Bank efficiency and competition: bibliometric analysis of concepts and emerging issues

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Abstract

Purpose – This study provides a bibliometric analysis of bank efficiency and competition over the past years (from 1993 to 2022) to (1) discover the past and current state of knowledge on bank competition and efficiency, (2) identify leading and authoritative journals and scholars who made significant contributions to the distribution of knowledge and impact, (3) identify nations that made a significant contribution and impact to the literature and (4) identify the structure of collaboration that exists between scholars in the areas of bank competition and efficiency and key thematic areas.

Design/methodology/approach – A total number of 868 documents made up of articles, reviews, book chapters, book and conference papers from the Scopus database were gathered. This study used a bibliometric analytic approach.

Findings – The number of documents on bank competitiveness and efficiency has increased significantly, as have their total publications, citations and national output. Additionally, the most esteemed and prestigious academic journals of eminent academics who have had a significant impact on the dissemination of knowledge on bank efficiency and competition literature champion papers on banking efficiency and competition. In terms of citation performance and collaborative efforts, the United States tops the developed countries, led by China, which is also the most productive. Additionally, single-country publications predominate in the literature, with China ranking first among the top five countries with corresponding authors. While the Lerner index, H-statistic, concentration index and market power were used to measure bank competitive behaviour, the data envelopment analysis approach predominates efficiency estimation techniques that are linked to cost, profit or revenue, scale, technical and productivity indexes.

Originality/value – This study is one of the first to offer bibliometric evidence of both bank competition and efficiency. It also offers proof of the distribution of knowledge and intellectual structure of the concepts and concerns in bank competition and efficiency.

Keywords Bank competition, Bank efficiency, Bibliometric analysis, H-index, Co-citation, Network analysis

Paper type Research paper

1. Introduction

The 2008 global financial crisis sparked a rise in scholarly interest in banking business conduct as banks’ competitiveness and productivity came under close scrutiny. Given its consequences for national economies, the productive efficiency of the banking firm has since attracted interest from both policymakers and academics. According to Blankson et al. (2022), a banking company is deemed technically efficient if its management is able to increase a given output while minimising a given unit of inputs used in production. The ability of bank managers to use the bank’s inputs, as revealed by an analysis of the technical efficiency literature, can be separated into two categories: pure technical efficiency and scale technical efficiency, which both focus on taking advantage of scale efficiencies (Yannick et al., 2016).

Similar to this, structural (traditional) and non-structural theoretical frameworks are used to evaluate the competitive behaviour of banking firms. Structure–conduct–performance (SCP) theory is one of the earliest frameworks used to evaluate the competitive behaviour of banking organisations. According to the SCP, increased concentration may result in less competition, which would increase profits at the expense of social welfare. The efficiency hypothesis (EH), one of the SCP’s opposing hypotheses, claims that high performance is...
driven by bank efficiency (Demsetz, 1973). Due to the widely recognised advantages of an efficient and competitive banking system, banks’ efficiency and competitiveness have attracted significant attention on the academic and policy fronts (Schaeck and Cihák, 2014).

In order to properly regulate the banking firm and have a beneficial impact on economic growth and welfare, policymakers must therefore comprehend the trend in the academic literature about the behaviour (efficiency and competitiveness) of the banking firm. The literature on bank efficiency and competitiveness can be opened up for academic researchers to learn more about influential countries, journals and experts. Additionally, it reveals important and fundamental approaches as well as subject matters that are interesting and conducive to further discussion, making it possible to spot numerous gaps for future research projects. The bibliometric analysis (BA) method is used in this study, despite the fact that it hasn’t been widely used, particularly in research on the efficiency and competitiveness of banks. BA entails using quantitative methodologies, including citation analysis to units of publication, according to Donthu et al. (2021a, b).

More specifically, this study seeks to address the following critical issues in the area of interest using BA:

RO1. Examine the trend and stream of literature on bank efficiency and competition over the past years (1993–2022).

RO2. Identify the most impactful sources, scholars, and countries on bank efficiency and competition over the past years (1993–2022).

RO3. Explore Intellectual knowledge structure and networks in bank competition and efficiency.

RO4. Identify the key themes, significant domains and methods used in bank efficiency and competition over the past years (1993–2022);

RO5. Expose future research directions.

