Mapping the Dynamics of Non-interest Income in Banking Sector: A Systematic Literature Review and Bibliometric Analysis Using Scopus Database

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Abstract: In recent years, the Indian banking sector has experienced major changes with a significant shift of generating revenue from non-interest income over interest income. The non-interest incomes are mostly from fees, commissions, sale of fixed assets, Bank guarantees and Letters of Credit have a strong impact on the financial performance of banks. By analyzing 735 Scopus-indexed articles published in English between 2005 and 2024, this paper attempts to present a blend of Bibliometric analysis along with a Systematic Literature Review (SLR) on the currently available literature on the topic "Non-interest income of Commercial Banks" using VOS viewer software. This study is likely the first to present a holistic view of current banking literature on non-interest income which has rarely been investigated by using Bibliometric and SLR methods. This analysis depicts leading and influential authors, most cited papers, country-wise highest publications, International author's collaborations, and key research topics. By Network analysis, co-citation analysis, etc. the thematic clusters have been identified with the results that Dang, V.D., and Sufian, F. are the most influential authors, and the Journal of Banking and Finance is the leading journal. The USA, UK, China, and Russia are the countries that have major research excellence in this field. This study provides significant insights to academia, policymakers, and Banking professionals interested in future research on Bank Revenue diversification, lending activities, and Off-balance sheet exposures.

1. Introduction

As financial intermediaries, banks are essential to the growth and development of a strong economy. To increase access to banking services, governments, central banks, and international organizations formulate and implement policies that benefit the people (Stiroh, 2006). Commercial banks are generally based on doing two basic activities, Taking deposits and advancing loans. In the latter, they get interest as their primary source of revenue. However, this focus has now been changed to the intermediation and shifting of revenue generation (Kohler, 2015). Similarly, over time, the US banks have also expanded their scope of operations towards generating revenue from several fee-based sources (Maxwell, 2006). A large portion of this data has originated from financial institutions especially the banking sectors in Europe and the US since banks have been vehemently moving towards new business lines and providing fee-based services to cater to their need to generate revenue with a lesser risk portfolio. Similarly, over the past decade, financial institutions have experienced a decline in profits due to the process of financial disintermediation and heightened competition within

the traditional banking sector (Park et al 2019). Their study utilizes panel data from individual banks to investigate the connection between non-interest income and the risk-return profile of holding companies in American banks during the financial crisis. A study by Baek et al., 2018 demonstrates that Korean banks do not benefit from diversifying their operating income. As a result, Korean bank managers prioritize interest income. The findings also explain that the expansion in non-interest-related revenue fosters the growth in expenses, suppressing the impact of diversification on Korean banks' profitability. Consequently, Korean banks promote non-interest income revenues and discourage banking diversification According to this study; low returns and bank instability during the financial crisis are not caused by non-interest revenue. Therefore, it is crucial to examine evolving sources of bank revenue. Due to changes in their business models over time, banks are diversifying their sources of income. The bank's profits must be assessed since they are crucial to the models of supervision: foreign banks are earning more profits than PSBs which earn far less than private domestic banks. Higher state ownership of PSBs considerably reduces their propensity to seek non-interest revenue streams. For public sector banks, fee-based income drastically reduces risk as indicated by profitability statistics. These banks also have a lower default risk. Diversification seems to help PSBs of India from a regulatory standpoint (Pennathur et al., 2012). The unique aspect of this study is to include the application of a bibliometric and systematic literature methodology, which gives it a concise overview of the growing body of research on commercial banks' non-interest income.

The paper's primary contributions use the VOS viewer program, a widely used application for bibliometric research in any field, to discuss the important findings of 735 papers on the subject. Additionally, this approach differs from other approaches that provide high-contributing journals, influential papers, yearly publications, well-known authors, and networks for author collaboration. Furthermore, it identifies the main themes and keyword co-occurrences in previous research, which helps all scholars, identify current and upcoming hotspot issues in this particular field.

