

# Startup Performance: Mapping Pillars of Global Entrepreneurship Index and The Development of Studies

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**Abstract**—The aims of this study were conduct systematic literature review about start-up performance and its development in recent years studies to get the brighter perspective for the next research about entrepreneurship, especially for high tech start-up performance. This study reviewed articles from indexed journals related to Start-ups published in 2018 until early 2021, which focus on start-up ecosystems, start-up growth, sustainability and other topics which can related with the 14 pillars of the Global Entrepreneurship Index (GEI). This study discussed the development of terms and previous literature studies related to Start-up Performance with mapping of 65 studies from the last 4 years. The result found that most of the research conducted using quantitative methods, the majority are in the cluster of entrepreneurial attitudes compared to entrepreneurial abilities and entrepreneurial aspirations. In this study, also proposed the development of study that is interesting to examined further related to the existence of start-ups and improved performance.

**Keywords**—Start-up; Start-up Performance; Global Entrepreneurship Index; Entrepreneurship

## I. INTRODUCTION

THE Global Ecosystem Index [1] define entrepreneurship as “the dynamic, institutionally embedded interaction between entrepreneurial attitudes, entrepreneurial

abilities, and entrepreneurial aspirations by individuals, which drives the allocation of resources through the creation and operation of new ventures.” [2] while Global Entrepreneurship Index [3] mention that Entrepreneurs can be high tech or low tech or even no tech. Entrepreneurship is driven not by necessity entrepreneurship but by opportunity. Opportunity entrepreneurship is positively correlated with economic growth. Entrepreneurs envision scalable, high-growth businesses. They also possess the ability to make those visions a reality Entrepreneurs find ways to get things done, facing obstacles, innovate and bring products to market, their objectives extend to broader social and environmental benefits [4].

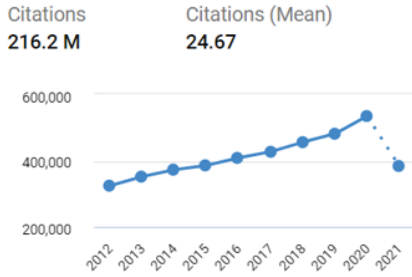
Entrepreneurship on Start-ups focus on their effort to strike a balance between exploration and exploitation to improve business performance even though the growth of ambidexterity is a major challenge [5]. Damodaran [6] describes start-ups as a high potential for growth in the company's value in the future, in their early stage of development, lack of experience, strong dependence on the sources of capital, and relatively low survival rates [6]. In contrast to Damodaran who describe Start-up as a young organization that is unstable but demanded to develop quickly, in the definition that develops recently, many allude to the linkage of startups with breakthrough innovation, drive innovation spirit, create wealth and growth rapidly in the world economy in recent years. [5,7,8]

Reviewing the definition put forward by previous researchers, a startup is required to continue to move dynamically by using their limited resources and abilities to improve its

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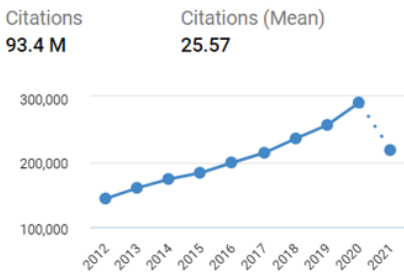
performance in business growth and expand the impact of innovation on the digital market [9-11]. Thus, studies related to the performance and growth of start-ups became a dominant highlight in entrepreneurship-related research in addition to studies developed to examine the performance businesses.



Publications about Start-up (2012-2020)

Figure 1: Start-up and Start-up publications and citations (2012-2020)

Source: <https://app.dimensions.ai/discover/publication>



Publications about Start-up Performance (2012-2020)

Figure 2: Start-up and Start-up Performance publications and citations (2012-2020)

Source: <https://app.dimensions.ai/discover/publication>

In Figure 1 and 2 can be seen a comparison in number and average of citations for studies related to Start-up and Start-up Performance. It appears in the graph that studies conducted on start-up performance continue to rise from year to year. What is interesting is that the citation rate for start-up related studies is 216.2M higher than the start-up performance related study which is only 93.4M, but the average citation of start-up performance related studies is higher than the start-up related study.

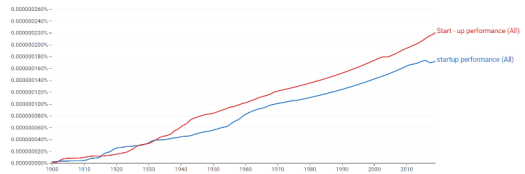


Figure 2: Comparison the usage of words “Start-up Performance” with Google Ngrams(2019)

Fig. 2. Showing the usage of ‘Start-up Performance’ compared with the word ‘Start-up Performance’ based on google books records. The y-axis shows the words’relative usage as compared to all other words. Figure produced using Google (2019) Ngram:<https://books.google.com/ngrams>

Comparison of studies and writing related to start-up performance is also done by observing the graph presented through Google Ngram. As seen in Figure 2 above, a comparison of writing the terms start-up and startup shows a wide gap difference. The term Startup Performance was aligned even in a higher position than the writing of the term Start-up. When compared to Figure 3 about shifting of industry, since the beginning of the Period Industry 3.0 around the 1930s the term Start-up has become more often used in the development of studies.

