Research Article

Valuation Methodologies for Start-ups in Indonesia: A Bibliometric Analysis

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Abstract.
The start-up industry in Indonesia is receiving a lot of interest from businessmen, investors, and researchers. Reliable valuation techniques are essential for investors and business owners alike in Indonesia's dynamic startup ecosystem. This study maps the structure of startup valuation research in the Indonesian setting using bibliometric analysis. It also examines how research subjects have changed over time and evaluates the significance of key studies. This study carefully examines the usual traits of new businesses in Indonesia, concentrating on both financial and non-financial factors. To illustrate the entire strategy adopted, start-up valuations frequently mix quantitative techniques like discounted cash flow (DCF) with qualitative assessments. There are still several calculating components that are not standardized when doing assessments at start-up. Therefore, valuation is more art than science. This bibliometric analysis delivers unique insights into research by syncing and visualizing knowledge networks, helping entrepreneurs, investors, and policy makers to comprehend the existing environment and future direction of startup assessment approaches in Indonesia. It uses co-word analysis to examine this topic's knowledge structure. As a result, the research finds 163 journal articles related to start-up valuation. In addition, four clusters are found to describe the current state of start-up valuation: start-up, investment, venture capital and discounted cash flow.

Keywords: start-ups, Indonesia, valuation, bibliomeric analysis

1. Introduction

Start-ups are more than just business endeavors in Indonesia's rapidly developing entrepreneurial scene; they are creative engines that drive societal change and economic expansion. Smith and Johnson have observed that the Indonesian start-up ecosystem has experienced an unparalleled boom, characterized by an array of initiatives ranging from fintech to sustainable agriculture, all aiming to tackle distinct difficulties within this heterogeneous archipelago [1]. Accurately valuing these projects' potential is essential to their success; this is a process that combines financial expertise, market knowledge, and strategic foresight.

The process of estimating a start-up's economic value, or valuation, forms the basis for investment choices made by angel investors, venture capitalists, and entrepreneurs

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alike. According to Chen and Wang, accurate valuation guarantees that money is distributed effectively and reduces investment risks, promoting innovation and long-term growth in the start-up ecosystem [2].

Selecting the valuation method to be employed is crucial when determining startup valuation, particularly for early-stage firms. Early-stage companies must be evaluated in terms of their potential for startup growth, as they are typically founded on an idea or concept [3].

The cost approach, income approach, and market approach—the standard approaches for valuing businesses—generally don't apply to startups [4]. The fundamental problem limiting the use of conventional valuation methods is the lack of typical data required for proper operation. Since the business is new, there are no data on previous sales or cash flow, and there are frequently no market data due to a lack of similar companies or transactions. Additionally, since a company's assets are intangible, it is challenging to evaluate them objectively [5]. The effectiveness of the capital market is a crucial presumption for conventional valuation techniques [6]. In the situation of the public capital market, where there are legal requirements for a public business to provide all pertinent information to stakeholders, this hypothesis might come close to being accurate [7]. In the private capital market, when knowledge asymmetry is greater, the situation is different. As an alternative to traditional method, The Berkus method, Risk Factor Summation method, Scorecard method, Comparable Transactions method, Book Value method, Discounted Cash Flow method, First Chicago method, and Venture Capital method are some of the methods that are commonly used to evaluate startups when calculating valuations [8].

However, because of the many market behaviors and regulatory environments throughout its enormous archipelago, Indonesia—a nation known for its cultural diversity and economic dynamism, finds it particularly difficult to appropriately value start-ups. The entrepreneurial landscape in Indonesia is defined by a fusion of innovation and tradition, as explained by Hasan and Tan [9]. The valuation techniques used also reflect this dualism. Entrepreneurs and investors frequently add culturally sensitive measures to financial models like Discounted Cash Flow (DCF) and Relative Valuation, understanding the interaction between disruptive technologies and conventional values. According to Lee and Li, comprehending this complex confluence is crucial for developing valuation solutions that satisfy both local culture and needs from the global market [10].

