

A Bibliometric Analysis Of Capital Budgeting Strategies: Developments, Trends, and Future Directions

Original Article

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Abstract

This study aims to analyze the development and trends in research on capital budgeting in Indonesia from 2015 to 2025 using a bibliometric approach. Data were collected through a systematic search of the Scopus database using the keyword “capital budgeting” focused on article titles, abstracts, and keywords. A total of 127 documents meeting the inclusion criteria were analyzed descriptively and visualized using VOSviewer software. The results of the study show a fluctuating publication trend, with the highest peak in 2024. The United Kingdom and the United States are the countries with the largest publication contributions, while Indonesia still shows limited contributions. Co-authorship analysis reveals low connectivity between authors, whereas co-occurrence analysis identifies the keyword “capital budgeting” as the primary hub connecting various topics, including the cost of capital, corporate governance, and NPV. Overlay and density visualizations also reveal that the cost of capital is a relatively new topic with potential for further development. These findings provide a comprehensive overview of the dynamics of capital budgeting research and identify research opportunities that remain open, particularly in Indonesia.

Keywords: Capital Budgeting, Bibliometrik, Cost of Capital, Net Present Value

1. Introduction

Capital budgeting is a fundamental process in financial management that focuses on evaluating long-term investment projects to maximize company value (Yasa & Khairnnsisah, 2024). Methods such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period have become the main instruments used to assess investment feasibility, particularly in strategic corporate decision-making (Ira & Setiawan, 2023). The use of these methods has become increasingly relevant in the context of the Indonesian economy, which is facing challenges in budget efficiency, accelerating infrastructure development, and optimizing investments in both public and private sectors (Fanani, 2021).

In Indonesia, the implementation of capital budgeting has shown varying developments across different types and scales of companies (Yunita et al., 2024). Large companies, including issuers listed on the Indonesia Stock Exchange (IDX), generally apply capital budgeting methods in a formal, structured manner based on the time value of money. The study by Mahaputra & Saputra (2024) indicates that these companies tend to use NPV and IRR methods as the basis for decision-making, in line with public accountability demands and capital market regulations that emphasize transparency and efficient investment fund management. In addition, large companies are usually supported by human resources with adequate financial competence, making the investment evaluation process more



comprehensive, including feasibility studies, sensitivity analysis, and risk simulations (Nurpadilah et al., 2025).

In contrast, Micro, Small, and Medium Enterprises (MSMEs) in Indonesia still face limitations in utilizing capital budgeting (Yunita et al., 2024). Many MSMEs have not adopted formal investment evaluation tools and instead rely on intuition or personal experience in decision-making. Limited financial literacy, lack of access to managerial training, and dependence on internal financing are the main inhibiting factors (Christine et al., 2023). Nevertheless, awareness among MSME actors of the importance of investment evaluation is beginning to grow, especially among those who have received assistance from financial institutions, business incubators, or government programs (Natasha et al., 2024). In this context, simpler methods such as the Payback Period are more commonly used due to their ease of understanding, although they are less capable of accounting for the time value of money and project risk.

The application of capital budgeting also varies significantly across industrial sectors. In the energy and infrastructure sectors, capital budgeting methods are intensively used due to the capital-intensive, long-term, and high-risk nature of projects (Soehaditama, 2022). The Indonesian government, through State-Owned Enterprises (SOEs) and technical ministries, also promotes the use of feasibility studies as a requirement for funding National Strategic Projects (NSPs) (Setiawan & Haryati, 2023). Meanwhile, in the service and retail sectors, investment evaluation tends to be simpler and is generally applied for outlet expansion or new equipment purchases. However, large-scale service companies have started to integrate capital budgeting into long-term strategic planning (Nik'mah et al., 2021).

Alongside the national economic transformation over the past decade, the need for data-driven and financially analyzed investment decision-making has increased (Wirawan et al., 2022). This development is reflected in the growing number of scientific publications discussing capital budgeting in various contexts. However, to date, there is still a lack of studies that systematically map and analyze the development of capital budgeting research comprehensively, particularly in the national context over recent years.