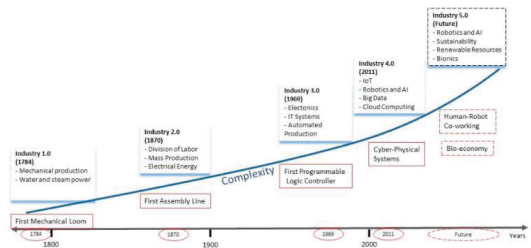


Figure 3: Years by years the shifting of industry Source: [12]

The author believes research related to start-ups and their development will continue to dominate various repuTable publication containers along with technological advances and the entry of the digital era to meet industry 5.0.

Global Entrepreneurship Index (GEI) mention the 14 pillars of the entrepreneurial ecosystem for factor driven economies on three continents and compares them to one another.

While their overall entrepreneurial performance is similar, the pillar configuration seems to be different. There are some noTable similarities; The Risk Acceptance, the Cultural Support, the Technology Absorption, and the Process Innovation scores are very similar in all three country groups. This study highlights articles related to Start-up Performance which is High tech entrepreneurship and its relationship with the 14 pillars developed by GEI to get a more complete perspective and can be compared between field studies developed on three continents and research that has been done. [2]

The three main pillars developed in the GEI report feature components that can drive increased entrepreneurial performance. First, entrepreneurial attitudes are societies' attitudes toward entrepreneurship, it defines as population's general feelings about recognizing opportunities, personality of entrepreneurs, high status perspective about entrepreneurs, accepting the risks associated with business start-ups, and having the skills to launch a business successfully. Entrepreneurial attitudes are important because it express the general feeling of the population toward entrepreneurs and entrepreneurship to recognize valuable business opportunities, and the required skills to exploit these opportunities. If national attitudes toward entrepreneurship are positive, it will generate cultural support, financial support, and networking benefits for those start-up founders and owners.

The second sub-indexes pillars are Entrepreneurial abilities refer to the entrepreneurs' characteristics and their abilities to manage businesses. Businesses created may vary by industry sector, the legal form of organization, and demographics—age, education, etc. Global Entrepreneurship Index define entrepreneurial abilities as start-ups in the medium- or high-technology sectors that are initiated by educated entrepreneurs and launched because of a person being motivated by an opportunity in an environment that is not overly competitive. The level of competition measured the uniqueness of the product or service. Moreover, it is generally maintained that opportunity motivation is a sign of better

planning, a more sophisticated strategy, and higher growth expectations than “necessity” motivation in start-ups.

The last sub index is Entrepreneurial aspiration reflects the quality aspects of startups and new businesses. This sub index highlights about entrepreneur motivation to run the early-stage business, taking effort to introduce new products and/or services, develop new production processes, penetrate foreign markets, rapidly increase their company's staff, and finance their business with formal and/or informal venture capital. Product and process innovation, internationalization, and high growth are considered the key characteristics of entrepreneurship, also added a finance variable to capture the informal and formal venture capital potential that is vital for innovative start-ups and high-growth firms.

## II. METHOD

The GEI is composed of three building blocks or sub-indices, entrepreneurial attitudes, entrepreneurial abilities, and entrepreneurial aspirations. This study conducted systematic literature mapping of 65 research articles [10-11, 13-76] related to start-up performance published throughout 2018 to mid-2021.

TITLE-ABS-KEY (startup) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018)) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "SOCI")) AND (LIMIT-TO (EXACTKEYWORD, "Startups") OR LIMIT-TO (EXACTKEYWORD, "Start-up") OR LIMIT-TO (EXACTKEYWORD, "Entrepreneurship") OR LIMIT-TO (EXACTKEYWORD, "Innovation") OR LIMIT-TO (EXACTKEYWORD, "Investments") OR LIMIT-TO (EXACTKEYWORD, "Start-up Process") OR LIMIT-TO (EXACTKEYWORD, "Efficiency") OR LIMIT-TO (EXACTKEYWORD, "Entrepreneur") OR LIMIT-TO (EXACTKEYWORD, "Marketing") OR LIMIT-TO (EXACTKEYWORD, "Performance") OR LIMIT-