Startup valuation is a complex process that is influenced by a wide range of financial, market, and sociocultural aspects that are particular to Indonesia. This study undertakes a Bibliometric Analysis to acquire a thorough grasp of the shifting approaches used in

valuing startups in this dynamic entrepreneurial landscape. This study assesses the corpus of information on startup valuation in Indonesia by examining a wide range of scholarly articles, conference proceedings, and research publications. This study tries to discover major themes and important studies using bibliometric techniques, such as co-citation networks, and keyword clustering. This paper offers a road map for negotiating the challenging terrain of valuing startups in this developing economy by outlining the intellectual framework of startup valuation research in Indonesia. This research not only enriches the academic discourse but also equips entrepreneurs, investors, and policymakers with valuable insights, fostering informed decision-making in Indonesia's dynamic startup ecosystem.

2. Literature Review

2.1. Start Up In Indonesia

Indonesia is a thriving center for innovation, entrepreneurship, and technical growth located in the heart of Southeast Asia. With a middle class that is expanding quickly and a population that is approaching 270 million, Indonesia has become an ideal place for startups to thrive. Indonesia's startup scene is distinguished by its vibrant energy, wide variety of businesses, and creative solutions to regional and worldwide problems. Creative Economy Agency (Bekraf) noted that start-ups can absorb 13 million workers and contribute 12% to Gross Domestic Product (GDP) [11].

Recently, there are four unicorn companies in Indonesia that have grown to be worth $1 billion without going public. Among these businesses are Go-jek, Traveloka, and marketplaces like Tokopedia and Bukalapak [12]. Furthermore, from a political and financial perspective, Indonesia's unicorns are important since they ensure the nation's more notable financial development and international attention in the increasingly digitalized global economy of today. According to an Economy sea 2019 report, Indonesia's advanced economy could treble in value from $27 billion in 2018 to $100 billion by 2025, with the four unicorns providing security to the e-commerce, ride-hailing, online travel, and online media industries [13].

2.2. Global Start-up Valuation Methodologies

A large deal of new businesses are starting up these days. The issue is that most of these entrepreneurs have fantastic ideas that might become successful businesses, but they lack funding or have extremely small budgets. The only places to turn for funding and

knowledgeable guidance are outside ones. Investors must always determine whether a new venture is worth investing in prior to financing. Since the majority of models and techniques rely on accounting data, which new enterprises typically lack, evaluating a new organization can be exceedingly challenging.

The literature on start-up valuation techniques from around the world highlights the variety of methods used to determine an innovative venture's value. Conventional techniques like Comparable Company Analysis (CCA) and Discounted Cash Flow (DCF) are fundamental [14]. But researchers like Kaplan and Stromberg have pointed out these approaches' shortcomings, particularly for startups in their early stages [15]. As a result of the inherent uncertainty in entrepreneurial endeavors, real options theory [16] and the use of Monte Carlo simulations [17] have emerged as nuanced viewpoints. Furthermore, the expanding paradigm of valuation has been influenced by behavioral economics [18] and the focus on intangible assets [19], which reflects the intricate nature of the intrinsic worth of start-ups.

2.3. Start-up Valuation in the Indonesian

In the specific context of Indonesia, the literature on start-up valuation is evolving in tandem with the country's booming entrepreneurial ecosystem. Research by Wibowo and Sukmana delves into the unique challenges faced by Indonesian start-ups, emphasizing the importance of understanding cultural factors and market idiosyncrasies [20]. They propose an integrated valuation model considering socio-cultural dimensions, aligning with the view that contextual factors significantly influence valuation outcomes [21]. Moreover, studies such as those conducted by Pratama et al. have explored the impact of government policies and regulatory environments on start-up valuation strategies, underscoring the need for startups to adapt their valuation models in response to changing governmental initiatives [22].

3. Methodology Research

This study used bibliometric analysis and a quantitative methodology. Bibliometrics is a tool for assuring accurate publication data, which is frequently utilized as transparent mathematical and statistical performance data [23]. The bibliometric method is a technique for conducting literature reviews that focuses on the format of articles cited in a source and employs statistical and quantitative analysis of published research [24].