Therefore, this study aims to fill that gap by conducting a bibliometric analysis of scientific publications on capital budgeting from 2015 to 2025, using data sourced exclusively from the Scopus database. The bibliometric approach enables the identification of key aspects such as publication trends, most productive authors, institutional collaborations, keyword distribution, and the intellectual mapping of research. Additionally, tools such as VOSviewer are used to visualize citation networks and thematic relationships among publications.

Through this approach, the study is expected to contribute to a better understanding of the development trajectory of capital budgeting scholarship in Indonesia and serve as a foundation for designing research agendas and policies that are more responsive to national economic needs and future investment challenges.

2. Literature Review

Capital budgeting is recognized as a critical component of financial management, particularly in supporting long-term investment decisions that contribute to value creation for companies. In the Indonesian context, methods such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period have been widely referenced as standard tools for assessing investment feasibility (Ira & Setiawan, 2023; Yasa & Khairunnisah, 2024). Empirical studies indicate that large-scale firms, especially those listed on the Indonesia Stock Exchange, tend to adopt these methods systematically and formally by regulatory standards and investor

expectations (Mahaputra & Saputra, 2024). These companies often conduct comprehensive evaluations that include sensitivity analysis and risk simulations, supported by a well-established financial infrastructure and skilled human capital (Nurpadilah et al., 2025). Conversely, the adoption of capital budgeting techniques among Micro, Small, and Medium Enterprises (MSMEs) remains limited, with decision-making often relying on intuition or experience due to constraints in financial literacy and access to managerial tools (Christine et al., 2023; Yunita et al., 2024).

In addition to company size, the implementation of capital budgeting practices also varies across sectors. Capital-intensive industries such as energy and infrastructure require robust feasibility analyses and are often driven by government mandates and national development strategies (Soehaditama, 2022; Setiawan & Haryati, 2023). Meanwhile, service and retail sectors tend to apply more straightforward investment assessments, though larger enterprises within these sectors have begun to integrate capital budgeting into strategic planning (Nik'mah et al., 2021). Despite the increased academic attention to this topic, as seen from the growing number of publications, a comprehensive and systematic mapping of capital budgeting research in Indonesia is still lacking. To address this gap, bibliometric approaches leveraging tools like VOSviewer are essential for analyzing publication trends, identifying research networks, and uncovering emerging themes (Wirawan et al., 2022). Such efforts are crucial for shaping a forward-looking research agenda that aligns with Indonesia's evolving economic landscape and investment priorities.

3. Methods

This study employs a bibliometric approach aimed at analyzing the development and research trends related to capital budgeting in Indonesia over the period from 2015 to 2025. The bibliometric method was chosen for its ability to provide a quantitative overview of the structure, patterns, and dynamics of scientific literature within a specific field of study. The research is descriptive and exploratory, utilizing secondary data sourced from Scopus, one of the largest and most reputable scientific databases internationally.

Data collection was carried out through a systematic search in Scopus using the keyword "capital budgeting" within article titles, abstracts, and keywords. The selected documents were limited to research articles, conference papers, and review articles relevant to the theme of capital budgeting. All articles deemed irrelevant to the topic or lacking complete bibliographic information were excluded after a manual screening of titles and abstracts.

The data obtained from Scopus were exported in RIS format and analyzed in two stages. The first stage involved descriptive analysis to identify the number of publications per year, journal distribution, affiliated institutions, and the most productive authors. The second stage consisted of bibliometric visualization analysis using VOSviewer software. This visualization included co-authorship analysis (author and institutional collaboration), co-occurrence analysis (keyword relationships), and citation analysis (citation networks between documents).

4. Results and Discussion

Based on a search of articles in Scopus, 127 selected documents were found. The articles that passed were selected by researchers based on: (1) the keyword "capital budgeting"; (2) the year range 2015-2025; (3) document types including research articles, review articles, and conference articles; (4) English language; (5) subject areas Business, Management and Accounting, and Economics, Econometrics and Finance; (6) and accessible documents. Using

the data obtained, the researchers conducted an analysis utilizing tools on the Scopus website. The research results show the number of articles published from 2015 to 2025 as follows:

