A Bibliometric Study of International Impact of Business Incubators

Siti Rosyafah

Faculty of Economics and Business, University of Bhayangkara Surabaya, Indonesia
Email: sitiirosyafahh@gmail.com

Abstract— **This research aims to describe the development of research of incubator business management were published in the international scientific journal in scopus indexed. This research method is used descriptive quantitative to approach the analysis of bibliometric. Sources of data obtained from the database Scopus with restrictions articles were published ten years past. Data were analyzed using the analyze menu on Scopus and the VOSviewer software. The findings of this study are research publication of incubator business management are indexed in Scopus, period 2010-2019 as many as 530 articles by 986 authors and 190 keywords. The development of research in incubator businesses were published in the scientific journal Scopus indexed, period 2009-2019 are positive growth. The visualization bibliometric network map based on keyword is divided to eight clusters and a network map based on the authors is divided to four clusters.**

Keywords— **Business Incubator, Entrepreneurship, Bibliometric, Scopus, VOSviewer.**

I. INTRODUCTION

Countries in the world, especially the countries developing, need over many entrepreneurs were able to change the source of power which is owned into products or services that have value added to boost thir country economy. One of the methods of formal to create an entrepreneurial new is the incubator businesses (Hakim, Syarifuddin, and Iskandar, 2018). The business incubator concept originated in the United States. Incubator businesses which first established in the world is the Batavia Industrial Center by Joseph Mancuso in Batavia, New York, United States of America in the year 1959 (Chen, Wang, and Hsueh, 2015; Lewis, 2011). The concept of the business incubator then spread throughout the world. Entering the XXI century, business incubators have become an international phenomenon (Phan, Siegel, & Wright, 2005).

Incubator Business role as a mechanism formally to create the company's new (Albort-Morant & Ribeiro-Soriano, 2015; Bollingtoft & Ulhoi, 2005; McAdam and McAdam, 2008; Schwartz & Hornych, 2010). In various countries, incubator business is used as instrument of policy developers an entrepreneurial. Business incubators help the needs of new companies in the early stages of business operations that are prone to failure (Dee, Livesey, Gill, & Minshall, 2011; Grimaldi & Grandi, 2005; McAdam & Marlow, 2007; Theodorakopoulos, K. Kakabadse, & McGowan, 2014), and experience difficulties when entering industrial competition that has been controlled by large companies (Gozali, Masrom, Haron, & Zagloel, 2015). With

the increase of the company new that healthy and profitable, the term length, inkuba tor business role creates a field of work, increase innovation (Dee et al., 2011; Lewis, 2011; Smilor, 1987; Theodorakopoulos et al., 2014), and the development of economic (Bergek & Norrman, 2008; Campbell & Allen, 1987; Lee & Osteryoung, 2004; Lumpkin & Ireland, 1988; OCED, 1997; Peters, Rice, & Sundararajan, 2004; Smilor, 1987; Theodorakopoulos et al., 2014).

In the year 1985 formed an association incubator businesses first in the world is the National Business Incubation Association (NBIA) in the United States expected in an amount of members as much as 40 incubator. Two twenty- five years later the number of members of NBIA be 2,000 incubators are scattered in 60 countries. However, not all business incubators are members of NBIA. NBIA estimates that the number of incubator businesses in the world in the year 2010 approximately 7,000 incubators and in the year 2017 as many as 9,000 incubator. In line with the growth in the number of incubator businesses in the world, the researchers began to be interested doing research about the incubator business. Figure 1 shows the number of empirically n of incubator businesses which published the article scientifically indexed Scopus.
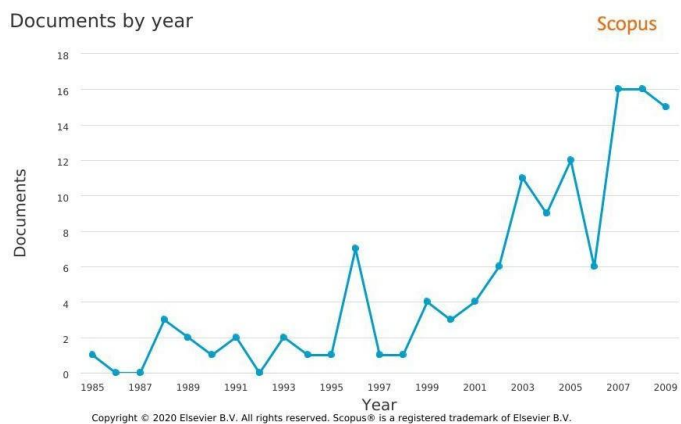
Source: www.scopus.com, 2021

Figure 1. The growth of number research publications on business incubator, Scopus indexed 1985-2009

Based search database Scopus, publication of research first about the incubator business, namely articles are titled Small Business Incubators And Public Policy: Implications For State And Local Development Strategies written by Plosila, WH, and Allen, DN in the journal Policy Studies Journal in 1985. After the studies with the theme of incubator businesses continue to emerge, and experienced an increase in both of in terms of quantity as well as from the aspect of variation studies. Figure 1 shows the growth of the publication of research incubator business since the year 1985 until the year 2009. Based on Figure 1 unknown number of publications of research incubator business from year to year to experience fluctuations, sometimes rising as the year 1988, 1996, 2004 and 2007, but occasionally experienced a decline such as the t ear 1997, 2004 and 2006. in general the number of publications from the year 1985 until the year 2009 showed an increase. Sources in Scopus beginning in 2020, has not found research that specifically examines the development of research incubator business in ten years past. By because it, research it aims to describe the development of research incubator bus nis in the world that is published in the journal Scientific indexed Scopus, as well as map out the visualization of the network based on keyword and writer.