Although the use of BA is a tried-and-true method (Wallin, 2005), it has recently received more attention in business management research due to its effectiveness in identifying trends in journal and article performance, academic collaboration patterns and research output components (Donthu et al., 2021a, b; Khan et al., 2021). According to Durisin and Puzone (2009) and Kumar et al. (2021), other fields as well as finance can benefit from a BA. The efforts of Violeta and Gordana (2021), Ikra et al. (2021) and Alam et al. (2021) in the field of finance and banking are quite modest.

The current study significantly differs from the previous studies and, as a result, has contributed significantly to the growth of the literature and the discourse around policy. For instance, the current study examines the issues of both competitive bank behaviour and efficiency of banks which have broad-ranging policy implications on the stability of the financial system, welfare implications and financial inclusion, in contrast to some of the existing studies that focused on trends in data envelopment analysis (DEA) application in banking (Violeta and Gordana, 2021) and the efficiency of Islamic banking (Ikra et al., 2021). Again, in contrast to Alam et al.’s (2021) study, which focused on bank performance using 36 documents, this study used relatively large documents (868) from the Scopus database, enriching the current development with recent articles and other publications. Given how quickly the banking industry is changing, this study makes a significant contribution to updating current knowledge in the field. Again, the study by Alam et al. (2021) omitted major thematic areas in the fields of competitive behaviour and bank efficiency.

The main conclusions of this analysis show that interest in bank competitiveness and efficiency issues has increased exponentially since 1993, with notable increases in author contributions, national productivity in publications, total citations and authorship. A global
interest is also growing in bank competition and efficiency, and this development is still receiving attention from academics and policymakers. As a result, studies on bank competition and efficiency attracted the most prestigious journals, had the highest publications and were supported by the most eminent academics who had a significant impact on knowledge and productivity in the field of bank competition and efficiency.

Furthermore, industrialised countries with complex banking systems made more contributions to the literature on bank competition, efficiency and related topics. A network analysis reveals that, Beck et al. (2013a, b) and Berger et al. (2009), the two most frequently referenced papers to date are the dominant articles in the clusters of bank rivalry and efficiency. A complex network structure of knowledge transmission and distribution in terms of competition and efficiency has been created as a result of the influence of these authoritative and significant publications on information transfer and distribution through their co-citation networks.

Additionally, there were indications of shared interests among academics in the topics of bank competition and efficiency, and those who have an interest act as a bridge for others to engage in the debates about bank efficiency and competition.

In terms of the main themes in research on bank competition and efficiency, the terms “bank efficiency” and “cost efficiency,” “profit efficiency,” “stochastic frontier analysis” or “approach,” “DEA,” “SFA,” “scale efficiency” and “Malmquist index as clusters” are also frequently used. The DEA dominates the primary methodologies in the field of efficiency estimators. As another policy trend and research agenda, bank competition also generates the second-largest node related to clusters of bank concentration, Lerner index, market power, Panzar-Rosse’s H-Statistic, market structure, concentration and competition. The remaining portions of this study are structured as follows: The literature on conceptual and methodological issues in bank efficiency and competition is discussed in Section 2; the method of analysis is covered in Section 3, the results are discussed in Section 4 and the overall conclusion of the study is presented in Section 5; the study’s limitations and potential areas for future research collaborations are discussed in Section 6, which is devoted to these topics.

2. Literature
2.1 Estimation techniques in bank efficiency
Based on ratio analysis, the earliest estimates of bank efficiency were made. The complexity of bank inputs and outputs, however, makes this strategy oversimplified and troublesome (Thanassoulis et al., 1996). Thus, parametric and non-parametric approaches—two more recent methods—were found to be effective at measuring bank efficiency. The parametric approach is further subdivided into stochastic frontier analysis (SFA), distribution-free approach (DFA) and thick frontier analysis (TFA), according to Aigner et al. (1977), Berger (1993) and Berger and Humphrey (1997). Two additional non-parametric measures were identified in the literature at hand. Both the free disposal hall (FDH) approach created by Deprins et al. (1984) and DEA (Charnes et al., 1978) fall under this category. The FDH technique essentially relaxes the DEA’s convexity assumptions.