Finding articles that are relevant to the themes is the first stage. To gather bibliographical records about start up valuation, the research pulls data from the Scopus database. The largest database of peer-reviewed literature citations and abstracts is Scopus. It is widely used for literature searches and is reliable, authoritative, and dependable [25]. The research performs a search query related to the topic to find relevant articles. The search query is TITLE-ABS- KEY "Valuation"OR "Business" AND "Appraisal" OR "Business"AND "Evaluation" AND " Start" AND "Up" OR "New" AND "Business" OR "New" AND "Venture" OR "Emerging" AND "Company" OR "Small" AND "Business" Or "Fledging" AND "Company".

There are 168 scholarly publications found using the search string in the Scopus database. The research then excludes journal articles that are not written in English and are not related to the subject area. This study employs two topic areas: Business, Management, and Accounting, as well as Economics, Econometrics, and Finance. Figure 1 depicts the data collecting and processing procedure.

The study employs bibliometric analysis. VOSviewer version software is used at this step to calculate metrics and give network visualization. The co-word analysis looks at where the research issue is right now. It investigates the association between keywords by examining the co-occurrence of pairs of terms. Co-word analysis involves multiple approaches [26]. It chooses high-frequency keywords and organizes them into clusters. Last step, The knowledge structure of topics represented by social network analysis is interpreted.

4. Results and Discussion

The study begins by going over publishing activity trends, which are then examined to show how start-up valuation research has changed over time. In 1988, the first study on start-up valuation was published. Since then, as the focus on economic expansion has grown, the valuing of innovative business research has gained momentum. Figure 2 illustrates how the number of papers examining new business value has been rising yearly, peaking in 2023 at 23.

VOSviewer software was used to give a graphical analysis of bibliometric data and display of research findings [27]. Scientific software called VOSviewer is used to gather data and create maps by integrating citations, bibliographies, and keyword repetitions. It also contains a clustering technique [28]. Five clusters were divided into three primary groupings using this clustering technique.
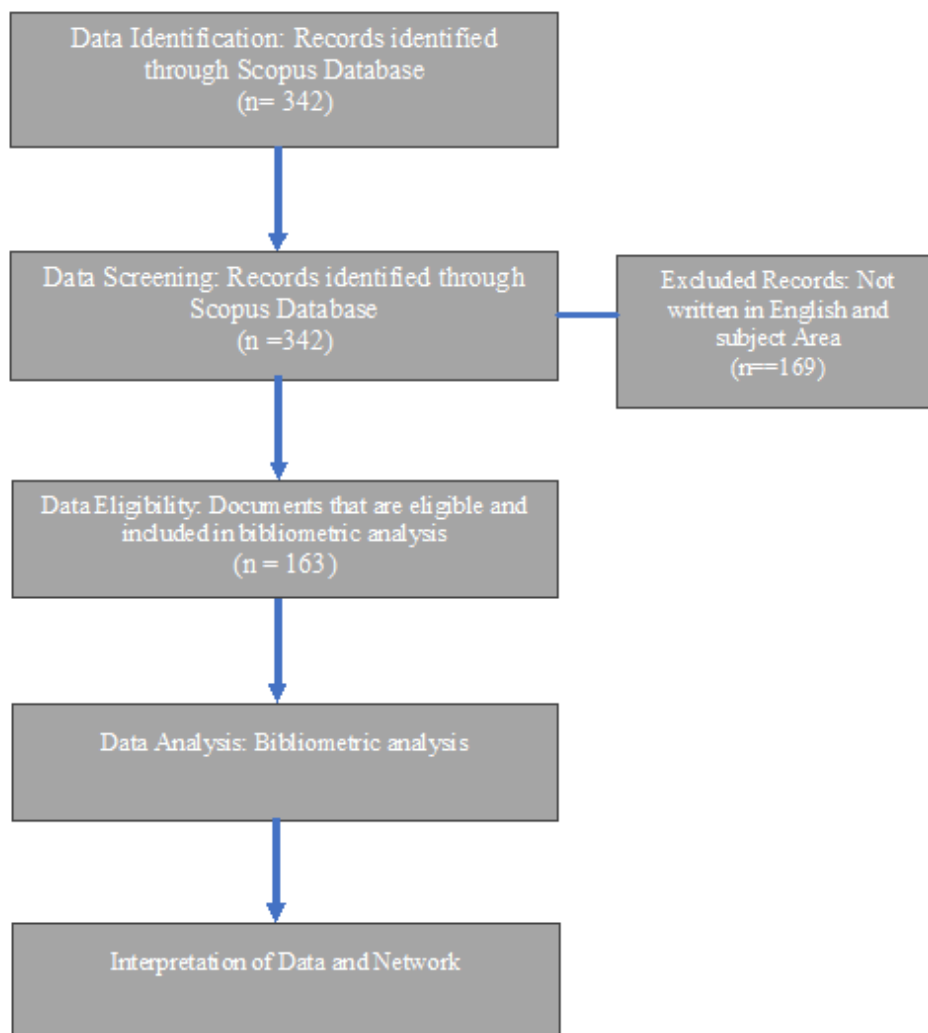
Figure 1: Research Methodology.

