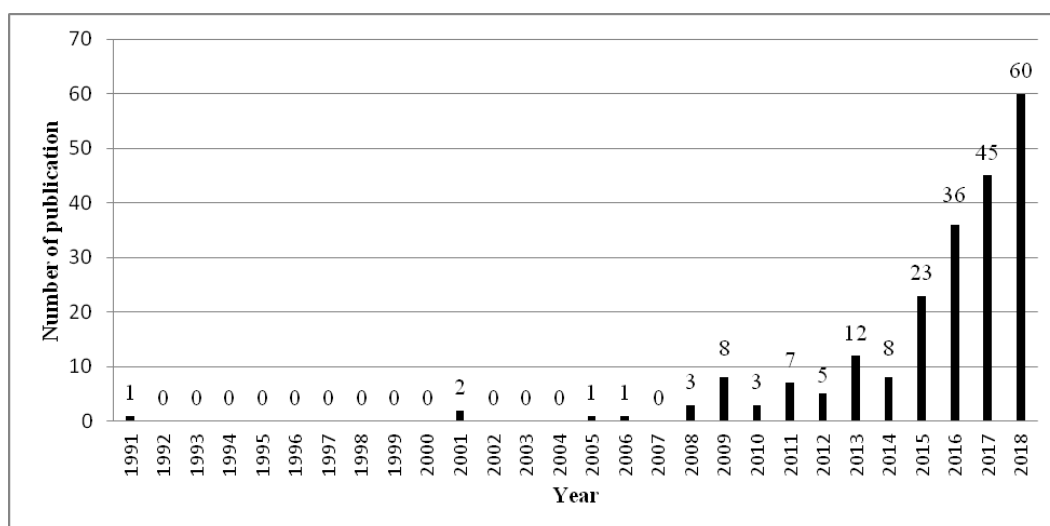
Bibliometric analysis was adopted to examine data empirically (Ellegaard & Wallin, 2015; Orfa and Alejandro, 2020; and Valencia-Arias et al., 2019)). In recent years, bibliometric analysis has been increasing used by Vietnamese scholars (T. M. Ho et al., 2017; Vuong, Ho, T. T. Nguyen et al., 2017; Vuong, Ho, T. M. Nguyen et al., 2017; Vuong, Ho, Vuong, Napier et al., 2017; Vuong, La et al., 2018; Vuong, Napier et al., 2019). Data obtained from the previous step was further accessed with Excel in order to address the five research questions.

Research Results

Publications by Year

Table 2 represents the number of publications in educational sciences during the period 1991 – 2018. The year of 1991 was selected as the starting point of analysis because it was the first year that Clarivate WOS database recognized one publication researcher from Vietnam. This was written by Dr. Le Thac Can, a former senior officer working for the Vietnam Ministry of Education and Training. Le’s (1991) work addressed the reform of higher education in three countries, namely Vietnam, Laos, and Cambodia. After Le’s work, Vietnam had to wait for ten years to record two next publications in 2001. Overall, during the period of 1991-2007, we only observed two more publications (one in 2005 and 2006). The period was the so-called “hibernating” time.

Figure 1
Number of Publications 1991-2018



The period of 2008-2012 witnessed a more stable increase of publications; however, the number of publications per year during this period was still at a one-digit number. This period was named as the “warming-up” time. The year of 2013 opened a new period, which was named as “leapfrogging” time. Since 2013 onward (except 2014), Clarivate WOS always accounted for a two-digit number of publications from Vietnam, and the annual growth rate was always exponential. Notably, the year of 2018 accounted for 60 publications, the highest record since 1991. The figure of only one year of 2018 was, indeed, equal to 27.91% of the total publications between 1991 and 2018. Overall, between 1991 and 2018, Vietnamese researchers published 215 journal articles, conference papers, and book chapters indexed by Clarivate WOS, which implies an average of 7.7 publications per year.

Research Fields and Levels of Education

Research fields were divided into 11 clusters: (1) teaching and learning; (2) management, leadership and policy; (3) technology in education; (4) psychology education; (5) curriculum; (6) test and assessment; (7) research; (8) special education; (9) international education; (10) English education; and (11) STEM education.