II. PROBLEM

The formulation of the problem in this study of this are how is the development of research incubator businesses were published in the scientific journals indexed Scopus ten years past (years 2009-2019) and how visualization bibliometric map of the network based on keyword and authors.

III. LITERATURE REVIEW

Business Incubator

Incubator Business is the institution that organizes the incubation of the prospective entrepreneurs or entrepreneurs new to be able to run their business with success. Based on the review of research beforehand, obtained several definitions of incubator businesses in general and particular. In general, the definition of incubator business is an organization that aims to support the foundation of a business new or a business that is just entering the phase of growth (Hausberg & Korreck, 2020). Business incubators are a popular tool for accelerating the creation of successful companies or entrepreneurs (Bruneel, Ratinho, Clarysse, & Groen, 2012). Incubator business is a facility that accommodates the company of young and small to help them evolve with the rapidly into a business that is competitive (Hughe s, Ireland, & Morgan, 2007). Incubator businesses are programs help businesses that are targeted for companies starters and stages beginning with the purpose of increasing the chances to grow into a company that is healthy and sustainable (Adkins, Sherman, Voinovich, and Jos, 2001). Reasons main set up an incubator of business is to increase the development of the economy to grow a new business that creates a field of work and diversify the economy locally. The purpose incubator is to foster companies young during the period beginning which easily change and to help them survive life until they were sufficiently strong to go out alone (Scarborough & Cornwall, 2016), so they are need a good management.

Definitions are more specialized, incubator business is the organization that organizes the incubation business to source power intangible (such as space, equipment together, and the service administration), and the source of power that is not tangible (such as knowledge, access, networking), during the period specified and funded by sponsor (eg, government or company) and or the funds themselves are derived from the cost of the rental of participants incubation (Hausberg & Korreck, 2020). Incubator businesses are actively supporting the process of creating a business just by providing a variety of services that include infrastructure, access to networks, and support for business (Njau, Karimi, Mwenda, & Wachira, 2019). Incubator business is defined as an infrastructure that is designed to accelerate the growth of d late success of the company or entrepreneur through a series of sources of power and service support of business (Bergek & Norrman, 2008; Hendratmi & Sukmaningrum, 2018). Opinion else, incubator businesses are usually in the form of property with a unit of work small that provide early development of entrepreneurship and learning, access to mentors and investors as well as visibility in the market

(Tsaplin & Pozdeeva, 2017).

The Government of the Republic of Indonesia uses the term entrepreneurial incubator rather than the term business incubator. It is pitch mirror on the Regulation of President Number 27 Year 2013 on Development Incubator Entrepreneurial in Indonesia. According to the rules of the incubator of entrepreneurship is an institution intermediary who perform the process of coaching, mentoring, and development to entrepreneurs or prospective entrepreneurs as participants incubation or tenant. The term incubator of entrepreneurship on the rules that have the intent that the same with and incubator businesses such as that put forward by the experts (Judge, Solihat, Setiawati, & Roisah, 2018).

IV. BIBLIOMETRIC

The bibliometric term in Indonesian and English, it is etymologically derived from two words namely biblio and metrics. Biblio means book, while metrics means measuring (Royani & Idhani, 2018). In the study of this, the notion bibliometric are studies that measure the development of research, literature, books or documents in the field of a certain kind are quantitatively or qualitatively by using methods of statistics. Bibliometric divided into two groups of large, namely bibliometric descriptive and bibliometric behavior. Bibliometric descriptive describes the characteristics of a literature while bilbliometrik behavior examines the relationship that is formed between the components of the literature that (Royani, T Upan, & Kusumaningrum, 2019). The previous author defined bibliometrics. Definition of bibliometric according Winarko and Sormin, namely the review of the applying methods of mathematics and statistics to measure a change, both in quantitative m aupun qualitatively on a set of documents and media more (Winarko & Sormin, 2010). According Sopari and Christiani, bibliometric are studies that use methods of mathematics and statistics to study and identify patterns in the use of literature and to analyze the development of literature in particular for author, publication and use. The purpose of bibliometrics is to explain the development of a scientific discipline (Sopari & Christiani, 2015).

Analysis of bibliometric the research is in descriptive quantitative measure progress publication of articles of scientific with the theme of incubator businesses, measures the number of articles were published, found the journal core, the subject of the research, the authors of the most prolific, affiliate or institution of origin author, and origin country writer. Analysis of bibliometric behavior do that Memet will be the network in a visual relationship between the words keys and relationships between authors. The data source used for data analysis came from the Scopus database.

Scopus

Research about the incubator business can be found in various media publications of scientific journals, Proceedings of the conference, or book. The media that has a quality that is different. One of which became the determining quality is the process of peer review. By because it, research it chose Scopus as a source of data because the article scientifically that indexed Scopus pass peer review process.

Scopus is a database of citations and abstracts are supervised by experts in the field. Based on information from the website Scopus (www.scopus.com) which is accessible to 2021, the data contained in Scopus comprises over 39,744 journals scientifically active, Proceedings of the conference scientific as much as 29,683 titles, book series as much as

1499 title with 59,698 volumes, the publication of trade more than 300 titles and articles were published publisher internationally as much as more than 8,000 titles. At Scopus are also 221,169 the title of a book that consists of monographs or books of text. Scopus data are changed every day adjusting the addition of the data due to the issuance of new or reduction of the data for publication does not continue.

Several previous authors defined Scopus. According to Saleh and Sumarni, Scopus is a center of data largest in the world that includes tens of millions of literature science who published since tens of years of the past which is owned by Elsevier (Saleh & Sumarni, 2016). Scopus collects abstracts from various scientific literature including journals, books and proceedings. Scopus create indexes literature science to provide information that is accurate about the metadata of each article scholarly included publication data, abstracts, and references other (Savitri, 2019). Scopus helps the researchers to conduct a search, analyze, and visualize a study with more effective (Tupan, Rahayu, Rachmawati, & Rahayu, 2018). Scopus managed to maintain its quality since tens of years that last until the time this (Natonis, 2019).