A network analysis of the keywords that featured in the scientific papers in the research sample is shown in Figure 3. This cloud map displays the link between the keywords and the quantity of times each word appears in the article. In the network analysis, every word is shown as a circle, with certain terms additionally having labels. Only certain terms have labels shown since VOS viewer tries to prevent label overlap. The distance between two terms represented the approximate relationship of the repetition of the term, while the size of the term reflected the number of publications in which the term was discovered. Co-occurrences were used to determine how connected terms were to one another. Stated otherwise, the stronger the link between two terms, the more publications including those phrases. Furthermore, each hue designates a collection of phrases that are quite closely associated with one another. The VOS viewer clustering approach was used to identify these groups. Curved lines in the graphic are also used to highlight the strongest links between terms.
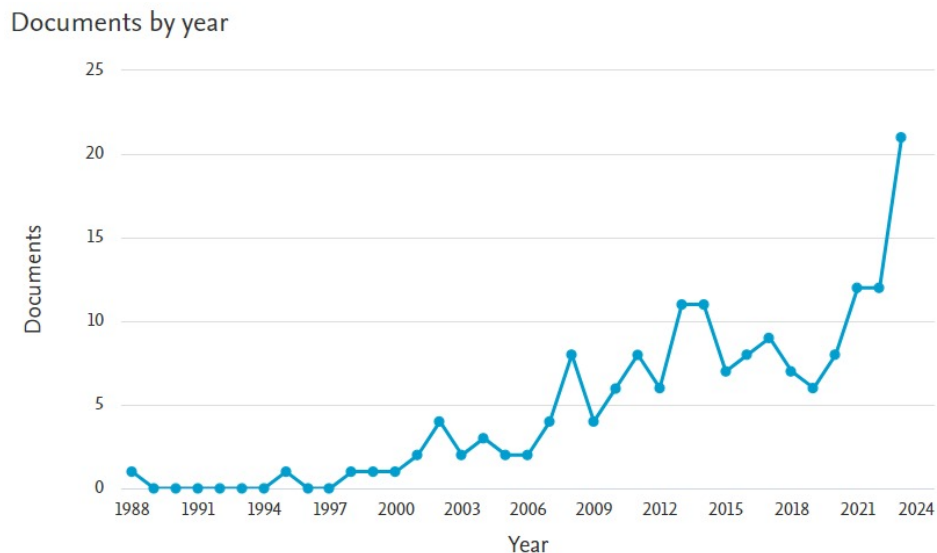
Documents by year