In order to obtain this set of data, the research team assigned two co-authors to read throughout the title, abstract, and content of each paper (if necessary). A respective field of research would be decided by each of the two researchers. It is noted that one paper may be included in two or more fields of research. For instance, the article titled “*Measuring integration of information and communication technology in education: An item response modeling approach*” (Peeraer & Van Petegem, 2012) was categorized in both *Technology in Education* and *Teaching and Learning*.

One studied paper may receive different classification from the two researchers. In this case, a discussion between the two researchers and under arbitrage of a third researcher would be made until a consensus was reached. Overall, there were only 14 papers, which were needed for the second round of discussion. This implied inter-rater reliability of 93.49% after the first round. The figure was acceptable as it exceeded the threshold of inter-rater reliability of 75%, as suggested by Stemler (2004). The following table represents the statistical data regarding Research Field:

Table 2
The number of publications according to research fields

Research Field	Number of publications	Percentage (%) as against the total number of publications (215)
Teaching and learning	143	66.51
Management, leadership, and policy	56	26.05
Psychology education	52	24.19
Curriculum	42	19.53
English Education	41	19.07
Technology in education	40	18.60
International education	18	8.37
Test and assessment	18	8.37
Research	17	7.91
STEM education	16	7.44
Special education	6	2.79

* *Note: One publication might be categorized in more than one research field. Therefore, the total percentage might outnumber 100%.*

Apart from the research field, levels of education were also examined. The results are represented in Table 3. The inter-rater reliability for this part was 98,9%, which was also higher than 75% - the acceptable level of inter-rater reliability (Stemler, 2004).

Table 3
The number of publications according to education levels

Education level	Number of publications	Percentage (%) as against the total number of publications (215)
Higher Education (HE)	106	49.30
Primary and Secondary education (PSE)	70	32.56
All Levels	16	7.44
Lifelong learning (3L) and Continued Education	15	6.98
Early Childhood Education (ECE)	6	2.79
Technical and Vocational Education and Training (TVET)	2	0.93

A combination of the two above tables would provide us a 11×6 matrix that represented the whole picture of educational research in Vietnam, according to the Research Field and Level of Education (Table 4). Thus, the matrix is composed of 66 “elements” with each represents a field of research along with a certain level of education. As evident in Table 4, the research outputs pertain to different matrix's “element” vary considerably. While there were four “elements” recording at least 20 publications (*i.e.*, *Teaching and Learning – Higher Education*; *Teaching and Learning – Primary and Secondary Education*; *Management, Leadership and Policy – Higher Education*; and *Psychology Education – Higher Education*); five others recording between 10 and 19 publications (*Management, Leadership, and Policy – Primary and Secondary Education*; *Technology in Education – Higher education*; *Curriculum – Higher Education*; *International Education – Higher Education*; *English Education – Higher Education*); and seven others recording between 5 and 9 publications (*Teaching and Learning – Lifelong Learning and Continued Education*; *Management, Leadership, and Policy – Lifelong Learning and Continued Education*; *Test and Assessment – Higher Education*; *Psychology Education – Primary and Secondary education*; *Curriculum – Primary and Secondary Education*; *English Education – Primary and Secondary Education*; and *English Education – Lifelong Learning and Continued Education*). The rest of 50 “elements” only recorded of four publications or below. Notably, there were 28 “elements” which were not recorded in any publications of Vietnamese researchers between 1991 and 2018.

Table 4
Matrix combining research fields and levels of education

	Higher Education	Technical and Vocational Education and Training	Primary and Secondary Education	Early Childhood Education	Lifelong Learning and Continued Education	All
Teaching and Learning	55	0	26	0	8	4
Research	8	0	0	1	1	0
Management, Leadership, and Policy	22	2	10	2	9	0
Technology in Education	14	0	3	0	3	3
Test and Assessment	8	0	3	1	0	0
Psychology Education	23	0	8	0	3	1
Curriculum	19	0	8	1	2	0
Special Education	0	0	2	0	1	0
International Education	11	0	3	0	0	0
English Education	12	0	7	0	5	2
STEM Education	3	0	4	0	0	0

Top Institutions with the Highest Number of Publications

Table 5 below figures out the top 10 Vietnamese institutions with the highest number of publications in educational sciences between 1991 and 2018.