VOSviewer

VOSviewer abbreviation of visualization of similarities-viewer (Tupan et al., 2018). VOSviewer is the device software to create maps based on the data ja light and to visualize and explore the maps are. VOSviewer has functions, namely First, creating maps based on network data. Map created by networks that are already available, but allows also to build nets an advance in advance. VOSviewer can be used to build a network of publications

of scientific, journal scientific, research, organizational research, the state, said the key, or the term; Second, visualize and explore the map. VOSviewer provide three visualization pe ta namely visualization network, visualization overlay, and visualization density. Zoom and scroll functions allow the map to be explored in more detail. Although VOSviewer is intended to analyze bibliometric networks, VOSviewer can be used to create, visualize, and explore maps based on all types of network data (Eck & Waltman, 2020).

VOSviewer the research is used to visualize a map of the network research based on keyword (networks of co-occurr ences of keywords) or co-words and a map of the network based on the author (networks based on co-authorship). A co- word network is a publication network in which two keywords appear together in a title, abstract, or keyword list. Meanwhile, co-author of the ship is a network among the researchers, institutions of research, or countries mutually connected by the number of publications which they wrote together (Eck & Waltman, 2014). How to show a map of the network co-word and co-authorship, namely through four stages Per all, collect the data (articles journals, books, literature, documents) from the database; Second, enter data into VOSviewer; Third, produce network maps based on data; and Fourth, using screenshots of VOSviewer to generate maps (Ranjbar- Sahraei & Negenborn, 2017).

V. RESEARCH METHODS

This study uses a quantitative descriptive method with a bibliometric approach. The unit of analysis in this research is a scientific article. Sources of data are articles of scientific about the incubator businesses magnified by from the database Scopus. Reasons election Scopus defined as purposive with consideration of the quality and reputation which has been recognized as internationally excellent by universities high and institutions of research.

Population and Sample

Population research this is the article scientific about the incubator business that is published in the journal of scientific, proceedings of conferences internationally, books, or the form of publications more are indexed Scopus. Based search on Scopus on the date of 20 November 2020, an unknown number of the population as much as 561 articles. Samples of research this is the article scientific about the incubator businesses are indexed Scopus were published ten years past, namely the year 2010 until the year 2019. Sampling is done on the date of 20 November 2020, acquired the data as much as 530 articles scientific.

Data Collection Techniques

The data collection technique used is secondary data. The data is already available in the Scopus Database. How to obtain data, namely First, access the website www.scopus.com with a subscription (paid) account in order to access all features and facilities; Second, do the restrictions on the menu search, which write the word key "Business Incubator", choose the location of keyword by clicking "article title, abstract, keywords", specify "date range" publishing articles by writing down the numbers "2010" to the "2019", Specify the document type by clicking "article" and specify the access type by selecting "all"; Third, obtaining data on the Scopus database which includes the criteria of the sample by click "search"; and Finally, store the data in a format RIS in order to be processed by the device software Microsoft Excel and VOSviewer.

Data Analysis Techniques

The data analysis technique used is descriptive quantitative and descriptive qualitative. Analysis of the data, carried out by stages as follows: First, the processing of the data with the help of Scopus, on the "Analyze". This menu helps researchers with output in the form of statistical data or statistical processing results in graphic form with image formats. Another output from Scopus is secondary data in RIS format; Second, the processing of data with the device software Microsoft Excel and VOSviewer. Outcomes Outcomes processing of data with Microsoft Excel is in the form of graphs, while output VOSviewer is a network map by keyword and based on the author; Third, analyzing the Scopus and VOSviewer outcomes in a qualitative descriptive manner.

VI. RESULTS AND DISCUSSION

Number of Business Incubator Research Publications Per Year

Searches in Scopus with the word key "Business Incubator" in the span of time of ten years past, obtained the results as much as 530 articles. Based on Figure 2, the publication of articles most much happened in the year 2019 as many as 91 articles, while the publication of the little happened in the year 201 3 with the number of 18 articles. In the years 2011 and 2013 the number of publications experienced a decline. From 2014 to 2016 the number of publications tends to remain constant. Number of publications articles of scientific results of research about the incubator business that is published in the journal Scopus indexed from the year 2010 until the year 2019 in general experienced an increase or growth which is positive. If in the year 2010 only 26 articles, then in the year 2019

there were 91 articles were published. Data that showed that research on ink ubator business continues to increase from year to year which means that the case increase the interest of researchers in the world to examine the incubator businesses.
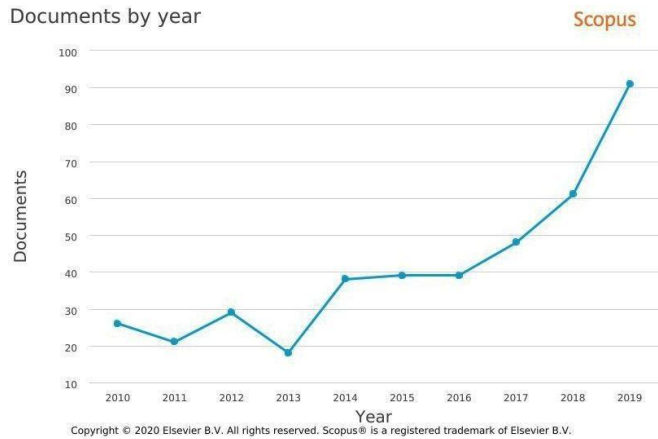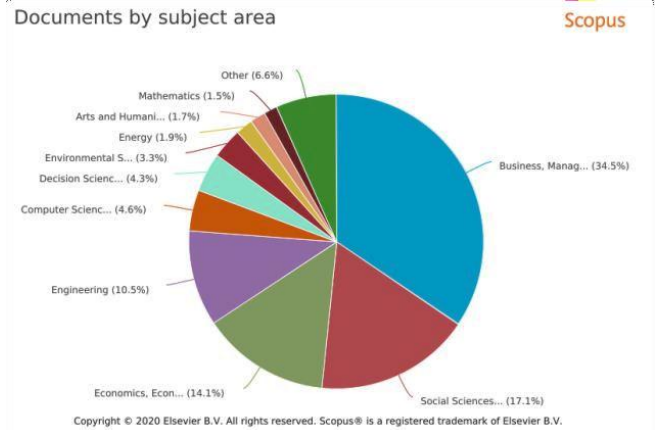

