



BIBLIOMETRIC ANALYSIS: THE RESEARCH DEVELOPMENT OF RETURN ON EQUITY (ROE) IN COMMERCIAL BANKS DURING 2021-2023

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ABSTRACT

This study aims to determine and provide a summary of the literature on the effect of Return on Equity (ROE) on commercial banking using the bibliometric method. The data used in this study are Scopus-based for the period 2021-2023. Data analysis tools use Microsoft Excel software, Mendeley desktop, and VOSviewer. The data collection technique went through several stages including identification, screening, eligibility, and inclusion. The results showed that based on the bibliometric method using VOSviewer, it was divided into seven clusters and 201 topic items. In addition, it shows a significant increase in research over the past three years. This increase is due to support and publication opportunities such as India and Jordan. The implication and contribution of this research is to map the topics that are often researched by researchers so that it can be a reference for future researchers.

Keywords : Return on equity, Commercial bank, Bibliometric

1. Introduction

In recent years, there have been a number of cases in the financial health of banks due to economic uncertainty after the COVID-19 pandemic. One of them is Silicon Valley Bank (SVB) from the United States, which filed for bankruptcy in 2023 due to a capital crisis. This case occurred at the beginning of SVB experiencing liquidity problems where clients withdrew US\$42 billion in deposits due to maintaining their company's defense until the time of the IPO and private fundraising. Therefore, SVB was undercapitalized and its cash balance became negative by US\$958 million. Secondly, SVB's shares declined and it became difficult for SVB banks to find buyers. As a result, SVB failed to secure sufficient capital from other sources. The hasty withdrawal of deposits caused SVB bank to be unable to fulfill its obligations when they fell due (Hasibuan, 2023).

ROE is one of the main benchmarks in assessing the financial health of a company. Commercial banks play a vital role in economic development and the financial condition of banks is an important indicator to measure the economic health of a country. Good bank health indicates a growing and stable economy (Raci et al., 2021). ROE as a key performance measure emerged with the risk management approach that inspired bank capital regulation (Alharthi, 2022). Moreover, ROE plays a positive role in equity planning and development in the long run (Alshiqi & Sahiti, 2021). The rate of return on shareholders' capital (ROE) shows how effective the bank is in generating profits from the capital invested by shareholders (Pham, 2023). Capital adequacy refers to the capital ratio that indicates the availability of capital (Khan, 2022). Indonesia is among the countries with a high level of ESG disclosure. Banks in Indonesia that perform well as measured by ROE and experience positive asset growth indicate that they are growing and getting bigger (Gutiérrez & Wibowo, 2023).

In commercial banking, asset growth is an important indicator of bank health. A bank with growing assets shows that it is able to attract new customers and provide the loans needed

by customers. (M.-P. Lu, 2022). With the expansion of digital technology, banks must adapt if they are to continue to compete in the global banking industry. To provide electronic banking services, banks spend huge amounts of capital to develop systems by investing in technological equipment, hiring information technology experts, and training employees to handle electronic banking. This has sharply increased the operating costs of banks, especially in the early stages of implementing electronic banking. Although expenditure on information technology investment is high, banks are able to generate relatively large income to overcome high expenditure (M. P. Lu et al., 2022). This is in line with research (Al-Amarneh et al., 2023) that banks that have online banking services have higher ROE than banks that do not have online banking services. This is also beneficial for banks because it can reduce their operating costs.

Return on equity (ROE) explains the effectiveness of equity utilization and the image of healthy managerial performance for commercial banks (Haddad et al., 2022). However, it should be noted that ROE is only one indicator of the company's financial performance. Therefore, it is important to evaluate company performance from various other aspects such as *Return on Assets* (ROA), *Earning Per Share* (EPS) and others. The purpose of this study is to determine the effect of ROE on commercial banking by using the bibliometric method, providing a comprehensive summary of the literature data used. This research has several implications and contributions. First, this study maps out the topics that are frequently researched by researchers. This mapping helps to identify popular research areas and areas that remain under-researched. Second, it helps to identify research findings that have not been widely used. These findings can be a valuable source of information for future researchers to develop their research. Overall, this study makes a significant contribution to the development of science by providing useful information to researchers in various fields.