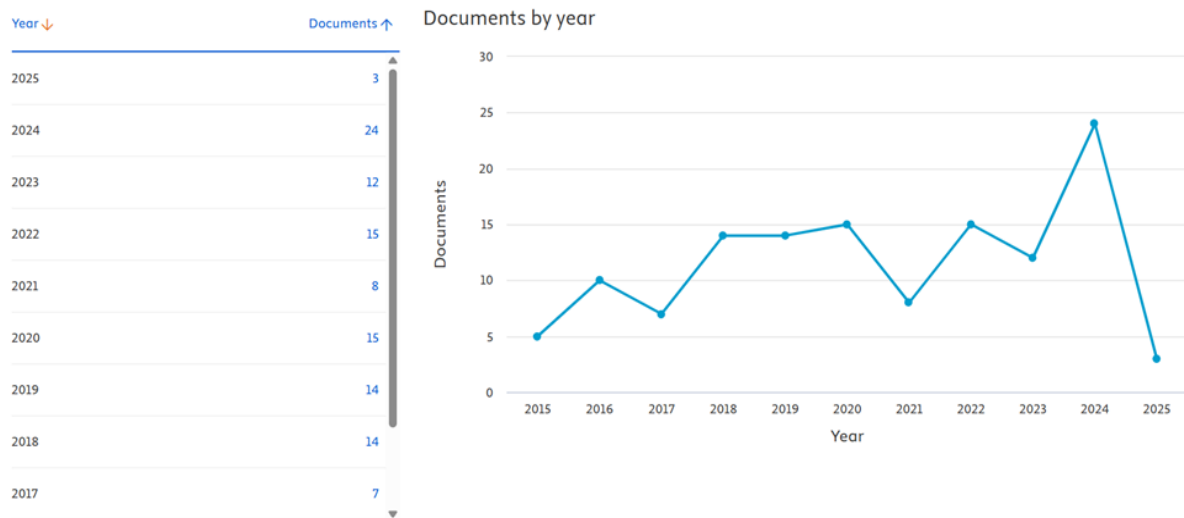


Figure 1: Graph of Article Publication Development in the Period 2015-2025 in Scopus
Source: Scopus Data, 2025

Based on Figure 1, it can be seen that there has been development in research related to “capital budgeting” in the 2015-2025 period. The highest increase in publications occurred in 2024 with 24 articles. Furthermore, in 2015, there were five published articles, in 2016, there were 10 published articles, in 2017, there were 7 published articles, and so on, as shown in the graph. This indicates that article publications fluctuate each year.

Researchers then examined the countries publishing articles related to “capital budgeting,” with the following analysis results:

Source: Scopus Data, 2025

Documents by country or territory

Compare the document counts for up to 15 countries/territories.

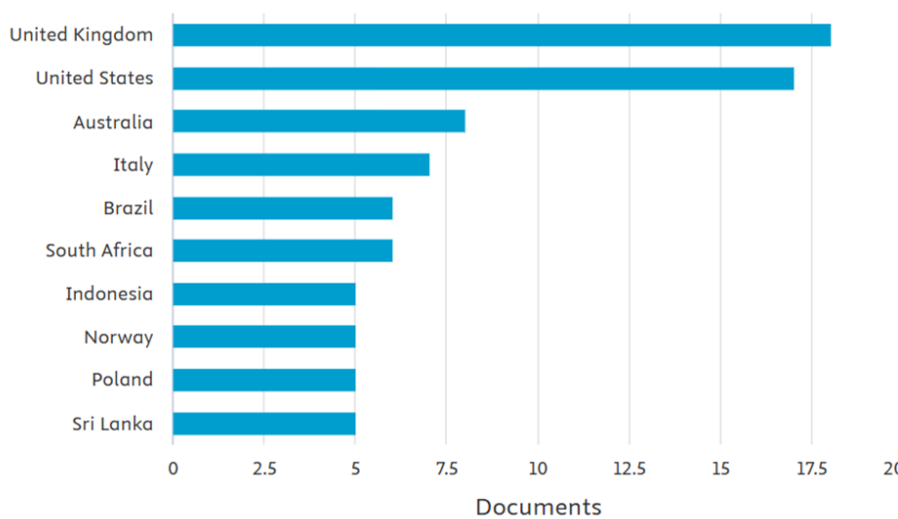


Figure 2: Diagram of Countries Publishing Articles
Source: Scopus Data, 2025

Based on the analysis results, Figure 2 shows a diagram of countries publishing articles related to “capital budgeting.” The country with the most articles published, with 18 articles, is the United Kingdom, and the second most, with 16 articles, is the United States. Indonesia has published 5 articles in Scopus.