2. Literature Review

A literature review is a summary overview of previously published papers to determine the research gap, and scope of study that will be relevant to the topic under study (USC Libraries, 2010). To gain a thorough grasp of the numerous research papers on the non-interest income of commercial banking institutions, this present work has combined bibliometric analysis and SLR. SLR aims to provide the most comprehensive list of all published and unpublished research related to a certain topic of study. SLR adopts transparent, scientific, and reproducible producers, which differentiates it from traditional description reviews. To solve a particular research question, it is necessary to accumulate all related and important research articles and other publications that help us to match our predetermined criteria of inclusion (Mengist et al. 2020). A popular and detailed method for examining and evaluating vast amounts of bibliographic data is bibliometric analysis (Donthu 2021). Many researchers use bibliometrics for several reasons, which include catching the emerging patterns in the impact of articles and journals, identifying common patterns of association, identifying research segments, and examining the cognitive framework of a given field in the context of existing literature (Verma & Gustafsson,2020). Regarding the area of research, several papers have been examined to extract an in-depth understanding inculcated with various dimensions of this topic. Park et.al (2019) in their study discovered that Non-Interest Income facilitates improving the stock return and decreasing bank risk during the crisis period and bank risk and return were unaffected by non-interest income from investment banking operations. Trivedi (2015) finds an insignificant relationship between Increasing share of Non-Interest Income with Risk-adjusted performance but between Income diversification and Profitability found to be positive and significant. Non-interest income is also correlated with macroeconomic instability and the concentration of the banking sector (Dvorak and Hanousek 2009). Efficient banks typically make the most money from non-interest income, according to research by Tennant and Sutherland (2018). Mehzabin et. al (2023) found a positive nexus among operating efficiency, capital structure, and banks' financial performance when moderated by Non-Interest Income. Previous studies indicate in comparison to Interest income, non-interest income is more volatile (Williams & Prather, 2010; Stiroh, 2004; Stiroh & Rumble, 2006). This suggests that a bank's

profitability may be more variable when non-interest income is included. Non-interest revenue provides retail-oriented banks with a substantial diversification advantage, according to (Köhler 2015). Research on the impact of fee-based income on the risks of the banking sector has yielded mixed results. Some studies have found that non-interest income is linked to increased revenue volatility. However, Williams (2016) suggests that it doesn't elevate the risks of insolvency in banks. Interestingly, Saunders et al. (2016) challenge Stiroh's (2004) earlier findings, which indicated that a larger proportion of non-interest income in a bank's revenue structure leads to decreased risk-adjusted returns. Regarding stock market performance, Stiroh (2006) found no significant relationship between stock returns and Non-interest income of commercial banks. Sissy et. al (2016) suggest that risk exploration offsets the bank revenue diversification of cross-border transactions. So, these literatures provide good insight into non-interest incomes in commercial banks along with understanding the framework of bibliometric analysis and systematic literature review.

3. Research Gap

All of the above studies focus on various empirical and conceptual studies that provide numerous insights for policymakers, institutions, Depositors, and financial intermediaries to make informed decisions in this particular field. The purpose of the research is to investigate the connection between non-interest income and other facets of financial performance. In particular, they examine the effects of variables including revenue volatility, capital structure, risk-return trade-offs, stock returns, off-balance sheet exposures, profitability, stability, and net interest margins.

Hence as far as the literature review is concerned, it is interesting to reveal that absolutely no research of bibliometric analysis on this particular field has been done yet. So this study can be considered the first research on this topic and is a humble attempt to identification of patterns and trends in these previous studies. This study uses a hybrid research design incorporating a blend of Bibliometric analysis along with Systematic Literature Review (SLR) to provide greater insights into a comprehensive knowledge landscape in the study of Non-Interest incomes. In light of this, the following research questions have been developed to guide the study: RQ.1- Which journals contribute the most to the field of "Non-interest income in Commercial banking"?. RQ.2- Which authors are the most prominent in this area, and how many citations they have received? RQ.3- Which countries have made the most contributions to the study of Non-interest income? RQ.4- Which are the top Papers having the most citations? RQ.5- Who are the authors having collaborations in this field of study? RQ.6- Which articles are inter-connected and what are the various clusters generated?

4. Objectives of the Study

In light of the research questions formulate above, the several objectives of this study include;

  i. To find out the leading academic journals contributing significantly to the area of research on non-interest income in commercial banking.
 ii. To identify the most influential authors in this field of research and their citation impact.
iii. To highlight the countries with the highest contributions and their patterns of collaboration.
 iv. To determine the highly cited research papers in the area of non-interest income in banking.
  v. To analyse the co-authorship networks and relationships among top researchers in this particular field and to investigate the inter-connected of articles and various clusters to be formulated.

