



Entrepreneurship education enhances the character of higher student; bibliometric study

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ABSTRACT

A Bibliometric method could facilitate a comprehensive and subjective evaluation of current education of entrepreneurship, based on several researches. Entrepreneurship rapidly became the most popular theme after Pandemic COVID-19. So many aspects to be considered when formulating entrepreneurship education. From this paper finding, by leveraging bibliometric of Scopus metadata it reveals and recommended to elert in tecnopreneurship and biotechnology. It will encourage higher students to get their whole understanding and impacted to increase intention to be an entrepreneur. The characteristics of millennial entrepreneurs are entrepreneurial intention, creative industry, entrepreneur education, self-efficacy, start-up, innovation, sosial entrepreneurship and digital entrepreneurship. Keep consistent due entrepreneurship education. It will induce entrepreneurial spirit.

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1. INTRODUCTION

Post Pandemic COVID-19, unemployment is a serious problem (Kesuma et al., 2023) and and it has been proven that Micro, Small, and Medium Enterprises (MSMEs) are the saviors of people's welfare. And Indonesia demographic bonus that will be predicted occure in 2025-2035, would rapidly increase the amount of productive classified people more than non-productive one (Kustanto, 2020). In doing so entrepreneurship subject become urge matter fo enhance independence character of higher student (Buddhi Satyarini et al., 2023). Entrepreneurship character can be induced by Science, Technology, Enineering and Math (STEM) learning (Amri et al., 2021), (MacFarlane, 2021). In doing so, Curriculum take a vital role in education process to form and sharpen student knowledge and skill implementing, in line with science and technology puposes(Hubers et al., 2022). In Indonesia there is Merdeka Curriculum (Independence Curriculum), which one of the main aim is to accomodate multiple perspective of knowledge (Nanggala & Suryadi, 2022), enjoy learning, student passion, 21st century character (Maipita et al., 2021).

In fact, how ever, Curriculum Merdeka implementation face a lot of obstacles, increasing the lecturer worries in term of result. Lecturer and theacher still as information source rather than learning facilitator (Zakiyyah et al., 2021). Another aspect, campus facilities do not meet the requirement for the project in curriculum Merdeka (Yudhawasthi & Christiani, 2022). More over, Seems a burden increase a long with rapid technology development, It require high capabilities and abilities of higher student (Fernández-Batanero et al., 2021). To cope that matters, lecturer should leverage multidisiplinary subject which covers the multiple perspective of knowledge. So do Entrepreneurship, It requires various disiplines such as marketing, accounting, human resource

managemen etc. Lecturer could modify by incorporating experiment for build business, product or services (Aqil et al., 2020).

We have inspired to give guidance for start-up entrepreneur what a factor to be noticed is, and for a lecturer what point of view to should be thought. Leveraging bibliometric research on scopus's high indexed papers, It could be a solution regards it. Similar ways has be done on matters, turnover of human resourches (Lumban Tobing et al., 2024), industry competition (Amir & Agung, 2023)online transportation (Imelda et al., 2024)Online learning (Amir & Widyastuti, 2023). Comparing with previous research which elaborate trend and pattern of papaer interm of entrepreneurship and resilience junction on 104 world papers, we focus in Indonesia entrepreneurship on 662 papers. It will more specific, applicable for Indonesian entrepreneurs or higher students

2. BACK GROUND OF STUDY

Entrepreneurship learning in Indonesian college and university does not yet fixed and clearly defined model (Maydiantoro et al., 2021). Graduates mostly do not have life skills, adaptation in social live (Wiratno, 2012). on the other hand, researcher conclude there are 23 entrepreneurship character such as commitment, responsibility, iniciative etc (Kesuma et al., 2023). Or 6 primary competences e.i entrepreneurial knowledge, career adaptability, occupational self-efficacy, creative thinking, networking skill, teamwork skill (van Dam et al., 2010). Rahmawati et al., (2021) conclude that skill, capital, market orientation, colleague, relationship. The way to strengthen entrepreneurship is face the obstacles and fear (Grant, 2014). So many factors to be ellert for higher student in entrepreneurship field. The study in entrepreneurship field become broad, complex, fragmented, it difficult to oversee increasingly(Tiberius & Weyland, 2023). This paper wants to reveal the whole picture, summarize the main character of the litterature. In order to understand trend and predict future outwantsss, by leverage bibliometric methode (Zupic & Čater, 2015)