TO (EXACTKEYWORD, "Performance Assessment") OR LIMIT-TO (EXACTKEYWORD, "Sustainable Development") OR LIMIT-TO (EXACTKEYWORD, "Technology Transfer") OR LIMIT-TO (EXACTKEYWORD, "Organization And Management") OR LIMIT-TO (EXACTKEYWORD, "Productivity") OR LIMIT-TO (EXACTKEYWORD, "Startup Time") OR LIMIT-TO (EXACTKEYWORD, "Start-up Performance"))

Then after obtaining 779 data on start-up articles published in 2018 to mid-2021, the author sorted content related to start-up performance and took 65 articles to be studied further and associated with the existence of 14 pillars of the concept of entrepreneurship contained in the Global Entrepreneurship Index to obtain a more complete mapping of study topics developed in recent years. As a direction and contribution to future studies, the author also took 180 articles related to entrepreneurship, digital entrepreneurship and its development to studies related to innovation and strategic management and then processed using vos viewer tools as discussion material in the discussion section. These articles are selected from repuTable journals indexed by scopus which can add more knowledge about the spread of the latest research topics related to start-ups performance that is easy to see correlation with other topics.



Figure 4: Research Method

The problem highlighted in this study is related to the number of studies on business performance but special studies on start-up performance are still few and rarely done. Topics related to start-up performance are also not too broad and spread across various scientific groups. This study seeks to classify the main topics based on the 14 pillars of the Global Entrepreneurship Index so that it can be seen

which groups of topics are still relatively rarely studied by previous researchers.

### III. RESULT

Research using quantitative methods which developed in 1800-1850 as a census tool on a large scale of political revolutions and collective movements are still widely chosen by researchers nowadays because it can capture the general condition of the research object and can be done in a relatively short time compared to qualitative studies, systematic literature studies and mix methods. In this study, 65 research articles that have been published in repuTable journals are also dominated by research with quantitative methods as seen in Table 1.

TABLE 1. TYPE OF RESEARCH

Year	Type of Research								
	Systematic Literature Review		Qualitative		Quantitative		Mixed Method		Total
2021	4	16%	3	12%	16	64%	2	8%	
2020	5	24%	3	14%	11	52%	2	10%	21
2019	1	6%	4	25%	9	56%	2	13%	16
2018	0	0%	2	67%	1	33%	0	0%	3
Average	10	15%	12	18%	37	57%	6	9%	65

#### Start-up performance literature review and 14 pillars of Global Entrepreneurship Index

From Table 2 we can observe that mapping result related topic with 14 pillars of GEI in 2021 is more evenly distributed. Dominance has not been fully seen because the 25 articles about start-up performance selected are articles published throughout early to mid-2021. In contrast to the mapping done for published articles in 2018-2020, there is a considerable percentage of dominance. But in general, regarding 3 sub-indexes pillars can be observed in Table 3 that the distribution of sub-indexes from the four years is higher in Entrepreneurial Attitudes than Entrepreneurial Abilities and Entrepreneurial Aspirations.

TABLE 2. RELATED TOPIC 14 PILLARS OF GEI

Year	Related Topic 14 Pillar of Global Entrepreneurship Index													
	Entrepreneurial Attitudes				Entrepreneurial Abilities				Entrepreneurial Aspirations					
	Opportunity Perception	Startup Skills	Risk Acceptance	Networking	Human Capital	Opportunity Startup	Technology Adoption	Human Capital	Competition	Innovation	Process Innovation	High Growth	Internationalization	Risk Capital
2021	8%	8%	4%	8%	9%	9%	6%	9%	6%	8%	8%	7%	1%	9%
2020	8%	11%	6%	11%	13%	5%	4%	12%	6%	4%	6%	6%	2%	6%
2019	6%	8%	3%	14%	14%	10%	3%	12%	6%	4%	4%	9%	3%	5%
2018	13%	13%	7%	13%	20%	7%	0%	13%	7%	0%	0%	7%	0%	0%

TABLE 3. THE SPREAD SUB INDEXES PILLARS OF GEI 2018-2021

Sub-Indexes pillars of GEI	2018	2019	2020	2021
Entrepreneurial Attitudes	67%	45%	50%	37%
Entrepreneurial Abilities	27%	31%	27%	30%
Entrepreneurial Aspirations	7%	24%	24%	33%
	100%	100%	100%	100%

#### IV. DISCUSSION

Based on the mapping that has been done, it appears that the distribution of articles related to the 14 pillars of GEI is quite evenly distributed. The Entrepreneurial Attitude cluster dominates the research background and objectives. This fact is relevant with GEI statement, Entrepreneurial Attitude is one of the most important factors to support the creation of an ecosystem, how the organization works and ability to face its business challenges. The existence of qualified entrepreneurial skills, supported by networking that lives in a good ecosystem and the ability to capture opportunities in addition to the ability to consider risk becomes the main capital that will foster excellent performance in start-ups.