Table 5
Top 10 Vietnamese institutions with the highest number of publications

No	Institutions	Number of publications	Having degree program on educational sciences
1	Vietnam National University - Hanoi	31	Bachelor, Master, Doctor
2	Royal Melbourne Institute of Technology (RMIT) Vietnam	21	No
3	Hue University	16	Bachelor, Master, Doctor
4	Ton Duc Thang University	12	No
5	Da Nang University	11	Bachelor, Master, Doctor
6	Hanoi National University of Education	10	Bachelor, Master, Doctor
6	Ho Chi Minh City University of Education	10	Bachelor, Master, Doctor
6	The Vietnam National Institute of Educational Sciences	10	Doctor
9	Vietnam Academy of Science and Technology	7	No
10	Can Tho University	4	Bachelor, Master, Doctor

Vietnam National University - Hanoi lead the league with 31 published papers. Following Vietnam National University - Hanoi was RMIT Vietnam with 21 papers. Hue University ranks number 3rd. However, the outcome of Hue University is 16 papers, which is only more than 50% of RMIT Vietnam's. The next institution ranked 4th is Ton Duc Thang University with 12 papers. Following behind, institution ranked 5th is Da Nang University, with 11 articles. The three following institutions, which include in the top performance institutions, are Hanoi National University of Education, Ho Chi Minh University of Education, and The Vietnam National Institute of Educational Sciences. These three institutions share the 6th position, with each having ten papers during the period of 1991-2018. Vietnam Academy of Science and Technology and Can Tho University stay at the number 9 and 10 of the league with seven and four publications published between 1991 and 2018.

International Collaborations

Within education research in Vietnam, it is accounted that between 1991 and 2018, 112 publications (or 52.09%) are the output of collaborative work between Vietnamese researcher(s) and international colleagues (see Figure 2). Such percentage of collaborative work is, indeed, smaller than what D. M. Ho (2015) found with a sample of publications from all fields of research. Specifically, D. M. Ho (2015) found that for every 100 publications as indexed by Scopus and published by Vietnamese researcher(s) between, 52 were collaborative outputs with the international researcher(s).

Figure 2

Number of publications by collaboration with international researchers and by Vietnamese researchers only