Bibliometric methods provide a quantitative study which could summarize the main characters of the literature (Sharma et al., 2022). It could summarize a huge number of published paper, easily and reabily. It will explore the relationship each metadata such as citations, author productivity, and keyword trends. It will show research gaps in this domain through network mapping visualization (Donthu et al., 2021). The main reason of choosing bibliometric methods for analysis is it's capability to examine large volumes of data easily in the over a given time. Bibliometric also give theoretical basis for specific literature review studies (Susanti & Reza, 2022). This paper vocus on article in english journal scopus indexed, with specific keyword and boolean "entrepreneur" AND "Indonesia" and then processed with Biblioshiny R4.3.

Different with another Bibliometric research due to entrepreneur such as (Syed M. Afraz Hassan Gillani et al., 2022), (Chhabra et al., 2023) proceed meta data from google scholar. Conceptual analysis has been done by Aparicio et al., (2019) from 325 papers during 1987-2017. Another result shown entrepreneurship ecosystem from 110 articles in 2011-2022 (Correia et al., 2024). Meanwhile (Tiberius & Weyland, 2023) studied from Web of Science papers from 1991-2021 use keyword "entrep* educat*". Another research examines the correlation triplex helix model on entrepreneurship education by leveraging bibliometrix analysis on 227 papers subjected to peer review between 1970 and 2022 wordwidely (Zakaria et al., 2023)

3. RESEARCH METHODS

Bibliometric methode is utilize bibliometric meta data of paper, it coull be a abstract of articles, authors name, affiliation, citasion, journal name, title paper and another source (Merigó & Yang, 2017), This Article presents a bibliometric overview of published research in several decade regarding entrepreneurship in Indonesia. These quantitative approaches is a highlight trends in article and appropriate meta data in order to resume the importants aspect of entrepreneur in Indonesia. Hopefully it can be notice the higher student as guidance for study and practice entrepreneurship.