5. Research Methodology

By summarizing earlier research, Bibliometric analysis which is employed in this study aims to expand the scope of research knowledge. (Zupic & Ater,2015). In this parlance, Bibliometric analysis refers to a quantitative evaluation of written publications that measures the advancement of scientific studies to determine the effect they have. (Broadus,1987). A bibliographic study has been used to find out the most influential authors, most cited journals, Contribution of top countries, Network analysis of top authors, Keyword and Citation analysis, Co-citation, Bibliographic Coupling, etc. for

visualization by analyzing the metadata. Similarly, SLR is used to provide qualitative and thematic insights to gauge the research potential, and related areas and facilitate future researchers researching this area.

It offers a science mapping and a performance analysis that help in determining the thematic evolution of a study area. The topic is appropriate for this method since non-interest income in banking research is vast and multidisciplinary but still unstructured, as was previously discussed. In line with Fahimnia (2015), we followed a three-step technique including, (Assembling, Arranging, and Assessing) to measure the highly rated journals, and the prolific authors and to give a direction for further research in this area. Similarly, the Systematic Literature Review (SLR) depicts a structured process of review of literature to identify the gaps, and methods and synthesize the findings. VOS Viewer software has been used for the analysis and mapping of collected data.

5.1 Data Source

This study uses Scopus database to conduct an empirical analysis of journals and articles published between 2005 to 2024. The primary crux of this research is to visualize the research potentials, Network analysis, Citations and Co-Citation analysis, an insight about Authors and Articles, Keywords etc.

The reasons for using the Scopus database for this study mainly due to its accessibility, Another reason for the selection of Scopus over other databases like Web of Science etc. for its broad and multidisciplinary coverage, robust analytical tools, Scopus is indexed with high quality, reputable journals in banking and finance, making it best suited for bibliometric and systematic literature review analyses.

The period of study covers a period of 20 years ranging from 2005 to 2024 to have a better grasp on the evolutionary patterns of studies on non-interest income in banking. The time frame is important owing to the growth momentum of scholarly interest in these areas post-2005. Followed by the deregulation and earlier shifting in banking strategies due to Globalisation and deregulation in the 1990s and 2000s. The 2008 financial crisis has compelled banks to diversify their revenue. Besides, the surge of digital banking and innovations has spurred extensive research in this area, particularly in Scopus-indexed Journals.

5.2 Criteria for Selection of Study Framework

<div style="border:1px solid">

Assembling

Search query: (Title-Abs-Key ("Non-Interest And Income   And of   And Banks") or Title-Abs-Key ("Fee And Based And Income And of And Banks") or Title-Abs-Key ("Income And Diversification And of And Banks") or Title-Abs-Key ("Revenue And Diversification And Of And Banks"))   To (Language, "English"))

Search database: Scopus
Total articles retrieved= 827

</div>

<table>
<tr><td colspan="1"><div align="center">Arranging</div>
Filtered by Subject area:
Finance, Economics and Econometrics= 538, Accounting & Management =316, Multidisciplinary = 9, Decision Sciences = 55, Engineering = 45, Mathematics = 33, Computer Science = 57, Arts and Humanities = 25, Social Sciences = 176,
Year: 2005-2024
Types of document: "articles".
Stages of Publication: "Final"
Type of source: "Article,
Language "English"
Final articles: 735 articles</td></tr>
</table>

<table>
<tr><td><div align="center">Assessing</div>
Analysis method: (SLR) Descriptive analysis- Most Prominent Journals, Top authors, Publication trends year by year,
Bibliometric analysis- Bibliographic Coupling, Citations & Co-citations analysis, Co-authorship, Network analysis.
Limitations: Completeness and accuracy of information obtained from the Scopus database</td></tr>
</table>

6. Scope of the Study

Published empirical papers from 2005 to 2024 retrieved from the Scopus database were rigorously examined for this study. A total of 735 papers have been selected for bibliometric and SLR analysis using VOS-Viewer software through visualization and interpretation of factual findings. The selected papers include themes connected to Non-interest income, Diversification of Revenue and Bank performance. The timeframe of this study captures two decades of banking spreading over Pre and post global financial crisis. The identification of the research gaps, and the significance of the factual data have also been thoroughly analyzed.