Figure 2: Trends for Start-up Valuation Research.
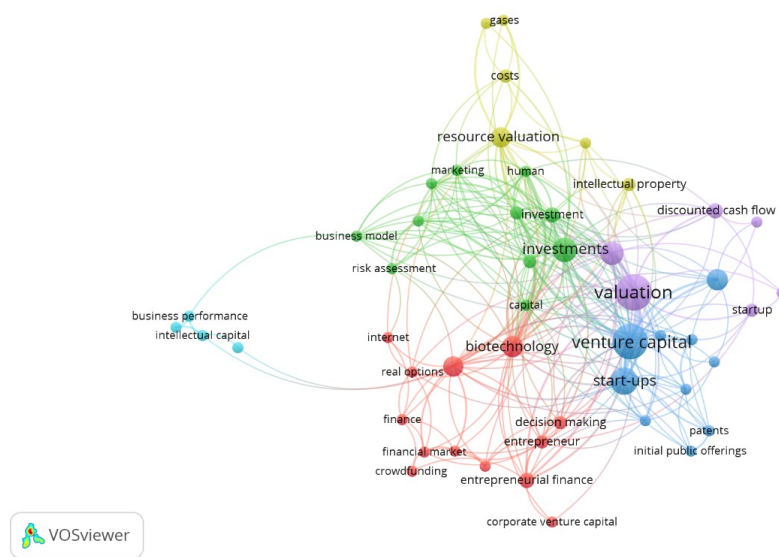

Figure 3: Network Visualization of Co-Word Analysis.

The findings can be divided into three parts. The blue area consists of topics related to venture capital and start-ups. On the other hand, the purple cluster area includes keywords related to valuation, discounted cash flow, and startups. Lastly, the green area focuses on investment.

Not surprisingly, A new venture's finance and investment decisions are predicated on its startup valuation. Then, from the network analysis results, it can be stated that early growth and expansion enterprises may be valued using discounted cash flows (DCF) and venture capital (VC) techniques. Previous studies propose using valuation methodologies based on the discounted cash flow (DCF) because cash flows are crucial

for the development of startups [29]. As per Pintando et al. [30], further writers such as Sanders and Koomägi [31] and Dittmann et al. [32] assert that DCF is the most often utilized valuation technique by investors. Additionally, DCF is the recommended approach when there is limited data to compare against. Because of this, DCF is the approach most used.

The DCF approach inspired the VCM [33]. It evaluates a company's value based on the net present value of future cash flows in the most likely scenario (success scenario), over a specific time horizon, and with an interest rate that reflects the high risk of investing [34]. In comparison to the DCF, the VCM considers the riskiness of the enterprise in its value. The VCM determines the value of a startup by analyzing future cash flows using firm comparable and a market multiple approach [35]. The VCM is a popular tool for determining the worth of a startup, particularly in the pre-revenue stage [36]. However, the VCM has limitations. The discount rate is one of the most essential [37]. Some authors stated that it is incorrect to incorporate the company's default risk into a high rate chosen arbitrarily [38]. Furthermore, including default risk into the discount rate requires assuming the first as constant over time, during the full firm life cycle, which is an unreasonable assumption [39]. Hidayat et al. also stated that the subjective character of the venture capital process makes it difficult to justify, making it unreliable for entrepreneurs [40].

Because bibliometric analysis of start-up value is rarely performed, this current study can fill the gap of the development of new venture valuation methodologies especially Indonesia. it's crucial to keep in mind that any firm assessment must start with correctly contextualizing business reality [41] and gathering sufficient information [42,43]. According to Black, a company's worth is determined by its present operations and its potential for growth [44]. For startup assessment, growth and non-financial opportunity information [45] is crucial [46]. According to Amit et al., management team abilities are a crucial component of prosperous starting businesses [47]. Indeed, several startup valuation techniques take this non-financial information into account [48,29]. Because the Indonesian startup ecosystem is unique, valuation not only integrate with their internal information but also their external factors. Based on the findings, the venture capital technique and DCF are most used. However, due to the peculiarities of the Indonesian startup ecosystem and the absence of an effective pricing mechanism for the aforementioned reason, negotiations between investors and entrepreneurs are crucial to the private equity valuation process. This also shows how crucial it is for each party to have a comparable amount of bargaining power while engaging in negotiations to reach a valuation. Thus, startup valuation is more art than science, as noted by Messica [49].