Researchers also examined the results of the analysis of institutional affiliations involved in writing articles related to “capital budgeting,” with the following research findings:

Documents by affiliation

Compare the document counts for up to 15 affiliations.

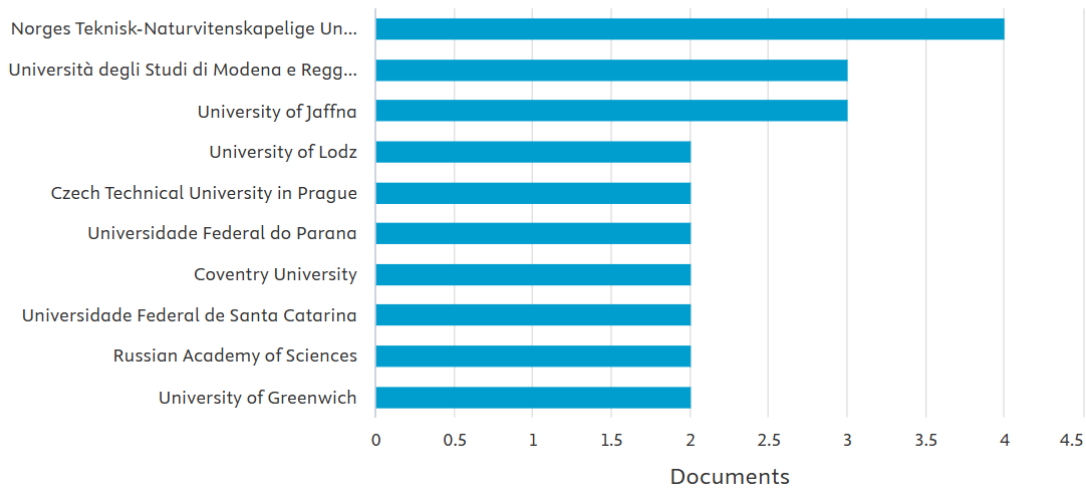


Figure 3: Diagram of Article Affiliations in the Period 2015-2025 in Scopus

Source: Scopus Data, 2025

Based on Figure 2, it can be seen that the authors' affiliations are from countries in Europe. The average number of articles published is two articles in seven different universities. The most prolific author publishing articles on “capital budgeting” is from the Norwegian University of Science and Technology (NTNU), with four articles.

Researchers also found from the analysis that there are numerous citations from articles discussing “capital budgeting,” with the number of citations for each article presented in the table below:

Table 1: Number of Citations of Articles Related to “Capital Budgeting” in Scopus

No	Title	Author	Publisher	Year	Number of citations
1	Estimating the learning curve of the solar PV balance-of-system for over 20 countries: Implications and policy recommendations	EElshurafa, A.M., Albardi, S.R., Bigerna, S., Bollino, C.A.	Journal of Cleaner Production, 196, pp. 122-134	2018	104
2	The WACC Fallacy: The Real Effects of Using a Unique Discount Rate	Kruger, P., Landier, A., Thesmar, D.	Journal of Finance, 70(3), pp. 1253-1285	2015	56

3	Global timber investments, 2005 to 2017	Cubbage, F., Knaieski, B., Rubilar, R., ... Chizmar, S., Abt, R.	Forest Policy and Economics, 12, 102082	2020	55
4	Mapping the venture capital and private equity research: a bibliometric review and future research agenda	Cumming, D., Kumar, S., Lim, W.M., Pandey, N.	Small Business Economics, 61(1), pp. 173-221	2023	53
5	Participatory budgeting in a Sri Lankan urban council: A practice of power and domination	Kuruppu, C., Adhikari, P., Gunarathna, V., Perera, P., Karunarathna, C.	Critical Perspective on Accounting, 41, pp. 1-17	2016	51
6	Real option analysis of abatement investments for Sulphur emission control areas compliance	Atari, S., Bakkar, Y., Olanii, E.O. Prause, G.	Entrepreneurship and Sustainability Issues, 6(3), pp. 1062-1087	2019	31
7	Does Participatory Budgeting Change the Share of Public Funding to Low-Income Neighborhoods?	Shybalkina, I., Bifulco, R.	Public Budgeting and Finance, 39(1), pp. 45-66	2019	31
8	Capital budgeting practices in Spain	Andres, P.D., Fuente, G.D., San Martin, P.	BRQ Business Research Quarterly, 18(1), pp.37-56	2015	30
9	Capital budgeting practices in Indian companies	Batra, R., Verma, S.	IIMB Management Review, 29(1), pp. 29-44	2017	29
10	The internal rate of return (IRR): projections, benchmarks, and pitfalls	Patrick, M., French, N.	Journal of Property Investment and Finance, 34(6), pp. 664-669	2016	29