The study, conducted in European countries (German, France, Italia, Poland etc) in the Entrepreneurial Attitude cluster, emphasized the importance of opportunity perception, start-up skills, and networking. While in the Entrepreneurial Abilities cluster is dominated by studies related to human capital, technology adoption and competition. In the Entrepreneurial Aspirations cluster is dominated by studies related to innovation process, high growth and risk capital but in Entrepreneurial Aspirations is not too strong to highlight each pillar in it when compared to cluster entrepreneurial attitude and abilities. In studies conducted in developing and developed countries in Asia (Japan, South Korea, Indonesia, Malaysia etc), it appears that the spread to 14 pillars is strongly

dominated by the Entrepreneurial Attitude cluster, especially at the cultural support point index, followed by networking, start-ups skills and opportunity perception. Studies on Risk Acceptance in this cluster are noted to be quite rare. In the Entrepreneurial Abilities cluster, there are predominantly studies conducted discussing Human Capital, Opportunity Start-up, and competition. Studies on Technology Absorption are still quite rare. Studies related to the Entrepreneurial Aspirations cluster in the article studied showed that articles written against the background of countries in Asia have not discussed too much about products and processes of innovation, internationalization and risk capital. But sub index pillar of high growth becomes the concentration in this cluster. The study conducted in middle eastern states (United Arab Emirates, Turkey, Israel etc.) is like countries in Asia that still focus on the Entrepreneurial Attitude and Abilities cluster related to Entrepreneurial Skills and Human Capital.

In Table 3 it can be learned that articles written in 2018 to 2020 are dominated by Entrepreneurial Attitudes and in the second rank is the Entrepreneurial Abilities cluster. Entrepreneurial Aspirations ranked last in terms of discussions about sub index points contained in the third cluster is still rarely done. In contrast to mapping data in 2021, Entrepreneurial Aspirations is ranked second only to Entrepreneurial Attitudes as an active topic of discussion put forward by researchers. In studies on Innovation, Start-up High Growth and Risk Capital are more highlighted than the second cluster of Entrepreneurial Abilities although the number of differences is not much different. This shows that the concentration of research in the field of Entrepreneurship in Start-ups shifts slightly by analyzing and studying more about the Entrepreneurship Aspirations cluster. In future research, it is possible that this Cluster of Entrepreneurship Aspirations will continue to grow to rival the other 2 clusters, Entrepreneurship Abilities and even Entrepreneurial Attitude.

Completing the discussion about studies in Start-up Performance, the authors provide



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## Appendix

	Sub-Indexes Pillars	Source
Entrepreneurial Attitudes	1. Opportunity Perception.	[13-16] [17-21] [10, 22-24] [25-27]
	2. Startup Skills	[10, 28-32] [17-19, 20-21, 23, 33-34] [10, 11, 25, 27, 35-39]
	3. Risk Acceptance	[11, 14, 19, 20, 23, 40-41] [10, 11, 27, 37, 39]
	4. Networking	[16, 18, 28, 30, 33, 42] [11, 17-19, 34, 43-45, ] [22-23, 35, 46-48] [25, 36, 38, 49] [50-54] [26-27, 55-56]
	5. Cultural Support	[13, 28-31, 57] [18, 34, 41-44] [11, 18-19, 22-23, 47, 58-59] [24, 35, 37-38, 46, 48] [48, 60] [25-26, 36, 49, 61-61] [27, 55, 56, 63] [64]
Entrepreneurial Abilities	6. Opportunity Startup	[15-17, 20, 22, 28, 33, 41, 44-45] [51, 53] [10-11, 26, 46, 55-56, 61-62, 65] [54, 66]
	7. Technology Absorption	[13, 15, 18-19, 21-22, 24, 31, 39, 65, 67] [53, 61]
	8. Human Capital	[20, 29-30, 32, 40, 42, 57, 68-69] [11, 19, 21, 44, 59 65, 70] [10-11, 24-25, 34-39, 50-51, 60, 71] [27, 54, 62-64]
	9. Competition	[17, 32, 41-42, 65, 72] [11, 23, 35, 58-59] [26, 49, 62]

Entrepreneurial Aspirations	10. Product Innovation	[13, 15, 31, 67-68, 72] [21, 43-45] [39, 46, 50, 55, 58, 73]
	11. Process Innovation	[28, 31-32, 42, 44, 67-68] [17-18, 34, 39, 46, 50-52, 58, 70, 73]
	12. High Growth	[14, 16, 29, 32, 74] [43-45, 59] [24, 35, 37-38, 48, 50-51, 58] [36, 54, 56, 62, 66]
	13. Internationalization	[18, 24, 49] [35]
	14. Risk Capital	[14, 20, 30, 40-41, 57] [17-18, 21, 44, 74-75] [22, 25, 34, 38, 46, 76] [26, 53, 62]

**Source:** processed by researchers (2021)