2.2 Estimation techniques in bank competition
The SCP hypothesis, which contends that there is a direct correlation between bank market structure, conduct and performance, served as the foundation for the previous analysis of competitive bank behaviour. The Panzar and Rosse (1987) methodology was created as an enhancement to the SCP approach’s applicability. According to Panzar and Rosse’s (1987) technique, a reduced-form revenue approach can be used to determine if a market can be
classified as having perfect competition, monopolistic competition or monopoly characteristics. The Panzar-Rosse formula defines a bank’s measured competitiveness as the sum of the elasticities of its revenues in their reduced form with respect to the pricing of its factor inputs (P) (the H-statistic). The three primary types of market structures—monopoly/perfect collusion, monopolistic competition, and perfect competition/contestable market—are distinguished by the Panzar and Rosse (1987) H-statistic. When the H-statistic is less than or equal to zero, the banking system is considered to be a monopoly; however, in the event of monopolistic competition, the H-statistic must fall between zero and one inclusive, and under perfect competition, it must be equal to one. Panzar and Rosse (1987) demonstrated that the H-statistic is a continuous measure of competition and that a higher value of the H-statistic denotes a more competitive market under the assumptions of constant price elasticity and a constant return to scale for Cobb–Douglas technology. Given that its test statistic that is more difficult to interpret than the Lerner index test, the Panzar and Rosse (1987) model has, like any other model, come under some scrutiny (Shaffer, 2004).

3. Methodology
3.1 Research design
The years have seen the study of existing records using a variety of analytical techniques. Some of these methods include BA, content analysis and meta-analyses. Using the well-known systematic literature technique (SALSA), pertinent documents were extracted for this study. Search, appraisal, synthesis and analysis is the abbreviation for this process. In the analysis stage, this study used a content-based descriptive and bibliometric analytic technique to give a summary of data on the important problems of interest from the relevant literature. Due to the availability of sizable databases and user-friendly analytical software, BA has emerged as one of the most effective approaches for qualitative analysis of bibliographic data in research (Donthu et al., 2021a, b). Bibliometric usefulness is governed by three main principles. The first is the existence of an observable relationship between writers and articles (Lotka, 1926), the dispersion of scientific publications on a subject by way of scientific journals (Bradford, 1934) and the occurrence or frequency of the subject matter (Zipf, 1949). There are two main categories of BA: performance analysis and science mapping (Donthu et al., 2021a, b). While the scientific mapping analyses the connections between research components, the performance analysis evaluates each scholar’s contributions in relation to a specific area of interest, such as bank competitiveness or bank efficiency.

Following Donthu et al. (2021a, b), this study makes use of performance analysis and science mapping. In essence, performance analysis is expected to ascertain the volume of documents cited between 1993 and 2022, which countries and scholars contributed the most to the knowledge and literature, and which academic journals received the highest publications and citations, while science mapping focuses on the intellectual structure of the bank competition and efficiency as well as the type of collaboration that exists between scholars in this field.

3.1.1 Materials. The Scopus database was utilised in order to guarantee thorough coverage of the pertinent literature on bank rivalry and efficiency utilising BA. With a tremendous amount of documents, the Scopus database is one of the biggest databases. The selection of the years 1993–2022 was made because it encompasses the time frame before and after the global financial crisis of 2008, when the actions of banking institutions came under scrutiny. The SALSA approach was used to extract pertinent documents for this study, and 887 papers were found when searching for pertinent documents using terms like “Bank efficiency” or “Bank competition,” which was based on the SALSA approach. The search was evaluated, synthesised and analysed by restricting the search terms to “Bank efficiency” OR “Bank competition” LIMIT TO EXACT KEYWORDS “TECHNICAL EFFICIENCY,”
“MARKET POWER,” “MARKET STYLE,” “DEA,” “Stochastic Frontier Analysis,” “Data Envelopment Analysis,” “Lerner Index,” “Regression Analysis” and “Malmquist Productivity Index.” With only materials published in English being the preferred option, the result of these selection criteria provided 816 articles, 16 book chapters, 1 book and 35 conference papers, bringing the total number of documents to 868. The Biblioshiny R package and VOSviewer software were utilised for the statistical analysis. Existing scholars have applied these significant bibliometric analytical methods for data visualisations, network analysis and mapping (Xie et al., 2020).