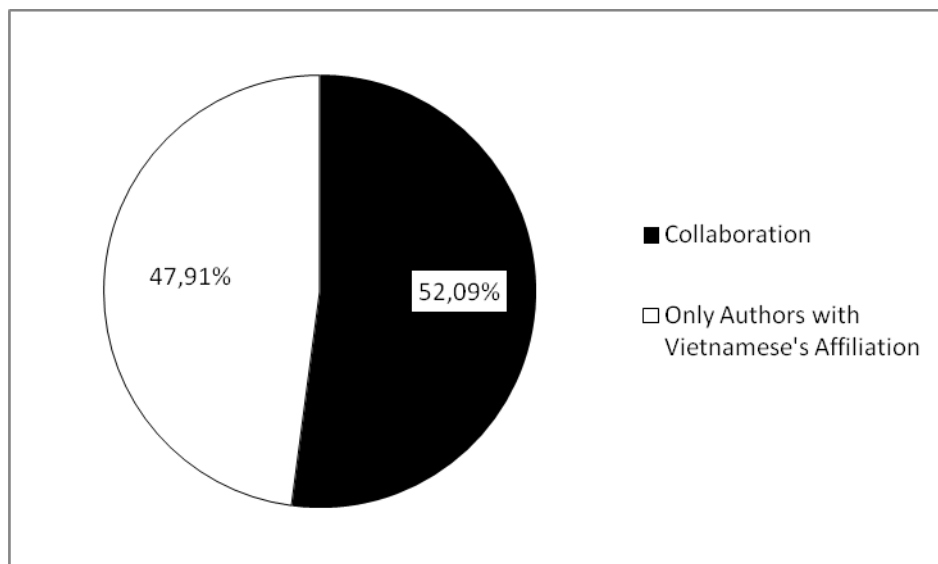


Table 6

Publication in collaboration with top 5 countries

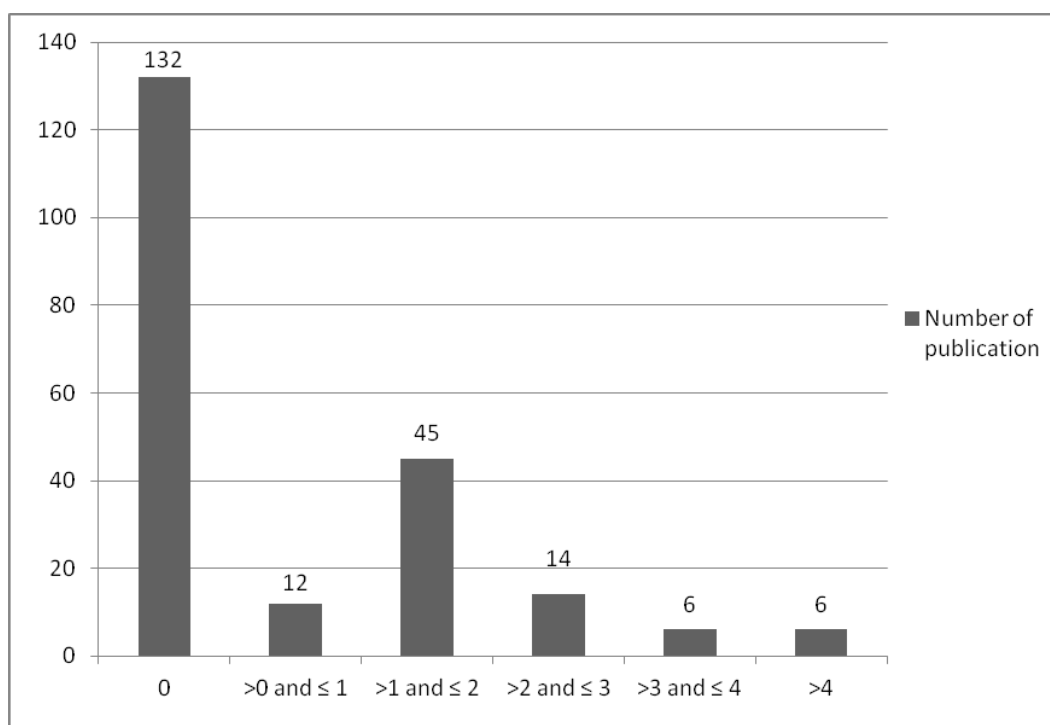
Rank	Country	Number of publications	Percentage (%) as against the total number of publications (215)
1	Australia	42	19.53
2	Thailand	14	6.51
3	The USA	12	5.58
3	New Zealand	12	5.58
5	China	8	3.72

Table 6 represents the top 5 countries with the highest number of collaborative publications with Vietnamese researchers between 1991 and 2018. The most frequently collaborating country with Vietnam is Australia with 42 publications (19.5%); followed by Thailand with 14 publications (6.5%); the USA and New Zealand co-rank at number 3 with 12 publications (5.6%), and the fifth one is China with the number of co-publications is 8 (3.7%).

Quality

Figure 3 depicts the number of publications according to their quality, which is proxied through the Clarivate WOS's IFs 2019. IFs were collected via the newly opened site of Clarivate WOS: <http://mj.l.clarivate.com/>. Papers would be assigned as in IF = 0 if its outlets are either Emerging Sources of Citation Index (ESCI) – indexed journals or edited books or conferences.

Figure 3
Number of publications by journal impact factor range



As evident in Figure 3, most publications in educational sciences by Vietnamese researchers between 1991 and 2018 belonged to the group IF = 0: 132 publications (61.40%). The group with second-highest number of publications was IF > 1 and ≤ 2: 45 publications (20.93%). The rest are equally divided into two groups: IF > 3 and ≤ 4 and IF > 4, with each having 6 publications (2.79%). Thus, very few publications were highly qualified, as reflected through IF.

Discussion

Education is identified as a strategic sector of Vietnam strategies in reforming the whole socio-economic system. Over previous years, the Vietnam government has put several efforts in order to renovate its education system. However, the status of the educational research of Vietnam is under-researched. Educational research is crucial as it serves as the foundation for the renovation of education at both national, meso, and micro levels. Thus, using data extracted from Clarivate WOS, this research examined the status of educational research in Vietnam over a period of 28 years (1991-2018) in five aspects: 1) The number of publications per year; 2) Publications according to research fields and levels of education; 3) Institutions with the highest performance; 4) Collaboration with international colleagues; and 5) quality of publications.