2. Literature Review

2.1 Return on Equity

Profitability is an important part of a bank's financial performance. The level of profitability can be calculated by various methods, where the choice of method depends on the type of profit and assets or capital being compared (Pratama et al., 2016). Thus, maintaining the level of profitability and improving the profitability ratio is important to show optimal bank performance. *Return on Equity* (ROE) is a ratio that measures how effectively a company uses its capital to generate profits. A high ROE indicates that the company is effective in using its capital and generating large profits. Conversely, a low ROE indicates that the company generates low profits from each unit of equity capital (Hawaldar et al., 2022). ROE as an important financial metric that assesses a bank's performance by comparing its net profit after tax with its equity capital. This ratio serves as an important indicator of how effective a bank's main capital is in generating profits, usually expressed as a percentage (Tazriah & Pratiwi, 2023).

2.2 Commercial Bank

Commercial banks is a financial institution that accepts deposits from the public and provides loans for consumption and investment purposes for profit. Commercial banks include both private sector banks and public sector banks. Commercial banks generate revenue through loans, credit card interest, and various fees. For example, an entrepreneur may seek a loan from a commercial bank to start his or her business. As they repay the loan, they are obligated to pay interest, which is a profit for the bank. This mechanism mirrors how commercial banks profit from credit card interest. When businesses repay funds spent on their credit cards, they typically incur interest charges. The main difference between commercial banking and other banking sectors lies in their clientele. Commercial banking primarily serves the financial

needs of small to medium-sized businesses, government agencies, and institutions such as educational institutions (Kaplan, 2023).

3. Research Methods

This research uses bibliometric analysis which is the application of statistics and quantitative approaches to research publications. This analysis is used for various purposes, fields, and topics or in certain journals (Firmansyah & Faisal, 2020). The scope of research used is research journal articles on *Return On Equity* at Commercial Banks. Data analysis tools use Microsoft Excel software, Mendeley Desktop and VOSviewer. Data collection techniques go through several stages including identification, screening, eligibility and inclusion (Setiawan et al., 2023).

The first stage is to identify and consider several important factors including keyword search, category, language, period, document type and source. This research uses the initial keyword "*Return on Equity*". In the search category, the researcher focuses on *Business, Management and Accounting, Economics, Econometrics and Finance*. To avoid language bias, the search language used is English. The time period used is the period 2021-2023, then using articles as the type of document in this study. Data sources were obtained from the internationally qualified Scopus database.

The identification stage found 3,032 publications obtained from keyword searches. Furthermore, the filtering process includes several criteria that are suitable in this study, including using the years 2021-2023 (923 publications), subject areas in Business, Management, Accounting, Economics, Econometrics and Finance (705 publications), Document types only focus on Articles (645 publications), Some of the keywords used are “Bank Performance”, “Bank Size”, “Bank Stability”, “Banking”, Banking Performance”, ‘Banks’, ‘ROE’, ‘Return on Equity’, ‘Return on Equity (ROE)’, ‘Commercial Banks’ (206 publications), the type of source used is articles (206 publications) and the grammar uses English because is used internationally and quality.

The feasibility stage includes checking the data to be used and in the last stage consisting of statistical analysis and bibliometric analysis resulted in 201 publications being selected. This study used two bibliometric methods, namely co-authorship and co-occurrence. Co-authorship analysis is used to see the level of collaboration between researchers by involving organizations and countries while co-occurrence analysis produces the development of return on equity research through the keywords of this study.

4. Research Findings and Discussion

4.1 Annual Publication Growth

Figure 1 shows all 201 publications regarding return on equity (ROE) in commercial banks produced in 2021 until the highest publication in 2023. This shows an increase in publications per year. Based on publication data, the highest subject area categories are Business, Management and Accounting 149 publications and Economics, Econometrics and Finance 136 publications.