According to Berger and Köhn, three specific institutional framework components—the legal system, the culture, and a nation's innovativeness—seem to be important to consider when comparing early-stage start-up valuations across national boundaries [50]. Li and Zahra's [51] and Antonczyk and Salzmann's [52] research depend on the cultural characteristics of uncertainty avoidance and collectivism, they provide useful points of reference for the pertinent cultural dimensions. Li and Zahra [51], in particular, demonstrate how collectivism and the avoidance of uncertainty impact venture capital activities. They contend that these two cultural aspects are intimately linked to the information asymmetries and uncertainty that underlie venture capital investments. As previously noted, significant levels of uncertainty and information asymmetry are intrinsic elements that impact venture capital (VC) early-stage start-up values [53,48]. As early-stage start-up valuation in the venture capital (VC) setting is characterized by a great deal of uncertainty [see, for example, 53,48,42]it is anticipated that uncertainty avoidance will have an impact on early-stage start-up valuation. More precisely, VC investors are likely to demand a greater risk premium in nations where there is a preference for avoiding uncertainty as compensation for the risk taken, which ultimately results in lower start-up valuations [54,51]. However, Antonczyk and Salzmann discover that avoiding uncertainty has a detrimental effect on business value [52]. The result lends more credence to the theory that higher early-stage start-up values are correlated with lower uncertainty avoidance and, consequently, a greater willingness to take risks.

Based on the collectivist perspective, it describes how significant belonging to a group is to a person [55]. This suggests that VC investors from collectivistic nations may apply a smaller risk premium when funding early-stage initiatives in the context of start-up valuation [50]. Chinese investors do, in fact, appear to have a higher risk tolerance, as demonstrated by Ding et al. [56]. This, ceteris paribus, should translate into a lower risk premium and a higher start-up valuation. Furthermore, rather than depending largely on contracts, people in collectivistic nations rely more on commitment and trust [57]. Therefore, the influence of a collectivistic culture could account for higher start-up valuations in the venture capital (VC) context, where mutual trust and cooperation between entrepreneurs and VC investors are key aspects driving success [58, 59].

The results of Berger and Köhn demonstrate that high levels of innovativeness combined with a common law legal framework result in high early-stage start-up valuations [50]. Formal institutions built on a common law framework appear to reduce the ambiguities and information asymmetry inherent in venture capital deals, which may encourage investors to give greater valuations. On the other hand, Canada and the UK, which have common law systems but low levels of innovation and collectivism, demonstrate by Berger and Köhn [50] that a common law system by itself does not result

in high start-up valuations. The combination of a common law system and high levels of innovativeness in the country, such as in the United States, Israel, or Japan, explains high early-stage start-up valuations [50]. Overall, it highlights the importance of a country's legal framework, culture, and innovativeness in start-up valuations, particularly in Indonesia, which is founded on a civil law system intermixed with local customary law and Dutch law.

5. Conclusion

From the perspective of investor and business owner, The importance of correct startup valuation is compulsory. This study used a bibliometric analysis of "start up valuation" literature. Using the Scopus database, this research also examined a variety of emerging scientific literature. Employing a total of 168 documents as a sample. According to the results, the number of publications on new venture valuation has risen dramatically, particularly in the 2021 through 2023. Based on the findings of VOSviewer's research, three primary groupings were formed from five clusters. According to the network research findings, Venture Capital and Discounted Cash Flow approach are commonly used to mark the new company value. However, those methods should be tailored with non-financial information and external factor for valuing in Indonesia start up. Nevertheless, the research limitation of this study is that the data were generated from Scopus, not other databases (e.g., Web of Sciences). Also, the findings of this study can be expanded in the future by conducting qualitative research by analyzing the themes suggested by the network analysis described above.

Acknowledgements

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