4. Results and discussions

4.1 Descriptive analysis

A summary of the information used is given in Table 1. A total of 868 publications on the competition and effectiveness of banks were used to generate a total of 44,252 references from 1,586 writers, of whom 136 were connected to documents with a single author and the majority of the other authors were those of documents with multiple authors. The average number of citations for each document yields 23.8, which is the impact per document.

4.1.1 Trends and streams of bank competition and efficiency. In this study, a performance analysis was used in the context of trends and streams of bank competitiveness and efficiency utilising a variety of broad indicators (number of publications, national productivity, citation analysis and author’s publication impact analysis using the h-index). These broad performance indicators can be used to analyse trends and streams of knowledge about bank competition and

<table>
<thead>
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<th>Description</th>
<th>Results</th>
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</thead>
<tbody>
<tr>
<td><strong>Main information about data</strong></td>
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<tr>
<td>Timespan</td>
<td>1993:2022</td>
</tr>
<tr>
<td>Sources (journals, books, etc)</td>
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</tr>
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<td>Documents</td>
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<td>Conference paper</td>
<td>35</td>
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<td>Source(s): Authors’ own creation</td>
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Table 1. Descriptive information
efficiency, but they can also be used to find the most influential sources, researchers and nations. This allows for a comprehensive productivity and performance analysis of the topic of bank competition and efficiency. Citations are viewed as a crucial aspect of the impact analysis of published materials, whereas the quantity of publications is thought to be a sign of production (Donthu et al., 2021a, b). Figure 1 demonstrates that, in line with previous studies, there has been an increase in article publication productivity since 1993 in terms of bank competitiveness and efficiency (Alam et al., 2021). This increased interest in bank productivity studies is undoubtedly partially attributable to the crucial role that banks play in the national economies’ transformational drive.

Regarding the influence of published documents, the performance metric of citations reveals that the highest citation per article, as indicated by the mean total citation per article (MeanTCperArt), occurred in 1997. Thereafter, it declined, then slightly increased in the following year, but is currently on a downward trajectory. Ikra et al. (2021) also discovered a decrease in the mean number of citations per publication for Islamic Banking between 2000 and 2020. Ikra et al. (2021) speculate that the drop in the mean citation per article may be related to the fact that just a small number of articles contributed to the total productivity document.

Therefore, it is plausible to infer that even while the productivity of the banking firm was on the rise, the predicted effect from total article citations could not match the level of overall productivity. However, over the course of the study, the average number of citations per year (MeanTCperYear) has largely maintained a slight increase. This is consistent with the growing trend in the article on productivity and emphasises both the ongoing interest in as well as the significance of bank productivity in the fields of policy and research. In addition, recent times have seen an upward trend in productivity literature consistent with earlier findings (Alam et al., 2021).

Similar to Figure 1, Figure 2 displays the output of journals that have supported publications on bank competition and efficiency over time and once more highlights the fact that Journal of Banking and Finance is at the top of the list of the top five (5) most influential journals on these topics. Applied Economics, Banks and Bank Systems, Research in International Business and Finance and Journal of International Financial Markets.

**Figure 1.** Citation and annual production of articles

**Note(s):** MeanTCperArt is the mean total citation per article, MeanTCperYear is mean total citation per year

**Source(s):** Authors’ own creation
Institutions and Money are further publications. The aforementioned evidence emphasises the consistent and significant contributions of the best and most highly regarded journals in guiding policy debates and discussions on banking firm conduct, cost, revenue, performance, stability and competitive behaviour, which are crucial issues in the banking sector that have an impact on both the global economy as a whole and individual national economies.

Furthermore, Figure 3 shows that the top ten (10) countries in terms of the frequency of national productivity of articles on bank competition and efficiency issues are China (319), the United Kingdom (192), Malaysia (188), the United States (177), Indonesia (73), Australia (65), Greece (64), France (62), India (61) and Italy (50). The preceding evidence also shows that China produced more articles than the United Kingdom or the United States. This evidence suggests that the national productivity on bank competitiveness and efficiency literature is geographically heterogeneous.

By implication, it underlines the firm belief that the developed economies, in particular China, the United States, and the United Kingdom, have robust banking sectors that have a significant impact on both the domestic and global banking scene. Due to this, local and global financial stability and economic growth depend on the competition and efficiency of banks in these economies.