Source: Data processing on Scopus, 2021
Figure 2. Number of Business Incubator Research Publications per Year
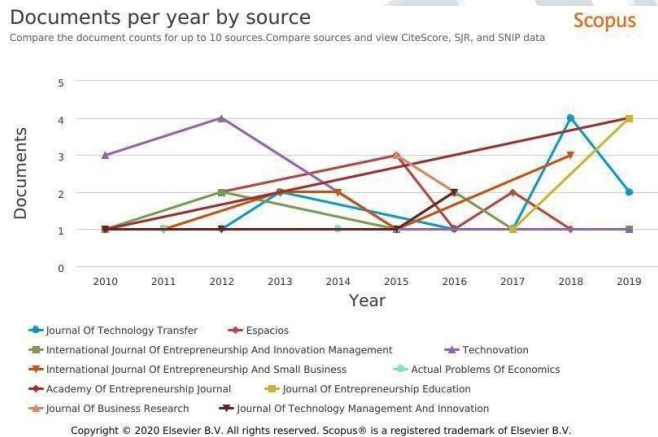
Source: Data processing on Scopus, 2021
Figure 3. Business Incubator Core Research Journal

Journal of the Core Research Business Incubators

Based on Figure 3, known publication articles of scientific most results of research about the incubator business, namely in the Journal of Technology Transfer as much as 11 article, next to the journal Espacios and journal Technovation respectively 10 articles. The order of the fourth through sixth are the International Journal of Entrepreneurship And Small Business with 9 article, International Journal of Entrepreneurship And Innovation Management as much as 9 article, Journal Actual Problems of Economics as much as 6 articles, and sequence to seven

to ten each 5 articles are on journal Academy of Entrepreneurship Journal, Journal of Business Research, Journal of Entrepreneurship Education, and Journal of Technology Management And Innovation.

Source: Data processing on Scopus, 2021
Figure 4. Business Incubator Research Subjects

Business Incubator Research Subjects

Subject research incubator businesses are indexed Scopus in 2010 - 2019 as in Figure 4. According to Figure 4 the subject of the most high is business, management, and accounting as much as 34.5 percent; Second, the social sciences as much as 17.1 percent; Third, economics, econometrics and finance as much as 14.1 percent; Fourth, engineering as much as 10.5 percent; Fifth, computer science or science computer, which is as much as 4.6 percent. By because the research incubator business is more dominant, including in the field of the study of business, management and accounting
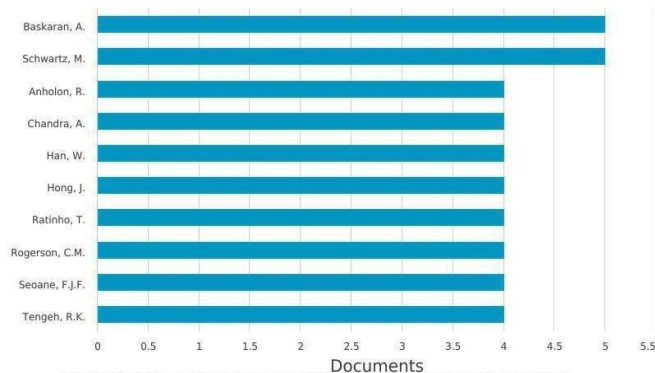
The Most Productive Business Incubator Researcher

The researchers incubator business of the most prolific in the world in the year 2010 to 2019 is Baskaran, A. from the University of Malaya and Malaysia and Schwartz, M. of the Department of Urban Economics, Halle Institute for Economic Research. Both authors are respectively write as much as 5 articles. List the title of the article the author tert ebut shown in Table 4 in the section attachment. The position of the third until the ninth, each as much as four articles, namely Anholon, R. Chandra, A., Han, W., Hong, J., Ratinho, T., Rogerson, CM, Seoane, FJF and Tengeh, RK. The Most Productive Business Incubator Researchers are shown in figure below

Source: Data processing on Scopus, 2021
Figure 5. Most Productive Business Incubator Researchers
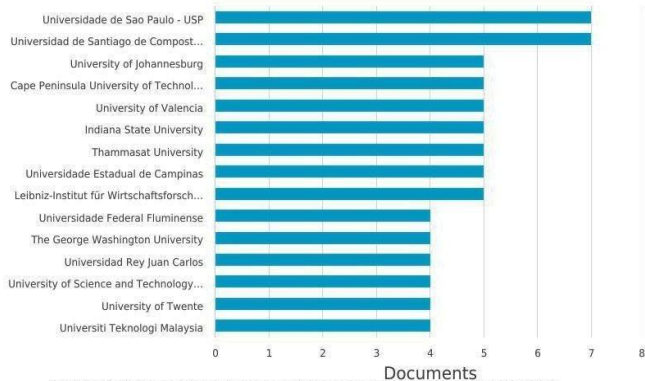
Source: Data processing on Scopus, 2021
Figure 6. Author Affiliations of Business Incubator Research Publications