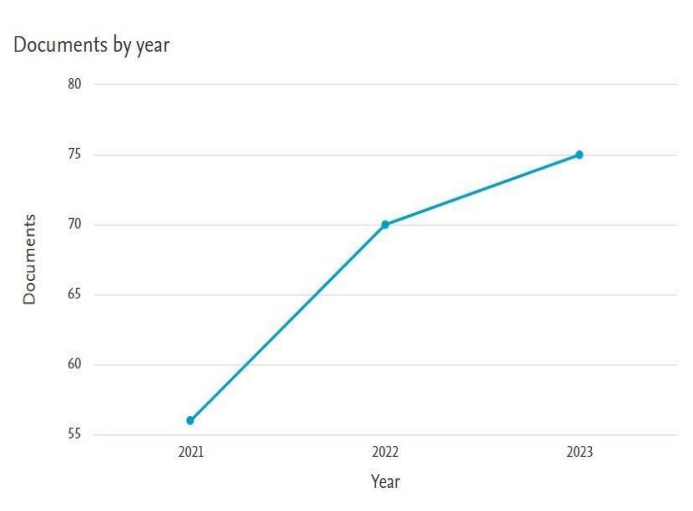


Figure 1. Annual Publication Growth Output of *Return on Equity* (ROE) at Commercial Banks

4.2 Publication Distribution by Country/Region

Based on Figure 2, there are several countries or regions publishing about *return on equity* (ROE) in commercial banks. The countries or regions included in the top 5 include India being the first country in terms of publications with a total of 26 documents followed by Jordan with 17 documents, United States with 16 documents, Saudi Arabia with 15 documents and Indonesia with 14 documents. In this publication there are 15 countries contributing to *return on equity* (ROE) in commercial banks with the number of publications ranging from one to 26 documents.

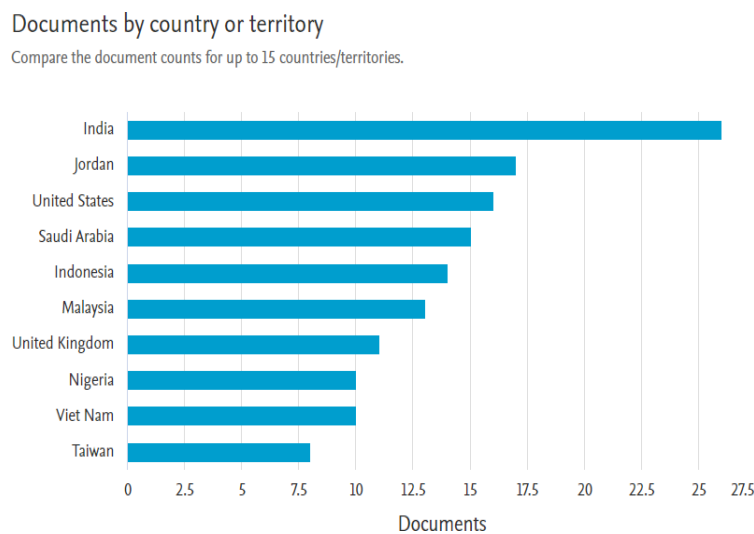


Figure 2. Publications by Country or Region

4.3 Publication by Organization

Based on Figure 3 and table 1, Prince Sattam Bin Abdulaziz University (Saudi Arabia), HSE University (Russia) and Al-Balqa Applied University (Jordan) have contributed greatly to *return on equity* (ROE) research over the past few years. In addition, there are 2 different organizations in Jordan with a total of 6 publications, indicating that Jordan also has a higher interest in *return on equity* research in commercial banks than other countries. It also recognizes that universities contribute to research on commercial banking.

Documents by affiliation ⓘ

Compare the document counts for up to 15 affiliations.

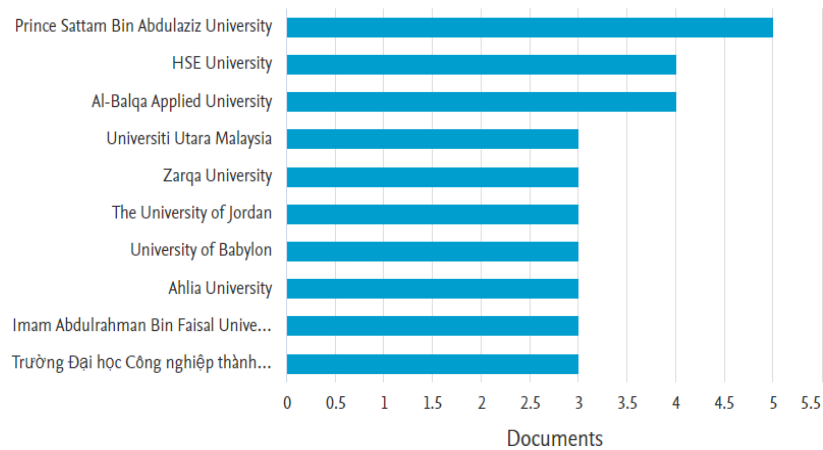


Figure 3. Publications by Organization

Table 1. Top organizations that contribute to return on equity research in commercial banks