Source: Data from Scopus, 2025

Next, the researchers visualized the data from Scopus using VOSviewer. First, they looked at the visualization of the collaboration network between authors, or co-authorship, which was done to understand the collaborative structure among researchers studying the topic of product cost in Indonesia. The network mapping results showed two main characteristics in the collaboration pattern, namely connected co-authorship and unconnected co-authorship.

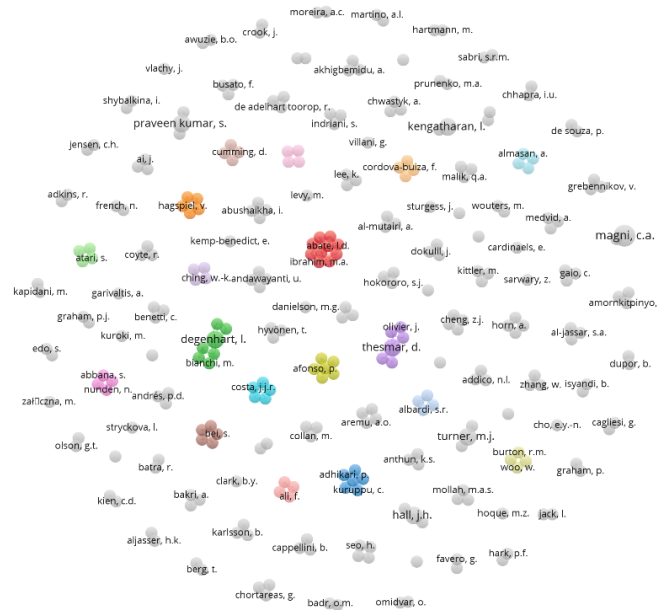


Figure 4 Unconnected Co-Authorship
Source: Scopus Data, 2025

In this study, the mapping of the co-authorship network yielded results that were not connected to the larger collaborative network. This means that many authors conducted research independently or within a narrower collaborative scope. This may occur because researchers did not limit their analysis of bibliometric data on “capital budgeting” to a specific country. As a result, all authors belong to different clusters that are not interconnected. Thus, the co-authorship analysis not only provides an overview of collaboration intensity but also reveals the potential for strengthening synergies among researchers in deepening research related to capital budgeting.

The researchers then examined trends in capital budgeting research using co-occurrence, which displays bibliometric networks between keywords in a visual format. The results of the co-occurrence visualization can be seen in the following figure:

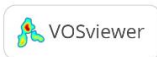
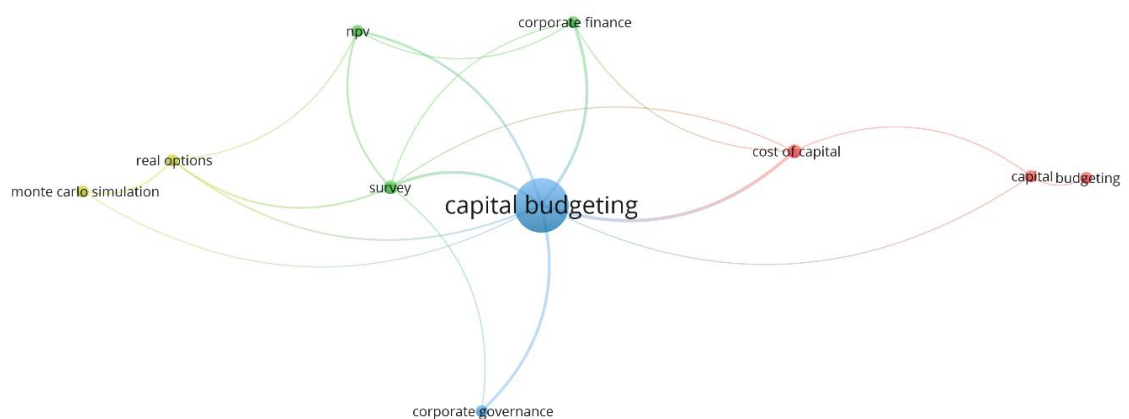