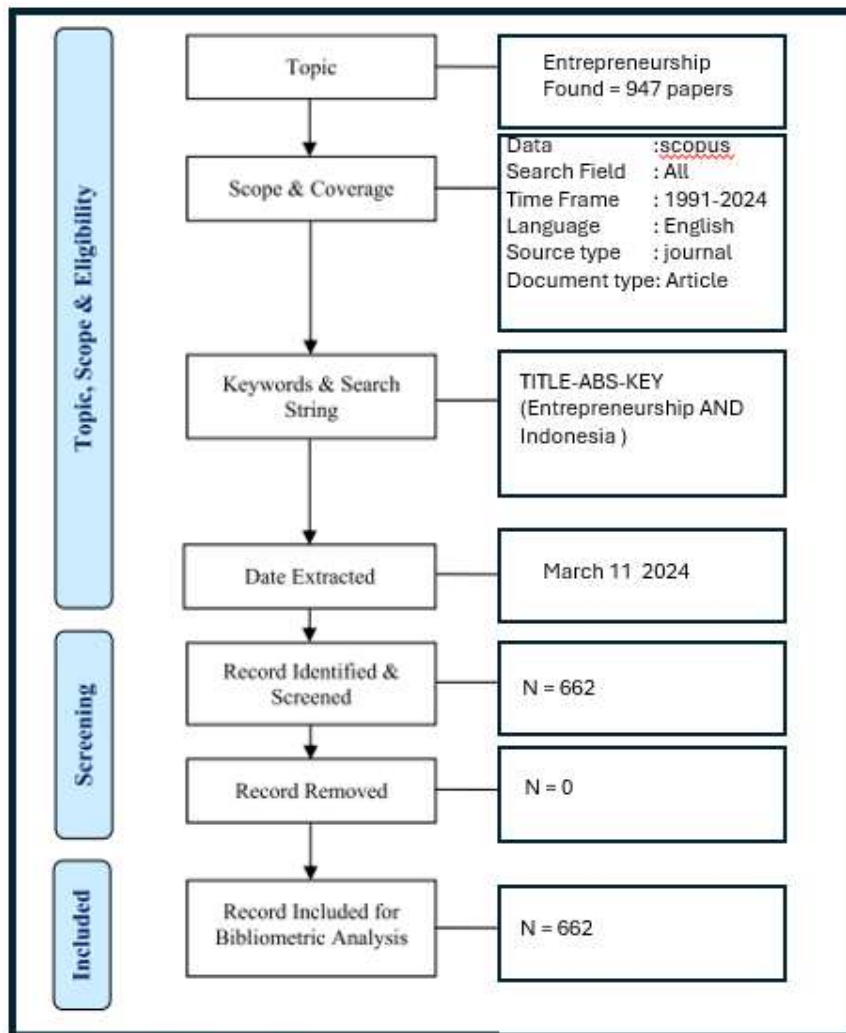


Figure 1. Flow diagram of the search strategy.

Figure 1. : Flow Diagram of Search Strategy

Metadata from Scopus provides bibliometric indicators such as citation counts, h-index, and co-citation networks, which enable researchers to evaluate the impact and influence of scholarly publications and authors. It also allows for easy tracking and monitoring of research trends and collaboration patterns across different countries, institutions, and disciplines (Martín-Martín et al., 2018). As shown in Table 1 and Figure 1.

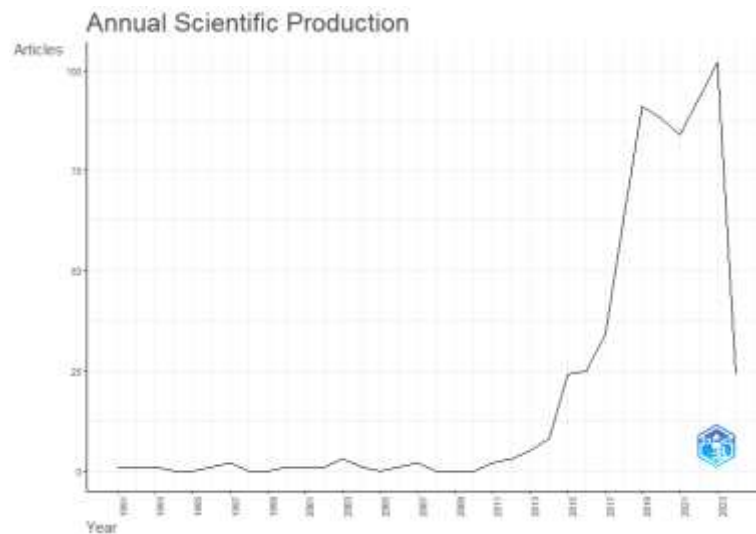


Figure 2.: Annual Scientific Production

The next step is Process to filter articles in order to refine source of metadata, simplify to get an article, understanding and using in research field. After screening all articles, we can see comprehensively. We also analysis annual scientific production of publication, to get whole picture of articles publication on journal indexed Scopus. It can be seen that starting in 2019 there was a very huge or exponential growth. Of the 662 articles of journals, downloaded metadata in csv format, then process quantitatively by the biblioshiny R4.3.1 application. Table 1 shows the main information of all metadata.