No	Organization Area	Country	Number of Publications
1	Prince Sattam Bin Abdulaziz University	Saudi Arabia	5
2	HSE University	Russia	4
3	Al-Balqa Applied University	Jordan	4
4	Universiti Utara Malaysia	Malaysia	3
5	Zarqa University	Jordan	3
6	The University of Jordan	Jordan	3
7	University of Babylon	Iraq	3
8	Ahlia University	Bahrain	3
9	Imam Abdulrahman Bin Faisal University	Saudi Arabia	3
10	TrUong Dai hoc Cong nghiep thanh pho Ho Chi Minh City	Vietnam	3

4.4 Author or Researcher of the Publication

Based on Figure 4 based on scopus data introduces 10 authors of publications related to return on equity in commercial banks including Abraham, R. (The Impact of Corporate Governance and Political Connectedness on the Financial Performance of Lebanese Banks during the Financial Crisis of 2019-2021, 2022; The Role of Liquidity Creation in Managing the Covid-19 Banking Crisis in Selected Mena Countries, 2023). Ahmeti, S., Aliu (Financial Performance Evaluation of the Commercial Banks in Kosovo, 2021; The Relationship between Liquidity Risk Management and Commercial Bank Performance: Evidence from the Western Balkans, 2022).Furthermore, M. Altahtamouni, F., Buallay, A., Chouaibi, J., El Khoury, R., El-Chaarani, H., Haddad, H., and Lu, M.P and so on.Overall the author has 2 document publications in the period 2021-2023.

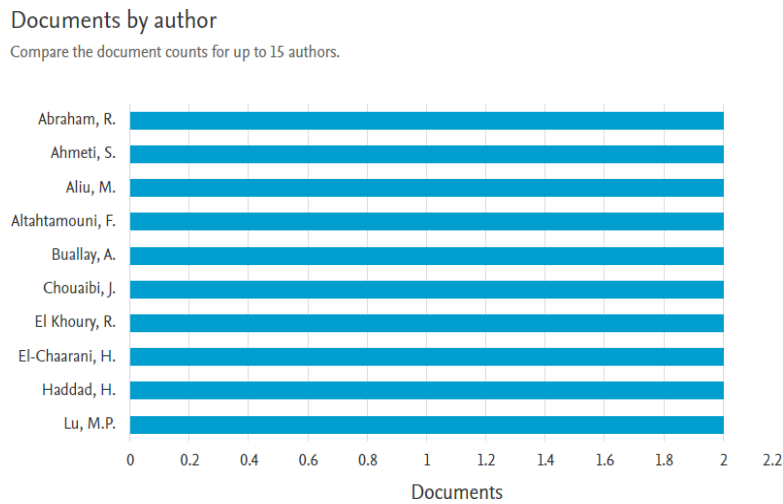


Figure 4. Author or Researcher of the Publication

4.5 Bibliometric Mapping of Return on Equity (ROE) Research

Based on Figure 5 presents a graphical representation of the *co-occurrence* network obtained from bibliometric analysis using VOSviewer. According to (Zakiyah et al., 2022) shows *network visualization* in *co-occurrence* network images generated from bibliometric analysis using VOSviewer showing the relationship between the main variables in research on *Return on Equity* (ROE). *Nodes* (spheres) in the figure represent the main variables and *edges* (networks) show the relationships between variables. A group of nodes connected by an edge indicates a correlation or relationship between researchers in research on ROE. Table 2 shows the top 13 keywords related to *return on equity* (ROE) for commercial banks with 7 clusters and various colors. related research is "*Return on Equity*" 121 times with a total strength of 213. This shows that the research topic is broad as it relates to how efficiently a bank uses its shareholders' equity to generate profits.