Figure 4 Co-Occurrence Networking
Source: Data processed by researchers, 2025

Based on the network visualization results, it can be seen that there are seven different color groups for each keyword. Each color displayed represents a different cluster. The first cluster is blue, which has two keywords, with the main keyword being capital budgeting and the supporting keyword being corporate governance. In this cluster, capital budgeting has the largest circle and serves as the central node connected to other keywords. This means that capital budgeting is the primary keyword frequently used and connects all supporting keywords.

The second cluster is red with the keywords cost capital, capital, and budgeting. The third cluster is green with the keywords survey, NPV, and corporate finance. The fourth cluster is yellow with the keywords real options and Monte Carlo simulation. The keywords in these three clusters have circles that are the same as the others. This means that the keywords in these clusters are used equally and are connected to other keywords.

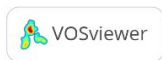
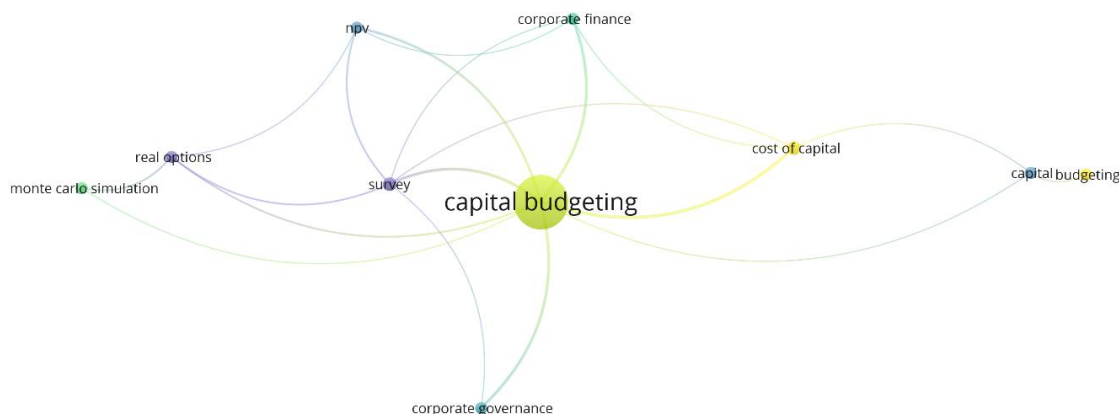


Figure 5: Co-Occurrence Overlay

Source: Data processed by researchers, 2025

Based on the overlay visualization in Figure 5 shows the relationship between topics in research on capital budgeting, with a color map representing the development of publications from 2018 to 2021. Blue to purple indicates older research, while green to yellow signifies more recent publications. From this visualization, it can be observed that “capital budgeting” serves as the central hub or main node connecting various other important topics such as “cost of capital,” “NPV,” “corporate finance,” “corporate governance,” and “Monte Carlo simulation.” These connections indicate that capital budgeting plays a central role in research related to financial companies and governments. The topic of “capital budgeting” appears strongly connected to “budgeting,” reflecting a research trend exploring the role of Monte Carlo simulation in determining capital budgeting. Furthermore, “cost of capital” appears in yellow, which means it is a relatively new area in scientific discourse and likely indicates a new direction in capital budgeting research. Overall, this analysis shows that the research landscape on capital budgeting over time is heavily influenced by “NPV” or net present value and is beginning to evolve toward the exploration of cost of capital.