The previous debates demonstrate a developing tendency in commercial banks' behaviour, particularly in regard to issues of efficiency and competition. This steady growing trend implies that stakeholders, particularly scholars, are continually interested in banking practices in the field of policy. The rise in bank productivity (competition and efficiency) is global in scope, with established nations leading the productivity curve while developing economies also show some strong interest.

4.1.2 Influential sources, scholars and countries on bank competition and efficiency. In this study, citation analysis is used to determine the sources, researchers and nations that have had the most influence on bank efficiency and competition throughout the years. Citation
analysis reveals the intellectual connections between researchers, promotes their contributions to knowledge and illustrates the influence of their work through publications (Donthu et al., 2021a, b). The top 20 most referenced journals are shown in Table 2 along with the number of papers that were published therein.

With fifty-four (54) articles published on bank competition and efficiency-related topics, the *Journal of Banking and Finance* tops the list of the most influential and frequently cited journals in terms of impact. Next in the list are *Applied Economics*, *Banks and Bank Systems*, the *Journal of International Financial Markets, Institutions and Money* and the *Journal of Economic Studies* (JES), with *Managerial Finance* coming in last among the top 20. Similar to this, some of the most significant authors include Beck et al. (2013b), whose article “Islamic vs conventional banking: Business model, efficiency, and stability” received 728 global citations with an average of nearly 73 per year, and Berger et al. (2009), whose publication Bank Competition and Financial Stability, received 543 global citations. Table 3 once more clearly identifies the top five researchers who made significant contributions to bank competition, efficiency and stability and who published in highly ranked journals (*Journal of Banking and Finance*, *Journal of Financial Services Research*, *Journal of Financial Intermediation* and *Journal of Money, Credit and Banking*). It can be seen that the most highly cited academics’ research was published far earlier.

Similarly, this study used the h-index in Figure 4 to further investigate the source journal’s impact on bank competition and efficiency. The top 20 journals’ h-indexes (Hirsch Index) are taken into account. The *Journal of Banking and Finance* tops the list of highly performed journals with an h-index score of 33, followed by the *European Journal of Operational Research, Research in International Business and Finance, Applied Economics* and the *Journal of International Business and Finance*. This is consistent with earlier observations on the contribution of the literature on bank competition and efficiency from the highly ranked journals. The journal with the lowest h-index among the top 20 journals sampled is the *Journal of Financial Services Research*. The aforementioned proof substantially indicates that
the majority of current concerns in bank competition and efficiency were published in prestigious journals and can be a valuable source of literature and data for future scholarly work.

Figure 5 (which lists the top 30 most influential countries in citation) reveals that the United States has the highest total number of citations, followed by the United Kingdom, the Netherlands, Australia and China in that order. Research on international banking has
traditionally centred on the United States, possibly as a result of the strength and sway of the dollar as well as the current financial crisis. The United States has more citations overall than the other top 30 countries, as a result. The United States is the most highly referenced country in the world, receiving 3,313 citations, followed by the United Kingdom (3,014), the Netherlands (1,661), Australia (1,556) and China (1,069). These countries are home to the majority of the world’s largest banks, as well as a complex financial infrastructure that has an impact on the global financial system. Figure 5 also shows the average number of citations per publication from these nations. Lebanon, the Netherlands, Australia, Hong Kong and Brazil are the first five (5) top countries, indicating that average article citations in those countries drew a lot of attention.

Furthermore, two metrics—the h-index and the g-index—are typically employed to assess the influence of authors on published materials. For writers who wrote publications with a significant impact, metrics are provided in Table 4. In terms of citation impact, the h-index reveals both the number of papers and their volume. The most cited publications of a scholar, however, are given more weight by the g-index. Highly referenced articles are given more weight. However, the most widely used author performance statistic is the h-index.

With the most publications (27), highest h-index (12) and highest g-index (22), Sufian, F. stands out as the author with the greatest impact on the topic of bank efficiency and competitiveness (Table 4). Weill comes after that. Ikra et al. (2021) acknowledged Sufian’s significant impact on banking firm conduct, particularly efficiency. The author’s performance and the journal’s performance demonstrate that publications on bank competitiveness and efficiency have a significant influence, and this could continue to inspire additional research initiatives in the future.