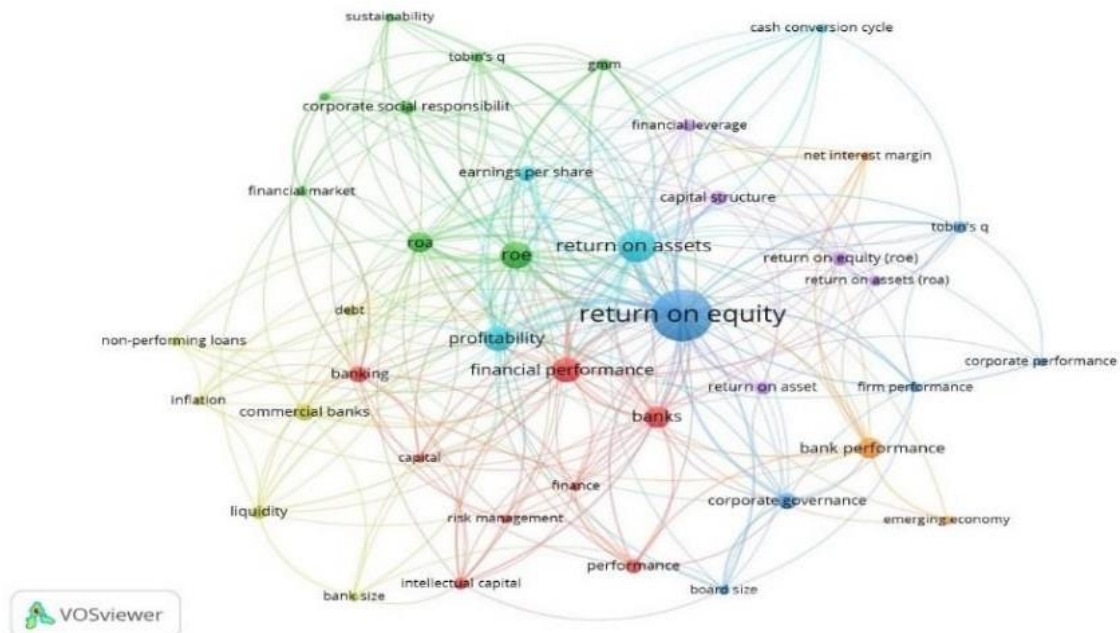


Figure 5. Co-word map of *return on equity* publications in commercial banks

Table 2. Keyword level used

No	Label	Cluster	Links	Total Link Strength	Occurrences
1	Return on Equity	3	38	213	121
2	Return on Assets	6	34	128	46
3	Profitability	6	27	87	29
4	Financial performance	1	25	63	28
5	Bank	1	20	38	22
6	Bank Performance	7	14	21	19
7	Commercial Banks	4	15	19	13
8	Banking	1	19	25	12
9	Earnings Per Share	6	13	35	10
10	Capital Structure	5	16	26	9
11	Gmm	2	13	24	7
12	Debt	4	13	18	5
13	Finance	1	11	14	4

The red cluster describes research on financial performance, banks, banking and finance for commercial banks. Financial performance is a key indicator of the soundness and operational efficiency of commercial banks. Financial performance refers to the financial performance of the bank which includes aspects such as profit, revenue, cost, and liquidity. Financial performance is included as a determinant variable of ROE because ROE measures the company's ability to generate profits using the equity owned by shareholders. Furthermore, banks are financial institutions that accept deposits from the public and provide credit and other financial services to meet the financial needs of individuals, businesses, and governments. Commercial banks are part of financial institutions that have the main objective of earning profitability, which distinguishes them from other types of banks. Banking is the activity or business conducted by financial institutions. Furthermore, finance is related to money management activities such as investment and budgeting. The relationship between finance and commercial banks, for example, for individuals such as providing a place to store money which can be in the form of deposits, savings and current accounts. Finance and ROE have a relationship in analyzing profitability and making financial decisions.

The green cluster describes GMM (*Generalized Method of Moments*) in the context of commercial banks as a statistical method for analyzing the relationship between various factors affecting bank financial performance, including Return on Equity (ROE).