First, regarding the Number of Publications per Year, this research revealed that, over the time, outputs of educational research of Vietnam might be divided into three periods: 1) Hibernating time (1991-2007): only five publications were published, and there were many years with no record of publication at all; 2) Warming-up time (2008-2012): the period is featured with a stable but small (one-digit) number publications annually; and 3) Leapfrogging time (2013 onward): the annual record of publication is always a two-digit number (except

2014), and the growth rate is exponential. The pattern of international publishing in educational sciences in Vietnam is somewhat analogous to findings of prior studies, which select broader scopes for their research purposes. For instance, Ho (2015), based on Scopus database on all fields of research between 1996 and 2013 revealed that: 1) research outputs from Vietnam were relatively modest during the decade of 1996-2005; 2) the period of 2007 – 2008 marked the new phase in which international publications from Vietnam started growing exponentially. A more recent research, Vuong and Tran (2019), which also used the Scopus database on social sciences and humanities fields between 2008 and 2018, observed a steady growth in terms of scientific outputs between 2008 and 2015; and another sudden upsurge surrounding the years of 2015-2017. The similarity in terms of publication pattern over time among this research and the studies of Ho (2015) and Vuong and Tran (2019) may be explained through two notable policies by the Vietnamese government, namely: 1) the initial operation of National Foundation for Science and Technology Development (NAFOSTED) in 2008; and 2) the new regulation on PhD education in 2017. NAFOSTED of which model is inspired by the US's National Science Foundation, has a mission to boost research in Vietnam to meet international standards. The critical difference between NAFOSTED and other public research funders in Vietnam is that the former mostly relies on international scientific databases such as Clarivate WOS or Scopus as a reference to evaluate project outputs as well as a grant proposal but not the latter. As a consequence of this policy, NAFOSTED grantees, which mostly come from universities and research institutes, contribute to 20% of publications of Vietnamese researchers between 2008 and 2018. The respective figure is even much higher (60%) if we count only among publications, which are the results of state funding projects. The new regulation on Ph.D. education, which was issued along with the Circular 08/2017/TT-BGDĐT in 2017. To some extent, Circular 08/2017/TT-BGDĐT is considered as the first-ever publish-or-perish policy in Vietnam as it set strict conditions for both Ph.D. students and supervisors as well (Vuong & Tran, 2019). Specifically, a PhD student in Vietnam should publish at least one Clarivate WOS or Scopus indexed paper as prerequisite conditions for graduation. In the same vein, eligible criteria PhD supervisor is also leveled up: a lecturer must have at least one Clarivate WOS or Scopus-indexed paper as first or corresponding author to become a PhD supervisor.

Second, as shown in Tables 2-4, this research revealed a different picture of research outputs *regarding Research Fields and Levels of Education*. While some “elements” (i.e., a couple of a research field along with a level of education) were accounted of more than 20 publications between 1991 and 2018 (i.e., *Teaching and Learning – Higher Education: 55 publications; Teaching and Learning – Primary and Secondary Education: 26 publications; management, Leadership and Policy – Higher Education: 22 publications; and Psychology Education – Higher education: 23 publications*); many other (components) are accounted only one or not any publication (e.g., *Curriculum – Early Childhood Education: 1 publication; Test and Assessment – Early Childhood Education: 1 publication; Technology in Education – Technical and Vocational Education and Training: 0 publication; Psychology Education – Early Childhood Education: 0 publication*). To interpret these findings, it should take into consideration the actual context of Vietnam's education system. For instance, it is foreseeable that higher education would receive the most attention from education scholars. This is due to two possible reasons. First, among other levels of education, higher education has been identified as the most priority. Second, since almost researchers are university lecturers, they would have the tendency to select the sample that is more familiar i.e., higher education. The results of this part also provide for policymakers an overall picture on the strengths and weaknesses of educational research in Vietnam. These also may serve as the input for further adjustment in terms of strategies of educational research in Vietnam, both at national and institutional levels.