4.1.3 Collaboration structure in bank competition and efficiency. Strong intellectual connections and knowledge structures in BA are supported by scholarly collaborations. The collaborative efforts that have resulted in single-country publications (SCPs) or multiple-country publications (MCP) are highlighted in Figure 6. Only a small percentage of the publications are MCPs; the majority are SCPs. Only one country has comparatively greater MCPs, and that is the Netherlands. China, the UK, the United States, Malaysia and India are

![Figure 4. Citation performance of top 20 journals](image-url)
Source(s): Authors’ own creation
the top five (5) countries represented by corresponding authors. In terms of SCPs, China tops the list, but in terms of MCPs, the UK comes in first. The majority of the corresponding authors who wrote SCPs are from China. Additionally, some developing nations have both SCPs and MCPs, including Saudi Arabia, Indonesia, Ghana, South Africa and Brazil. Above all, the evidence presented here indicates that SCPs are preferred by most countries, especially developed countries, in terms of knowledge structure and joint efforts in bank competition and efficiency.

### 4.1.4 Intellectual knowledge structure in bank competition and efficiency analytics

This study used two techniques, namely the historiographic network approach (citation) and co-citation analysis, to identify underlying themes, relevant domains and methods employed by previous researchers. The network structure of historiographic citations to documents is depicted in Figure 7. Citation analysis takes place when one academic work cites another’s, according to Donthu et al. (2021a, b). Citation analysis makes it possible to pinpoint the intellectual connections (knowledge sharing) between publications that are thought to have a significant impact or influence and those that are not. The criterion utilised in this study

<table>
<thead>
<tr>
<th>Authors</th>
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<th>G-index</th>
<th>M-index</th>
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Source(s): Authors’ own creation

![Figure 6. Distribution of corresponding author base](image-url)
required that the minimum number of citations per document be two, and out of the 866 documents, 655 met this requirement. As a result, newer publications and works with low citation counts are disregarded.

Figure 7 displays several (six) clusters, with Beck et al. (2013a, b) (green) and Berger et al. (2009) (red) being the dominant and most significant publications in each cluster. These two papers appear to be the most referenced in terms of bank competitiveness and efficiency. As a result, some of the most influential articles that drew a lot of citations and knowledge distribution are Beck et al.’s (2013) paper entitled “Islamic vs conventional banking: Business model, efficiency, and stability” published in the Journal of Banking and Finance; Berger et al.’s (2009) paper entitled “Bank competition and financial stability” published in the Journal of Financial Services Research. In addition to Turk-Ariss (2010), who published a paper in the Journal of Banking and Finance titled “The implications of market power in banking: Evidence from developing countries,” Beck et al. (2013a), who published a paper in the Journal of Financial Intermediation, also made contributions to the body of knowledge on bank competition and efficiency. The authors Beck et al. (2004) also published a study in the Journal of Money, Credit, and Banking with the title “Bank competition and access to finance: International evidence.” The magnitude of their nodes amply demonstrates the influence of these authoritative and significant papers on knowledge transfer and distribution through their citation networks. Again, their contributions in the domain of bank competition and efficiency have really inspired other academics, resulting in a complex network structure of information transfer and distribution. The degree of co-citational overlap in the relevant field of research is another area of interest that merits investigation. The findings of the co-citation analysis are displayed in Figure 8.

Figure 8 shows that the bulk of the nodes are extremely close to each other, indicating evidence of similar interest. For example, the node representing Beck et al. (2006) (beck, t., demirguc-kunt, a., Levine, r.) is close to Pasiouras et al. (2009) (pasiouras, f., tanna, s., zopounidis, c.) and Fries and Taci (2005). This demonstrates a degree of shared interest (homophily effect). Those researchers on the extreme right (e.g., Allen and Gale, 2000) identify some structural gaps (Mostafa, 2020), meaning that those scholars build a common interest that will serve as a springboard for others to connect to talks on bank efficiency and
competition. Berger and Humphrey (1997) are the most significant authors as reflected by the largest node in Figure 8. Similarly, Figure 9 depicts the co-citation networks of the several journals employed in this study.