Figure 6 shows the top ten a filiation or institution of origin researcher top that perform the publication of research on the incubator business in journals indexed Scopus in the years 2010 - 2019. Researchers Most come from Universidade de Sao Paulo (USP), Brazil and Universidad de Santiago de Compostela Spain respectively each as much as 7 articles, and is followed by 7 institutions with each with five articles, namely the University of Johannesburg-South Africa, Cape Peninsula University of Technology-South Africa, Indiana State University-USA, Thammasat University- Thailand, Universidade Estadual de Campinas-Brazil, and Leibniz-Institut für Wirtschaftsforschung Halle IWH, Germany. Based on the data mentioned, known agency that includes the category is

dominated from the continental United States and Europe. At least many of the Brazilian states with the three institutions. Countries of Asia which included are Malaysia and Thailand, but yet no single institution from Indonesia which entered into the category of this.
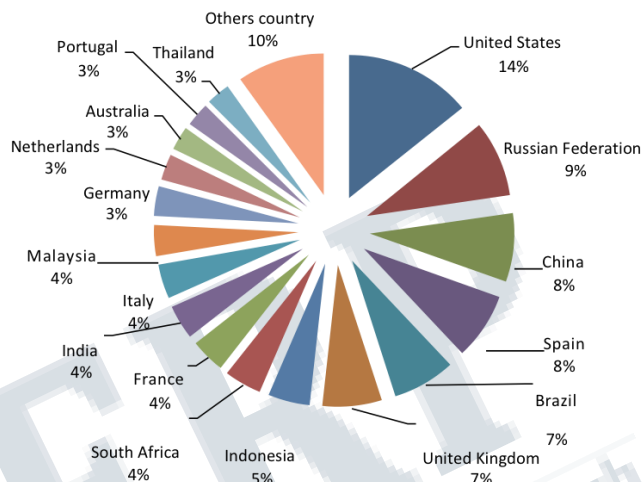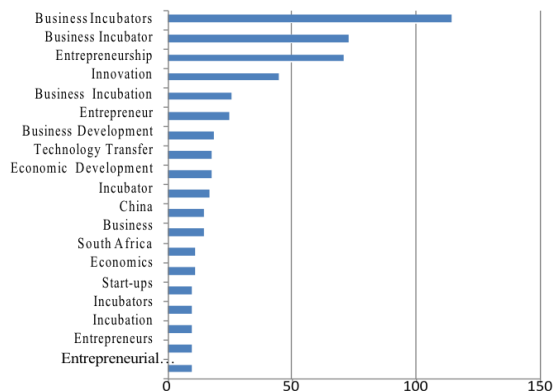

Source: Data processing on Scopus, 2021
Figure 7. Business Incubator Researcher Countries

Contributor results of the research areas of incubator businesses are indexed Scopus in the years 2010-2019 with a number of the largest by country are United States as many as 58 articles or 14 percent, followed by Russia as many as 35 articles, or 9 percent, China as many as 32 articles, or 8 percent, Spain as many as 31 article or 8 percent, Brazil as much as 29 articles, or 7 percent, the UK as much as 27 articles or 7 press en, Indonesia as many as 29 articles or 5 percent, South Africa as many as 17 articles, or 4 percent, the French as much as 16 articles, or 4 percent, India as many as 16 articles or 4 percent, in addition to the Italian and Malaysia respectively by 4 percent, followed by Germany, the Netherlands, Australia, Portugal, and Thailand respectively by 3 percent and the rest of other countries as much as 10 percent, as in Figure 7.

Map Network Research Incubator Business Based Password Lock

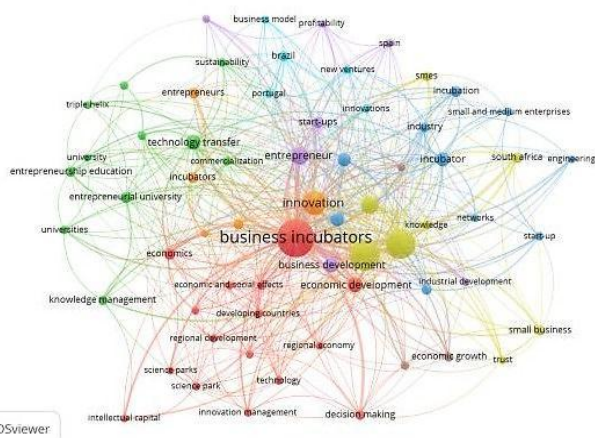Based on the analysis of Scopus, as many as 530 articles of scientific publication of research on the incubator business, found as many as 190 types of words key to the total frequency of as much as 1,097 words key. Keyword most lots used are business incubators that as many as 115 times, followed later by the word key business incubator as much as 73 times and entrepreneurship as much as 45 times.

The order of words key that most lots are used as in Figure 8.

Source: Data processing on Scopus, 2021
Figure 8. The most widely used keywords

Source: Output Processing Data of VOSviewer, 2021
Figure 9. Map Network Research Incubator Business

Based on Figure 9 known to cluster the largest by keyword is cluster -colored yellow -green with eight words key that business incubation, business incubators, entrepreneurship, knowledge, small business, smash, south africa, and trust. The cluster smallest is colored red light with only one word key that business incubations.

Figure 9 is a map of the network keyword research on incubator businesses are indexed Scopus in 2010-2019 to form eight clusters. Said the key to the cluster are the same shows that the two word keyword that has a closeness because it same used in the publication are different. Cluster first network color red light is composed of one member of that keyword business incubations. Cluster both network color green composed of one member of that keyword academic entrepreneurship. Cluster three network color blue is composed of one member of that keyword business.