Tabel 1. Main Data information

No	Description	Result
1	Timespan	1991:2024
2	Source (journal only)	306
3	Documents	662
4	Annual Growth Rate %	10.11
5	Document Average age	4.47
6	Average Citation per doc	7.27
7	References	29.864
8	Keyword plus (ID)	592
9	Author's Keywords (DE)	1.885
10	Authors	1.755
11	Authors of Single-authored docs	89
12	Single-authored docs	94
13	Co-Authors doc	3.27
14	International co-authorship %	16.01
15	Articles	662

On doing so, researcher analyses utilize biblioshiny reports, that we can use for research purposes or make plans or evaluations related to entrepreneur and entrepreneurship education. Comparison and deduction used to discuss the results of biblioshiny proceed. Bibliographic completeness is one of biblioshiny reports as a base consideration regarding data validity and reliability. Metadata with Critical status should be excluded from criteria. Table 2 shown status and percentages for each bibliographic data.

Table 2. Completeness of Bibliographic metadata

Matadata	Description	Missing Counts	Missing %	Satus
AB	Abstrac	0	0	Excelent
DT	Documen type	0	0	Excelent
SO	Journal	0	0	Excelent
LA	Languge	0	0	Excelent
PY	Publication year	0	0	Excelent

TI	Title	0	0	Excelent
TC	Total Citation	0	0	Excelent
AU	Author	1	0,15	Good
C1	Affiliation	4	0,60	Good
CR	Cite Reference	5	0,76	Good
DE	Keyword	21	3,17	Good
DI	DOI	178	26,89	Poor
RP	Corresponding Author	235	35,50	Poor
ID	Keywords Plus	592	89,43	Critical

There is a huge growth in publication regarding Indonesia's entrepreneurship, seem like exponential graphics, see figure 2. Predictably, this relates to Covid-19 pandemic, one of the most concerning global economic issues since end of 2019, Entrepreneurship has been indicated by rapid growth of MSMEs. Then, whole metadata input to Biblioshiny R4.3.1 application, processes step by step, the general result of metadata can be seen in table 1 and table 2. Published paper during 1991 – 2024, there are 626 papers from the journal source, Document type is articles only, with English language and open access (free access) for readers. Metadata statues are Excellent, Good and Poor status. It could be used as analyze base. Only Keywords Plus that not recommended to be used in analyze.

4. RESULTS AND DISCUSSIONS

One of the most important things about data processing is information about variables that are important and relevant to be discussed, by analyzing the Thematic Map as seen in figure 3, with keyword filtering. The results of the data are positioned in quadrants, where each quadrant describes its relevance.