The green and red nodes in Figure 9 denote two distinct journal co-citations. Additionally, there is some degree of connectedness between the nodes. The *Journal of Finance, Research in International Business and Finance, International Review of Economics and Finance* and *Emerging Markets Finance and Trade* are the main publications that can be determined from the aforementioned. The nodes surrounding the main journals reflect the periphery journals. *Journal of Money, Credit and Banking, Journal of Financial Services*...
Research, Empirical Economics, Journal of African Business, Economic Modelling, International Review of Financial Analysis and Cogent Economics and Finance are a few examples of these auxiliary publications. This implies that there is a shared topic focus among these publications.

4.1.5 Key themes and methods in bank competition and efficiency analytics. The dynamic character of the banking industry offers a variety of subjects and approaches in the literature on empirical competitiveness and efficiency. Keyword co-occurrence was employed as a crucial component of BA to identify key ideas and approaches discussed in the literature on bank efficiency and competition (Mostafa, 2020). Su and Lee (2010) claim that keyword co-occurrence analysis is one method for determining the important subjects, components and areas of a specific field of research. The building of a keyword co-occurrence network makes use of the keywords listed in a research paper’s abstract to examine how frequently those keywords appear in that particular research paper. A keyword co-occurrence network for the terms “bank efficiency” and “competition” is shown in Figure 10.

The thickness of the link displays the number of times a pair of terms occurs together in an article about bank competitiveness and bank efficiency, while the size of the node displays the frequency of each keyword employed. The largest node in Figure 10 is bank efficiency, which highlights research “hotspots” in bank efficiency and competitiveness articles (VanEck and Waltman, 2014). The Malmquist index, scale efficiency, parametric and non-parametric estimators, SFA or method, cost efficiency, profit efficiency and scale efficiency are all related to bank efficiency in Figure 10. These major subject areas can be traced back to previous research on SFA (Battese and Coelli, 1995; Berger and Humphrey, 1997), DEA (Banker et al., 1984) and the Malmquist Productivity Index (MPI) (Färe et al., 1994). The second-largest node linked to clusters of bank concentration (Berger and Hannan, 1989), market structure (structure-conduct-performance) approach (Demsetz, 1973), Panzar-Rosse H-Statistic (Panzar and Rosse, 1987), market power (Lerner Index) approach (Lerner, 1973) and contestability approach (Demsetz, 1982) is also created by bank competition. Figure 10 makes it abundantly evident that the competition and efficiency of banks, as well as their evaluation methods, constitute important theme domains in banking literature.

Therefore, prospective academics can use these keywords to discover patterns for present and future research topics related to the financial crisis and banking sector stability as a starting point for their identification and establishment.

Source(s): Authors’ own creation
5. Conclusions

Due to the particular role that banks play in national development, bank competitiveness and efficiency continue to receive a lot of attention in both policy talks and the academic setting. This study is driven by the numerous advantages of bank competition and efficiency to bank clients, managers and regulators who champion bank efficiency and competition policies as the key to boosting bank profitability, more rapid and thorough financial intermediation, the stability of the financial system and lower prices for high-quality bank goods and services. Between 1993 and 2022, this study examined 868 Scopus database documents.

For pertinent stakeholders, this study offers the following comprehensions and insights: Despite being a long-standing interest, academic interest in the topics of bank competitiveness and efficiency has been growing exponentially since 1993, with notable increases in author contributions, national productivity in publications, total citations and the number of authors. Not just one nation or region is experiencing exponential development in bank efficiency and competition. It has gained widespread interest, and the development continues to attract scholarly and policy-related attention. With the increase in productivity of documents on bank competition and efficiency, the *Journal of Banking and Finance*, *Applied Economics, Banks and Bank Systems*, *Journal of International Financial Markets, Institutions and Money* and *Journal of Economic Studies* (JES) rank among the topmost and prestigious journals with the greatest number of publications on bank competition and efficiency. Beck *et al.* (2013b), as well as Berger *et al.* (2009), are two important scholars who made major contributions and had an impact on knowledge and productivity in bank competitiveness and efficiency. Their contributions have been well recognised.