Cluster four network-colored yellow-green is composed of eight members which keyword business incubation, business incubators, entrepreneurship, knowledge, small business, South Africa, trust. Cluster fifth network, purple is composed of seven members which keyword business development, entrepreneurial, industrial development, profitability, Spain, start-ups, commercial technology. Cluster into six colored blue light, consisting of seven members of which keyword brazil, business models, innovations, new ventures, portugal. Cluster seventh-colored by brown light, consisting of five members of which keyword is entrepreneurs, incubators, innovation, management, performance. The last cluster, colored purple-brown, consists of three members, namely the keywords, namely economic growth, employment, sustainable development.

Table 1. Cluster Map Network Research Incubator Business Management Based Password Lock

No.	Color	Keyword
1	Pink	*business incubations management*
2	Green	*academic entrepreneurship,*
3	Blue	*business*
4	Greenish yellow	*business incubation, business incubator, entrepreneurship, knowledge, small business, smes, south africa, trust.*
5	Purple	*business development, entrepreneur, industrial development, profitability, spain, start-ups, technology commercial*
6	Light blue	*brazil, business model, innovations, new ventures, portugal*
7	Light brown	*entrepreneurs, incubators, innovation, management, performance*
8	Brownish purple	*economic growth, employment, sustainable developer*

Source: Output Processing Data VOSviewer, 2021

Business Incubator Research Network Map by Author (Co-Authorship)

Based on the processing of data on VOSviewer of 530 articles research incubator businesses which published the articles indexed Scopus years 2010 to 2019, is known there are 986 names the author, as follows;

Table 2. Number of Network Writer (co-authorship) Research Inku bator Business

Minimal number of documents that have been published by an author (scientific article)	Number of authors (people)	*Co-authorship* (The number of people who form a network of authors are mutually connected)
1	986	15
2	108	6
3	27	3
4	11	2
5	2	0

Source: VOSviewer Data Processing, 2021

Based on Table 2, the number of authors who publish at least 2 articles as many as 108 people, as many as 27 authors have published at least 3 articles, the number of authors who publish at least 4 articles sebany ak 11 people, and only 2 authors who publish five articles.

Table 2 shows the network of co-authorship, which is a network among the researchers, institutions of research, or countries mutually connected by the number of publications which they wrote together. In the know on the criteria of the author of at least has published an article, then the co-authorship that are formed as many as 15 people.

If the criteria are increased to one author, at least two articles have been published, the co- authorship that is formed decreases to 6 people. If the criterion is increased again become a writer minimum has to publish three articles, the co-authorship that is formed into three people. On the criteria of the author of at least has published four articles, co-authorship that terbent uk only 2 people. And, on the criteria of the last one writer minimum write five articles, it does not occur co-authorship. Figure 10 shows a map of the network the author (co-authorship), which is formed by the criterion of the author of at least publicize the art ikel. On networks that are 15 authors are mutually connected visualized lines each connected between the point of the name of the author with the point of the writer more.
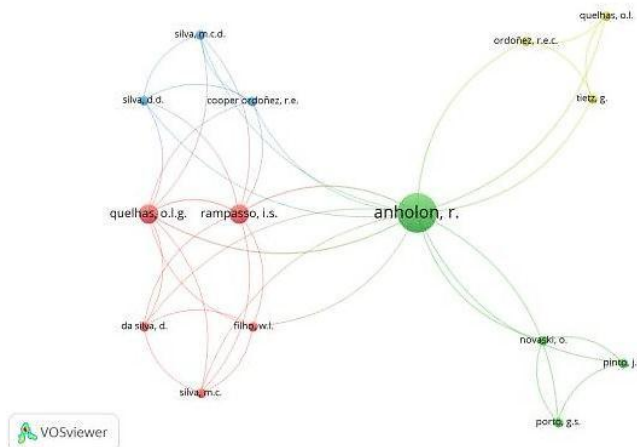
Source: Output Processing Data VOSviewer, 2021
Figure 10. Map Network of authors in Incubator Business

Co-authorship as in Figure 10 to form four clusters. Clusters are invisible to the eye can be distinguished by the color of the lines that connect the dots name of the author, namely the red light, green, blue and yellow. The names of the cluster members are shown in Table 3.

Table 3. Cluster Network Writer (co-authorship) Research Incubator Business

Cluster	Color	
1	Pink	Da Silva, D., Filho, W.L., Quelhas, O.L.G., Rampasso, I.S., Silva, M.C.
2	Green	Anholon, R., Novaski, O., Pinto, J.S., Porto, G.S.
3	Blue	Cooper Ordonez, R.E., Silva, D.D., Silva, M.C.D.
4	Yellow	Ordonez, R.E.C.,Quelhas, O.L.G., Tietz, G.

Source: Output Processing Data VOSviewer, 2021

Productivity of Researchers from Indonesia

Based on the processing Scopus found 19 articles were written by contributors origin Indonesia. The amount of the contribution of 5 percent of the total articles were written by all authors who come from various countries as many as 530 articles, as in Figure 7. Indonesia occupies the order of the seven countries with the number of the publication of articles incubator businesses most in the world. Data ninth twelve articles shown in Table 5 in the section attachment. Based on Table 5 (annex), known to the author of the most prolific origin Indonesia is Lina Widodo with productivity as much as two articles, namely article with the title A

Framework of Successful Business Incubators For Indonesian Public Universities in the year 2016 and the article with the title Critical Success And Moderating Factors Effect In Indonesian Public Universities' Business Incubators were published in the year 2018. Both articles are published in the International Journal of Technology.