The dark blue cluster illustrates *Return on Equity* is one of the key financial performance indicators used to evaluate the effectiveness of commercial banks in generating profits from shareholders' equity. ROE shows how efficiently a bank uses shareholders' capital to generate net income. The relationship between ROE and commercial banks is significant as ROE reflects various aspects of a bank's financial performance and health. A high ROE can indicate that the bank has a good ability to generate profits and can increase the value of investor capital. Conversely, a low ROE may indicate that the bank has problems generating profits and may potentially impair the value of investor capital.

The yellow clusters describe Commercial banks and Debt. Commercial banks are financial institutions that are managed and oriented towards making a profit from the products and services offered. Debt is the cost of debt as the effective interest rate a company pays on its debt.

The purple cluster describes capital structure, which refers to the composition of long-term funding sources a company uses to finance its assets. The relationship between capital structure and ROE is a metric that measures how much profit a company generates from the capital invested by shareholders.

The light blue clusters represent Return on assets, profitability and Earning per share. Return on assets is a financial ratio that measures how efficient a company is in generating profits from its assets. ROA shows how well a company's management uses its assets to generate net income. In the context of commercial banks, ROA is an important indicator that reflects the efficiency in the use of assets to generate profits. ROA also acts as one of the main determinants of ROE, where ROE can be influenced by the level of leverage used by the bank. Thus, bank management needs to pay attention to ROA as part of the overall strategy to improve financial performance and provide added value for shareholders. Profitability is the ability of a company to generate profits from its business operations over a certain period. It is a key indicator of a company's financial health and operational efficiency. Profitability is a key indicator in assessing the performance of commercial banks and serves as the main determinant of ROE. A higher level of profitability indicates that the bank is effective in generating profits from its assets, which in turn increases net profit and ROE. Bank management needs to focus on improving operational efficiency, risk management, and revenue optimization to achieve high levels of profitability and strong ROE. Earning per share is a financial metric that measures the net income available to common shareholders from each outstanding share. In the context of Return on Equity (ROE), high EPS indicates high net income, which directly increases ROE. Thus, EPS acts as a major determinant of ROE and is one of the key indicators in analyzing the financial performance of commercial banks.

The orange cluster illustrates that bank performance strongly influences Return on Equity (ROE). Factors such as profitability, operational efficiency, risk management, and liquidity all contribute to net profit, which is a key component in the calculation of ROE. Banks that perform well in all these areas will tend to have a higher ROE, reflecting their ability to generate profits from shareholders' equity effectively. Therefore, good performance management is critical to achieving and maintaining a high ROE.

5. Conclusion

Bibliometric analysis is a valuable scientific method for researchers wishing to conduct a review of a diverse and substantial field of research, and its popularity has increased in recent years thanks to the ease of access and evaluation of large scientific data, supported by bibliometric software and databases such as Scopus. We used international publications from Scopus and collected data using the keyword "return on equity," which yielded a total of 3,032 publications. We estimated for three years from 2021 to 2023 and found 923 publications. Next, the researchers applied inclusion and exclusion criteria based on subject areas such as business, management, accounting, economics, econometrics, and finance, which resulted in a total of 705 publications. The next step was to apply criteria related to document type to articles on ROE, which resulted in a total of 645 publications, and specific keywords related to ROE and commercial banks and in English, which resulted in a total of 206 publications.

Based on the analysis and discussion, it can be concluded that the research on ROE in commercial banks indexed in Scopus has grown during the period 2021 to 2023. The maximum research was recorded in 2023 with 75 publications out of a total of 201 publications. The five countries or regions with the most publications are India, Jordan, the United States, Saudi Arabia, and Indonesia. The most cited journal was Prince Sattam Bin Abdulaziz University (Saudi Arabia) with 5 publications, followed by HSE University (Russia) and Al-Balqa Applied University with 2 organizations in Jordan. In total, the contributing authors to this study have 2 publications. These results confirm that research on ROE in commercial banks remains an interesting topic. For future research, it is recommended to add keywords for better research results and to search and analyze more articles from other journals to get a more representative sample. The implication and contribution of this research is to map the topics that are often researched by researchers, so that it can be a reference for future researchers.

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