Third, regarding the Productivity of Institutions, the finding of the leading position of Vietnam National University- Hanoi is plausible since this is the flagship higher education institution, which annually receives tremendous investment from the government (Ericson, 2017; Vietnam Government, 2013). Vietnam National University - Hanoi is, indeed, a consortium that is composed of several affiliated universities and research institutions with three of which offering undergraduate and graduate programs in education/pedagogy. Akin to Vietnam National University- Hanoi, the appearance of Hue University, Da Nang University, and Can Tho University in the top 10 performing institutions are foreseeable. These three institutions are all comprehensive and play significant roles in the regions where they locate. All three universities provide education/pedagogy courses. Hanoi National University of Education, Ho Chi Minh City University of Education, and The Vietnam National Institute of Educational Sciences are three specialized institutions focusing only on the education field. Given this, it is explainable that these three institutions are all included in the league of the top 10. The appearance of RMIT Vietnam, Ton Duc Thang University and Vietnam Academy of Science and Technology is somewhat surprising since all these three institutions do not provide any degree courses in education/pedagogy; however, a closer look at these three cases might provide insights about the contemporary academic landscape in Vietnam. First, all these three institutions are well-known due to their research performance in general: RMIT Vietnam is a branch campus of RMIT Australia, a top 231 university in the world, according to QS (QS Quacquarelli Symonds, 2019); Ton Duc Thang University has been recognized as a rising star in Vietnam in recent years due to its aggressive strategy focusing on research. In 2019, Ton Duc Thang was the only representative of Vietnam, which is ranked among Top 1000 universities in the world, according to Shanghai Ranking (2019). Meanwhile, the Vietnam Academy of Science and Technology is well known as the most prominent graduate school and research institute in Vietnam. Second, given the emerging trend of interdisciplinary research across the world (Van Noorden, 2015), the appearance of three non-education specialized institutions in the top league of educational research is understandable.

Fourth, regarding the Issue of International Collaboration, this research revealed that collaboration with international colleagues was still an effective manner in order to enhance research productivity among Vietnamese educational researchers. However, the percentage of collaborative works in the educational science sector in Vietnam between 1991 and 2018 (52.09%) seemed to be lower than the respective figures of the whole sector (77%, see D. M. Ho, 2015) or social sciences (65%-74%, see T.T. Nguyen et al., 2019). Collaborating and co-publish with international colleagues, especially those who are from higher advanced universities, is an efficient strategy, which is often adopted by scholars from developing countries (Y. Li, 2014; T. Tran et al., 2020). Given the context of Vietnam, such collaboration is often between Vietnamese returnee scholar and his or her former supervisor – professor. A high-profile case to illustrate this assertion is the co-authorship between researcher, namely Thang Truong Dinh, who is currently working for Quang Tri Teacher Training College, and his former supervisor, Philip Hallinger, who is currently a well-established professor at Mahidol University (Thailand). Together, these two researchers co-published four articles as accounted in the 215 sampled publications in this research (see Truong et al., 2017; Truong & Hallinger, 2014, 2016, 2017)

In terms of top collaborating countries, this research revealed that scholars from Australia, Thailand, the USA, New Zealand, and China were the most frequent collaborating destinations of Vietnamese educational scholars. This finding was partly consistent with prior studies. For instance, D. M. Ho (2015), using Scopus database in all disciplines between 1996 and 2013; and V. T. Nguyen et al. (2017) using Clarivate WOS database in all disciplines between 2001 and 2015 also found that Australia, Thailand, the USA and China were among the top 20 collaborating countries with Vietnamese scholars.

Fifth, regarding the Issue of Quality, this research confirmed finding of previous works that the majority of international publications by Vietnamese researchers, regardless of their fields of research, were still relatively low-qualified. For instance, Vu et al. (2019) revealed that in 2018, the majority of publications in Economics field published by Vietnamese researchers (over 70%) were in journals with IFs smaller than 2. As shown in the results pertaining to number of publications per year, educational scholars in Vietnam have only involved in international publishing in recent years. Thus, the fact of low quality of international publications of Vietnamese education scholars, indeed, is understandable and reasonable.

Conclusions, Implications, Limitations and Suggestions for Further Studies

Bibliometric analysis is a research methodology, which has been widely employed in educational sciences. In Vietnam, there have been several scholars carrying out research studies using bibliometric analysis technique. However, these research studies often selected the whole fields of science or social sciences as research scope. The bibliometric research conducted by Vietnamese researchers using only one single field of study as this research is, indeed, under-tapped. Thus, using Clarivate WOS database, this research analyzed 215 publications under the category of *Education and Educational Research* with at least one co-author from Vietnam. The results of the bibliometrics analysis provide several implications for stakeholders, including policymakers, education leaders and managers, educational researchers and teachers.