All the name of the author of the origin of Indonesia has not appeared on a map of the network of researchers (co-authorship) incubator business as in Figure 10. This is due to the researcher or institution research the origin of Indonesia at years 2010 - 2019 have not been doing collaborative publication of the study by researchers incubator businesses from other countries that undertake the publication of research together.

VII. CONCLUSION

Based on the analysis of bibliometric note: Publication of research incubator business are indexed Scopus in 2010 - 2019 as many as 530 articles by 986 authors and 190 keyword are different; Publication highest in the year 2019 that as many as 91 articles; Journal of Technology Transfer into the journal's core publication of research business incubators; The most productive authors were Baskaran, A. and Schwartz, M., five articles each; Most research affiliations come from University de Sao Paulo-Brazil and Universidad de Santiago de Compostela- Spain; Contributor Most nationality United States. Conclusions of research: First, the development of research incubator businesses were published in the journal Scientific indexed Scopus in 2009-2019 experienced a growth that is positive. Second, visualization bibliometric map network based keyword is divided into eight clusters and a map of the network based on the authors divided into four clusters.

Based on the findings of the study, the number of research incubator businesses were written by contributors origin Indonesia amounting to 5 percent. It is show that the contribution of researchers origin Indonesia towards the development of the discipline of science incubator businesses is still low. But the fact this becomes an opportunity for researchers origin Indonesia further to explore various phenomena incubator businesses in Indonesia which have not been disclosed to produce novelty of research. Research is encouraging the researchers incubator business origin Indonesia to collaborate undertake the publication of research together with the researchers productive Kela's world from another country.

REFERENCES

[1] Adkins, D., Sherman, H. D., Voinovich, & Yost, C. A. (2001). *Identifying Obstacles to the Success Of Rural Business Incubators.* Athens, Ohio.

[2] Albort-Morant, G., & Ribeiro-Soriano, D. (2015). A bibliometric analysis of international impact of business incubators. *Journal of Business Research*, 69(5), pp. 1775–1779. https://doi.org/10.1016/j.jbusres.2015.10.054

[3] Bergek, A., & Norrman, C. (2008). Incubator best practice: A framework. *Technovation Journal*, 28(1–2), 20–28. https://doi.org/10.1016/j.technovation.2007.07.008

[4] Bollingtoft, A., & Ulhoi, J. P. (2005). The networked business incubator - Leveraging entrepreneurial agency?. *Journal of Business Venturing*, 20(2), 265–290. https://doi.org/10.1016/j.jbusvent.2003.12.005

[5] Bruneel, J., Ratinho, T., Clarysse, B., & Groen, A. (2012). The evolution of Business incubators: Comparing demand and supply of business incubation services across different incubator generations. *Technovation*, 32(2), 110–121.https://doi.org/10.1016/j.technovation.2011.11.003

[6] Campbell, C., & Allen, D. N. (1987). The Small Business Incubator Industry: Micro-Level Economic Development. *Economic Development Quartely*, 1(2), 178–191.
https://doi.org/10.1177/089124248700100209

[7] Chen, H.-P., Wang, C.-N., & Hsueh, M.-H. (2015). The Critical Success Factors of Biotechnology and Pharmaceutical Industry in SIAT. Integration Entrepreneur, Entrepreneurial Opportunity and Entrepreneurial Resource Perspective. *Proceedings of the 2015 International Conference on Management Science and Innovative Education*, 318–322. https://doi.org/10.2991/msie- 15.2015.60

[8] Dee, N. J., Livesey, F., Gill, D., & Minshall, T. (2011). Incubation for Growth, A review of the impact of business incubation on new ventures with high growth potential. *Nesta*, (September), 1–53.

[9] Eck, N. J. Van, & Waltman, L. (2014). Measuring Scholarly Impact. In Y. Ding et al. (eds.) (Ed.), *Measuring Scholarly Impact* (pp. 285–320). Switzerland: Springer International Publishing. https://doi.org/10.1007/978-3-319-10377-8

[10] Eck, N. J. Van, & Waltman, L. (2020). *VOSviewer Manual.* Leiden: Univeristeit Leiden. Retrieved from http://www.vosviewer.com/documentation/Manual_VOSviewer_1.6.1.pdf

[11] Gozali, L., Masrom, M., Haron, H. N., & Zagloel, T. Y. M. (2015). A Framework of Successful E-Business Incubation for Indonesian Public Universities. *The Asian Journal of Technology Management*, 8(2), 120–134. https://doi.org/10.13140/RG.2.1.1279.8965

[12] Grimaldi, R., & Grandi, A. (2005). Business incubators and new venture creation: An assessment of incubating

models. *Technovation*, 25(2), 111–121. https://doi.org/10.1016/S0166-4972(03)00076-2

[13] Hakim, L., Solihat, A., Setiawati, S. D., & Roisah, R. (2018). Implementasi Triple Helix pada Inkubasi Bisnis Outwall. *Jurnal Abdimas BSI*, 1(3), pp. 379–389.