In terms of bank competitiveness and efficiency, China, the UK, Malaysia, the United States, Indonesia and Australia are among the top 6 countries with the highest productivity, with China at the top of the list. But when it comes to individual countries, the United States has the highest overall citation performance, followed by the UK, the Netherlands, Australia and China. Thus, these nations comprise the top five (5) most frequently referenced nations when discussing stability, bank efficiency and competition. Most of the largest banks are located in these nations, which also have a sophisticated financial structure that affects the global financial system. Additionally, it was found that developed economies with multifaceted banking systems contributed more to the literature on bank competition and efficiency as well as issues related thereto than developing and emerging markets as evidenced by the fact that the majority of national citations come from developed economies and very few from developing and emerging markets. The highest impact journals for research on bank competition and efficiency were *Journal of Banking and Finance*, *European Journal of Operational Research*, *Research in International Business and Finance*, *Applied Economics* and *Journal of International Financial Markets, Institutions, and Money*. The two most influential scholars are Beck Thorsten and Sufian Fadzlan.

In addition, the network analysis of knowledge structure and distribution reveals that the most cited papers on bank competitiveness and efficiency, Beck *et al.* (2013a, b) and Berger *et al.* (2009), are the dominant publications in the clusters. Through their co-citation networks, these authoritative and significant articles’ effects on information transfer and distribution have really inspired other researchers, resulting in the development of a complex network structure for knowledge transfer and distribution in terms of efficiency and competition. There was evidence of shared interest among researchers in the topics of bank competitiveness and efficiency, and those who share an interest act as a springboard for others to engage in these topics.

In a similar vein, the co-citation network of the different journals reveals that the *Journal of Finance, Research in International Business and Finance, International Review of...*
Economics and Finance and Emerging Markets Finance and Trade are the primary journals well-known for their dissemination of knowledge in the fields of bank competition and efficiency studies. In addition, the keywords that dominate research in bank competition and efficiency are bank efficiency, which is linked with cost efficiency, profit efficiency, SFA or approach, DEA, SFA, scale efficiency and the Malmquist index as clusters. This research also suggests that bank efficiency may be estimated using DEA, which has become the standard approach. Prospective researchers might identify these keywords as trends for present and future research agendas as well as a springboard for the discovery and construction of future research agendas. As another policy trend and research goal, bank competition generates the second largest node linked with clusters of bank concentration, Lerner index, market power, market structure, concentration and competition.

6. Limitation of this study and emerging issues for future collaboration
The current study is unable to delve into emerging challenges affecting both bank competitiveness and bank efficiency. This is a shortcoming of this study. The modern banking industry is in constant motion as a result of developing concerns reflecting environmental challenges that influence a bank’s competitive behaviour and efficiency. One of the emerging challenges is the high proliferation of financial technology (fintech) firms, as well as the accompanying goods and services, which are undermining the traditional brick-and-mortar banking business model (Vallee and Zeng, 2019; Claessens and Kodres, 2014). In an environment of unbridled competition and regulatory relaxation, fintech firms use unparalleled innovative technological means as well as their extensive data analytics capabilities to deliver tailored-made and customer-centric financial services, potentially upsetting the competitive dynamics of the banking industry. Customer switching between banks becomes easier as banks that cannot afford to use cutting-edge technologies in the delivery of their products and services are expected to see a drop in non-core interest revenues.

While banks can use technology to increase their efficiency and competitive edge, investments must also be made to improve cybersecurity, data privacy and stakeholder protection (Gulyas and Kiss, 2022). Additionally, if fintech becomes more widely accepted through automation and digitisation, it can save operating costs, improve operational effectiveness and boost revenue growth (Frost et al., 2019). Additionally, one of the major recent challenges that influence banks’ efficiency and competitiveness is the shifting regulatory environment. Regulatory initiatives that encourage the competitive behaviour of banks by lowering entry barriers or encouraging customer switching between banks are eagerly enforced by regulators in an effort to undermine monopolistic tendencies and improve financial inclusion in the financial market (Claessens and Van Horen, 2015). On the other hand, regulators may be prompted by stability worries to increase the capital adequacy of banks, which favourably encourages consolidation.

The legislative reforms have the potential to impact the banking landscape’s competition and efficiency. Again, regulatory loosening and improvements in improved banking technologies have facilitated cross-border banking and heightened competitive behaviour in the financial landscape (Bach et al., 2014). As a result, domestic banks face severe competition from new foreign entrants with superior technology and service delivery methods. Another significant and rising challenge for the banking industry is the incorporation of environmental, social, and governance (ESG) practices into business models. Customers, investors, employees and regulators are all eager to work with banks that incorporate ESG principles into their operations (Khan, 2022).
References


Further reading


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