First, the findings pertaining to the number of publications per year and research fields; and levels of education indicated that educational sciences have been still under-researched until recently. Among different topics of research among educational sciences, there were many overlooked (e.g., *Technology in Education – Vocational Education and Training; Curriculum – Vocational Education and Training; Teaching and Learning – Early Childhood Education*: 0 publication) or almost overlooked ones (e.g., *Testing and Assessment – Early Childhood Education; Special Education – Lifelong Learning and Continued Education*: 01 publication). Given this circumstance, the policymakers and education leaders are suggested to regard these overlooked or almost overlooked topics as priorities for further research agendas. Educational researchers, including university/college lecturers and teachers may also use these results as references for their own research.

Second, the results with productivity of institutions provide us a list of the most dynamic research centers of educational research in Vietnam. The high positions of some comprehensive institutions (e.g., Vietnam National University – Hanoi, Hue University or Da Nang University) and non-education specialized institutions (e.g., RMIT Vietnam, Ton Duc Thang University, or Vietnam Academy of Science and Technology) emphasize the role of multi-disciplinary and interdisciplinary in the current era. These figures are contrast to the absence of Hanoi National University of Education, Ho Chi Minh City University of Education and Vietnam National Institute of Educational Sciences (the three most major education – specialized institutions of the country) on Top 5. Thus, in the future, policy makers and education leaders/managers should take into consideration of the approaches of multi-disciplinary and interdisciplinary in their strategies in educational research at both national and institutional levels.

Third, the findings of this study represented the international collaboration patterns in co-publishing of Vietnamese educational researchers over previous years. Given the current weak capacity of educational researchers in Vietnam, international collaboration to publish should be further considered as a major component of research strategies for educational sciences in Vietnam. However, it's noted that Vietnam should avoid the dilemma of over-dependence on one country partner. Specifically, the current figure showed that for every 100 Clarivate WOS-indexed publications by Vietnamese education scholars, more than 19 (19.53%) are the outputs of collaboration with Australian colleagues. As evident in Table 6, the respective figures for

other countries (e.g., Thailand, the USA, New Zealand and China) are much lower. A wise strategy, which balances among different country partners, without doubt, would ensure a more sustainable development of educational sciences in Vietnam.

Last, as our results showed that most education publications from Vietnam are indexed in low IF journals and outlets. The need for policy adjustment in order to promote highly qualified publications is paramount for the education field. Currently, some higher education institutions have implemented policies of cash rewards for researchers with papers published in high IF journals. However, this policy has its limitations as it may result in some unintended negative consequences such as ignorance of ethics, booming of low qualified publications, escalation of plagiarism, or faked data. A more radical measure should be adopted. For instance, the current projects funded by NAFOSTED often last only two years, which, according to some experts, are too short for high qualified research. Talking to local media, Dang Hoang Minh, a well-known psychologist, suggested that the timespan of some key NAFOSTED projects should be extended between three to five years. Another possible way to nurture high-qualified publications is to reform the current state funding allocation mechanism for higher education and research institutes. Specifically, the current historical-based and recurrent funding allocation mechanism should be shifted into the more outcome-based and efficient ones, such as performance-based formula funding or performance contract funding.

This research still has several caveats that further studies should avoid. Some notable ones are represented here below:

First, this research did not address individual research outputs. It is because the dataset of 215 sampled publications is not enough to analyze at the individual level. Thus, the research record of one author in this research may be only part of his or her overall works. He or she may, in specific periods of his or her career, have other publications affiliated with foreign institutions. Given this limitation, further research may investigate educational sciences in Vietnam at the individual level.

Second, the use of only Clarivate WOS database may be another limitation of this research. Further studies are suggested to include other sources of databases such as Scopus or databases gathering documents written in Vietnamese such as VCgate (<https://vcgate.vnu.edu.vn/>). The more inclusive the sources of analysis are, the more insights may be gained.

Third, since the analysis in this research is just a descriptive analysis, it cannot deduce implications from inferential statistics as in some other bibliometrics works. Future researchers may overcome this limitation by using inferential techniques. Findings from inferential techniques, without doubt, would result in more valuable implications than descriptive ones.

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Conflicts of Interest

The authors declare no conflict of interest.

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