[14] Hakim, L., Syarifuddin, D., & Iskandar, I. (2018). Membangun Inkubator Wirausaha Kepariwisataan di STP ARS Internasional. *Jurnal Abdimas BSI*, 1(1), 95–103. https://doi.org/10.31294/jabdimas.v1i1.3137

[15] Hausberg, J. P., & Korreck, S. (2020). Business incubators and accelerators: a co-citation analysis-based, systematic literature review. *Journal of Technology Transfer*, 45(1), 151–176. https://doi.org/10.1007/s10961-018-9651-y

[16] Hendratmi, A., & Sukmaningrum, P. S. (2018). Role Of Government Support And Incubator Organization To Success Behaviour Of Woman Entrepreneur : Indonesia Women Entrepreneur. *Polish Journal Of Management Studies*, 17(1), 105–115. https://doi.org/10.17512/pjms.2018.17.1.09

[17] Hughes, M., Ireland, R. D., & Morgan, R. E. (2007). Stimulating Dynamic Value: Social Capital and Business Incubation as a Pathway to Competitive Success. *Long Range Planning*, 40(2), 154–177. https://doi.org/10.1016/j.lrp.2007.03.008

[18] Lee, S. S., & Osteryoung, J. S. (2004). A Comparison of Critical Success Factors for Effective Operations of University Business Incubators in the United States and Korea. *Journal of Small Business Management*, 42(4), 418–426. https://doi.org/DOI: 10.1111/j.1540-627X.2004.00120.x

[19] Lewis, D. A. (2011). *Incubating Success*. U.S. Departement of Commerce Economic Development Administration.

[20] Lumpkin, J. R., & Ireland, R. D. (1988). Screening Practices of New Business Incubators : The Evaluation of Critical Success Factors. *American Journal of Small Business*, 12(4), 59–81. https://doi.org/doi:10.1177/104225878801200404

[21] McAdam, M., & Marlow, S. (2007). Building Futures or Stealing Secrets? *International Small Business Journal*, 25, 361–382. https://doi.org/10.1177/0266242607078563

[22] McAdam, M., & McAdam, R. (2008). High tech start-ups in University Science Park incubators: The relationship between the start-up's lifecycle progression and use of the incubator's resources. *Technovation*, 28(5), 277–290. https://doi.org/10.1016/j.technovation.2007.07.012

[23] Natonis, S. A. (2019). Pengaruh Aspek Keperilakukan CEO terhadap Kinerja Perusahaan : Sebuah Studi Literatur. *Owner : Riset &*

Jurnal Akuntansi, 3(2), 250–259. https://doi.org/https://doi.org/10.33395/owner.v3i2.165

[24] Njau, J. M., Karimi, L., Mwenda, M., & Wachira, A. W. (2019). Effect of Infrastructural Facilities Support Provided By Business Incubators on Technology Effect of Infrastructural Facilities Support Provided By Business Incubators on Technology. *International Journal of Entrepreneurship and Project Management*, 4, 17–32.

[25] OCED. (1997). *OCED. Technology Incubators: Nuturing Small Firms*, (97), 63–75.

[26] Peters, L., Rice, M., & Sundararajan, M. (2004). The Role of Incubators in the Entrepreneurial Process. *Journal of Technology Transfer*, 29, 83–91.

[27] Phan, P. H., Siegel, D. S., & Wright, M. (2005). Science parks and incubators: Observations, synthesis and future research. *Journal of Business Venturing*, 20(2), 165–182. https://doi.org/10.1016/j.jbusvent.2003.12.001

[28] Ranjbar-Sahraei, B., & Negenborn, R. R. (2017). *Research Positioning & Trend Identification*. TU Delft. AIDA Project. Retrieved from http://aida.tudelft.nl/wp-content/uploads/2017/05/aida_booklet_V1.1.pdf

[29] Royani, Y., & Idhani, D. (2018). Analisis Bibliometrik Jurnal Marine Research in Indonesia. *Media Pustakawan*, 25(4), 63–68.

[30] Royani, Y., Tupan, T., & Kusumaningrum, D. (2019). Visualisasi Bibliometrik Penelitian Bidang Ilmu Kegempaan di Indonesia Berbasis Data Scopus Tahun 1988-2018. Khizanah Al-Hikmah : *Jurnal Ilmu Perpustakaan, Informasi, Dan Kearsipan*, 7(2), 174. https://doi.org/10.24252/kah.v7i2a8

[31] Saleh, A. R., & Sumarni, E. (2016). Studi Bibliometrik pada Jurnal Standarisasi Pasca Terakreditasi (2011 – 2015). *Visi Pustaka*, 18(Desember), 231–240.

[32] Sawitri, D. (2019). Revolusi Industri 4.0 : Big Data Menjawab Tantangan Revolusi Industri 4.0. *Jurnal Ilmiah MAKSITEK*, 4(3), 1–9.

[33] Scarborough, N. M., & Cornwall, J. R. (2016). *Essentials of entrepreneurship and small Business Mnagement : Eight Edition*. Pearson Education Limited.

[34] Schwartz, M., & Hornych, C. (2010). Cooperation patterns of incubator firms and the impact of incubator specialization: Empirical evidence from Germany. *Technovation*, 30(9–10), 485–495. https://doi.org/10.1016/j.technovation.2010.05.001

[35] Smilor, R. W. (1987). Managing the incubator system: Critical success factors to accelerate new company development. *IEEE Transactions on Engineering Management*, EM-34(3), 146–155. https://doi.org/10.1109/tem.1987.6498875

[36] Theodorakopoulos, N., K. Kakabadse, N., & McGowan, C. (2014). What matters in business incubation? A literature review and a suggestion for situated theorising. *Journal of Small Business and Enterprise Development*, 21(4), 602–622. https://doi.org/10.1108/JSBED-09-2014-0152

[37] Tsaplin, E., & Pozdeeva, Y. (2017). International Strategies Of Business Incubation: The Usa, Germany And Russia. *International Journal of Innovation*, 5(1), 32–45. https://doi.org/10.5585/iji.v5i1.130

[38] Tupan, Rahayu, R. N., Rachmawati, R., & Rahayu, E. S. R. (2018). Analysis of bibliometric Development Research Division Science Instrumentation. *Journal of Documentation and Information,* 39 (2), 135–149.

[39] Winarko, B., & Sormin, R. (2010). The study bibliometric on Rice commodity. *Agricultural Library Journal*, 19 (2), 66–71.