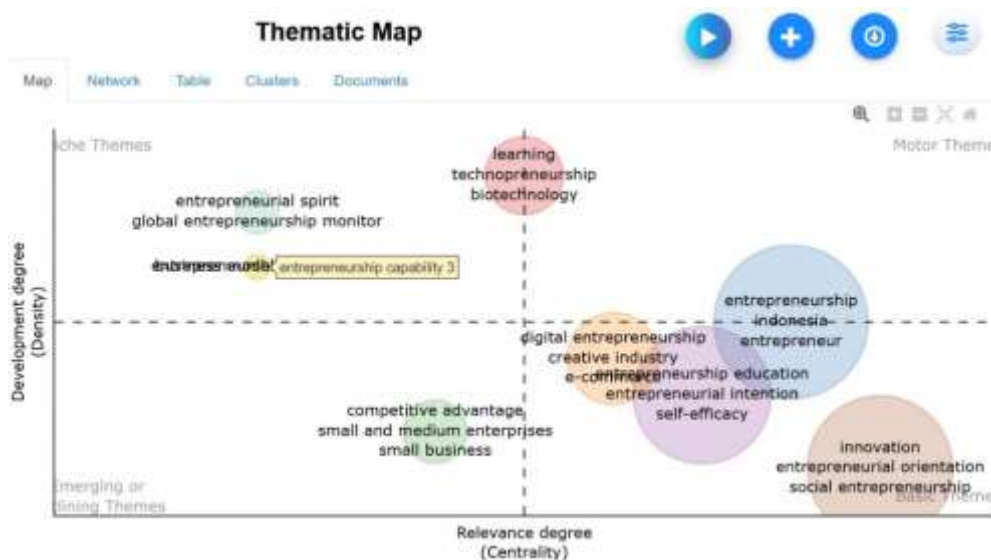


Figure 3. Thematic Map

In the Motor Theme quadrant (figure 3), There are the keywords used by recent researcher that is growing very rapidly and becoming the center of discussion. In this quadrant, there are learning, tecnopreneurship and biotechnology. Indeed, in several institution has implement this learning innovation through biopreneurship to encourage students interest (Aqil et al., 2020). This study recomend learning and technopreneurship as well. As a basic theme is entrepreneurial intention, creative industry,entrepreneureul education, self-efficacy, innovation sosial entrepreneurship and digital entrepreneurship. As shown in Basic Theme kuadran, that variable is highly recommended for further investigation. We can learn from Boateng et al., (2022), for the digital innovation, business, and society, elaborate it then to match with context.



Figure 4. Co-occurrence Network

In the Niche Theme quadrant (figure 3), the topic entrepreneurship capability, entrepreneurial spirit, global entrepreneurship monitor. The variables / keywords in this quadrant are keywords that became the basis of previous research. We could combine this aspect by implement namely Discrepancy Evaluation Model (DEM) (Jumini et al., 2021), the Information Technology-based Project Assignment Programs. Finally, in Declining/emerging theme, there are competitive advantage, small medium enterprise, small business, This topic in which a few researchers were been taken.

Figure 4, describes a co-occurrence networking among paper, focus on topic entrepreneurship and Indonesia. Sosial entrepreneurship and social enterprise is one of the topics recommended to be elaborate regarding entrepreneurship, because it is a rarely discussed topics. There are many things we can elaborate by leveraging co-occurrence network and become widely used in bibliometric research in the last decades (Zhou et al., 2022)

item	freq	year_q1	year_med	year_q3
community development	6	2014	2015	2017
marketing performance	9	2018	2018	2020
developing countries	6	2014	2018	2018
organizational learning	6	2018	2018	2019
indonesia	77	2017	2019	2022
entrepreneur	11	2016	2019	2020
social enterprise	10	2018	2019	2021
entrepreneurship	142	2019	2020	2021
innovation	29	2019	2020	2022
performance	15	2019	2020	2022
entrepreneurship education	41	2019	2021	2022
entrepreneurial orientation	26	2018	2021	2022
social capital	13	2020	2021	2022
entrepreneurial intention	36	2020	2022	2022
social entrepreneurship	23	2020	2022	2022
self-efficacy	16	2021	2022	2023
start-up	5	2022	2023	2023

Figure 5. Trend Topic

In the Trend Topic quadrant (figure 5) describe how the article topic trends from the document set by measuring the keywords that are often used and appear together in the articles

studied. Where it can be seen that keyword entrepreneurship has a high frequency and self efficacy, start-up are newest topics.

5. CONCLUSION

This paper presents a bibliometric analysis on entrepreneurship education enhance higher student character from 1991-2024. When higher student would like to practice business, or when lecturer would like to teach entrepreneurship subject, it is recommended to closely make a mapping the topics. It will provide an effective studying process and encourage the higher student to has real business, implementing this education. By describing the most importance topic, base on bibliometric analysis it can transform the higher intention regarding entrepreneurship. The cooccurrence mapping described on figure 4 contribute to shows the whole papers, researcher can leverage it into in-depth and effective study. Since this is considered a factor that determines the propensity to become an entrepreneur, entrepreneurship education in universities should be understood as instruction to develop entrepreneurial character. Finally, the trend topics in 2023 are self-efficacy and starts-up. These topics should be explore more. Base on figure 5, since 2020 Entrepreneur should involve social capital as a implication of digitalization, and social entrepreneurship as well,

6. LIMITATION AND FUTURE WORK

This paper does not specify business types of entrepreneurs, in fact it needs difference character between services business and production business. Paper metadata processed by Biblioshiny only, better if Vosviewer also used in term of comparison result. Google scholar meta data from Publish or perish also can be included in the next future research. Recommended to make a review and research in depth in a field of business.

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