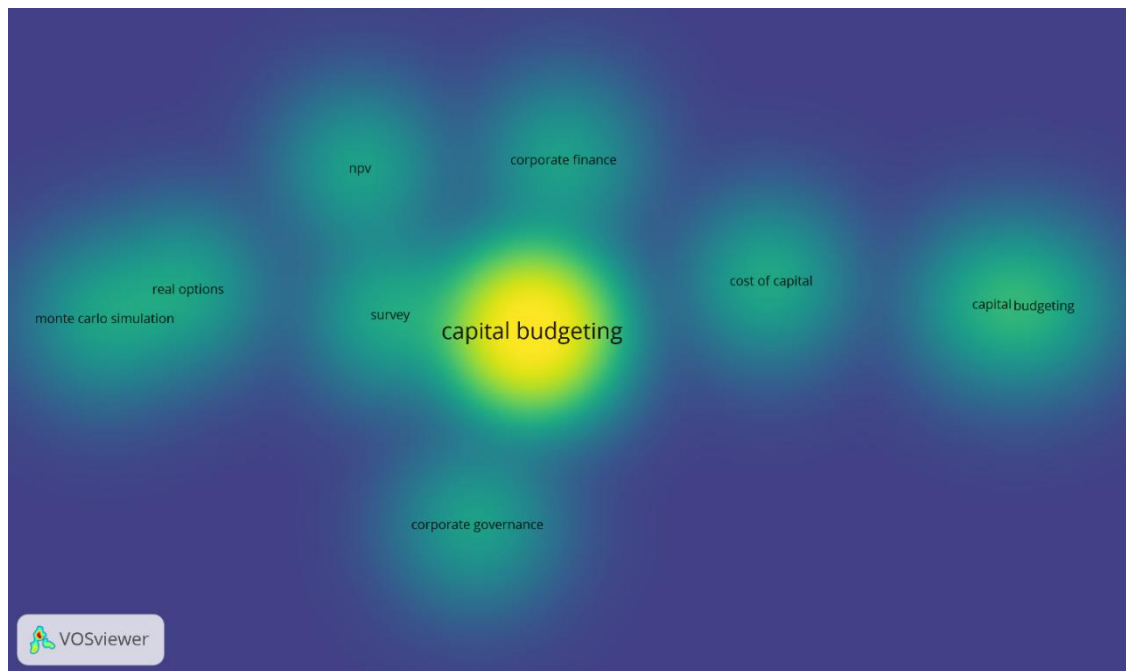


Figure 6 Co-Occurrence Density

Source: Data processed by researchers, 2025

Finally, density visualization analysis illustrates the level of density or frequency of a term or topic. Areas that are close to each other or have high density in one circle or node are connected to other circles (nodes). Conversely, areas with low density or low intensity indicate that these topics are still rarely researched. Areas with low intensity or low density typically have darker colors. The density visualization is shown in Figure 6, which illustrates that only capital budgeting has the highest density. Other topics have low density. Therefore, there are still many research gaps with other keywords related to capital budgeting.

5. Conclusion

This study successfully provides a comprehensive overview of the trends and developments in scientific literature related to capital budgeting in Indonesia during the period from 2015 to 2025 through a bibliometric approach. Utilizing data from the Scopus database and visualization analysis using VOSviewer, the study reveals a fluctuating increase in the number of publications over the years, with a peak occurring in 2024. These results indicate growing academic interest in the topic of capital budgeting in recent years, although a consistent growth pattern has yet to be established.

The analysis of the countries of origin of the publications shows that the United Kingdom and the United States still dominate the number of publications on this topic, while Indonesia remains in the early stages with a contribution of five articles. In terms of institutional affiliation, higher education institutions in Europe, particularly the Norwegian University of Science and Technology, are the most productive.

The citation analysis indicates that articles discussing capital budgeting have received significant attention from the academic community, as evidenced by the high number of citations garnered by several key publications. This suggests that the topic holds strong relevance to the development of financial management theory and investment policy.

Furthermore, the co-authorship mapping results show that collaboration among authors is not yet well-integrated, highlighting an opportunity to strengthen inter-institutional and international research networks. The co-occurrence analysis of keywords reveals that capital

budgeting serves as a central hub connecting various related topics such as cost of capital, corporate governance, NPV, and Monte Carlo simulation. Both overlay and density visualizations emphasize that certain topics, such as the cost of capital, are emerging as new directions and represent potential areas for future research development.

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