7. Descriptive Analysis:

Chart 1: Year-wise Publication Trend
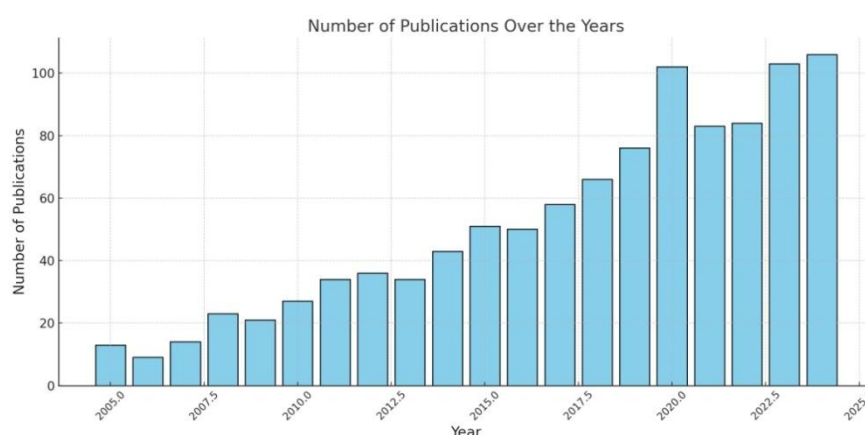
Source: Authors' compilation

This chart shows the trends of publications year-wise from 2005 to 2024. Although articles have been published since 2005, Chart 1 shows that the majority of the articles are released starting in 2024. The graph demonstrates a trend of fluctuations, indicating that the quantum of articles publications in 2015 decreased while in 2020 it increased. In 2024, a significant number of articles were published. A thorough investigation of this chart reflects the growing importance of Non-interest income as an

emerging topic in banking. It is assumed that this upward trend will continue due to the shifting of banking strategy owing to internet penetration, Digital banking products, Financial inclusion and literacy, Reforms in banking regulations and models, etc that usher banks to generate fee-based incomes more and more.

7.1 Top Contributing Journals

Table 1: Volume of Journal Articles Published

Journals	Count of Papers
Journal of Banking & Finance	31
Banks & Bank Systems	19
International Business Research	14
Cogent Business and Management	13
Finance Research Letters	12
Global Business Review	10
Pacific Basin Finance Journal	10
European Journal of Finance	09
International Economics Review	09
Journal of Financial Regulation	09

Source: *Authors' compilation*

Table 1 highlights the distribution of publications across 10 academic journals, with the Journal of Banking & Finance leading with 31 publications, followed by Banks and Bank Systems with 19. Other notable journals, including International Business Research (14) and Cogent Business and Management (13), reflect strong engagement with global finance and business topics. Several journals, such as *Global Business Review* and *Pacific Basin Finance Journal*, each have 10 publications, indicating balanced contributions to regional and thematic financial studies. Overall, the data showcases a diverse and targeted dissemination of research in finance, banking, and business domains.

Journals of Banking and Finance, bank systems, and Cogent Business and Management focus on innovations in banking, financial performance, and income streams which attracts the researchers to go for publishing in these quality journals. Pacific Basin Finance Journal and Global Business Review cater to the need of regional research like India where non-interest income is gaining much interest due to overhaul in banking models, Fintech, and affordability of digital banking products. These journals are indexed in the Scopus database attracting the researchers to publish their works.

7.2 Most Prolific and Influential Author

Table: 2 Number of documents per author

Authors	Number of Documents	H-Index
Dang, V.D	11	10
Sufian, F.	11	10
Amidu, M.	08	07
Lee, C.C	07	05
Tarazi, A	07	06
Calmès, C	06	03
Huynh, J	06	05
Tan, Y.	06	05
Williams, B.	06	05
Gambacorta, L.	05	09

Source: Authors' compilation

Dang, V.D. and Sufian, F. are the most frequently published authors, each contributing to 11 publications, highlighting their prominence in the research domain by having an H-index of 10 each. Authors like Amidu, M. (8 publications) and Lee, C.C., and Tarazi, A. (7 each) also play significant roles in the literature. They also have a good H-index ranging from 06-07. The remaining authors, including Calmès, C., Huynh, J., Tan, Y., and Williams, B., have consistent contributions (6 each), while Gambacorta, L. has 5 publications. The data reflects a mix of leading contributors and collaborative efforts in the field of banking, finance, and related studies. These leading authors focused specifically on banking incomes and their impact on financial performance and various through a critical analysis by using advanced empirical and econometric models that have been cited by other researchers due to their quality, peer review, and scholarly value.

7.3 Top Countries in Terms of Publication

Chart: 2: Country-wise Publications Trends
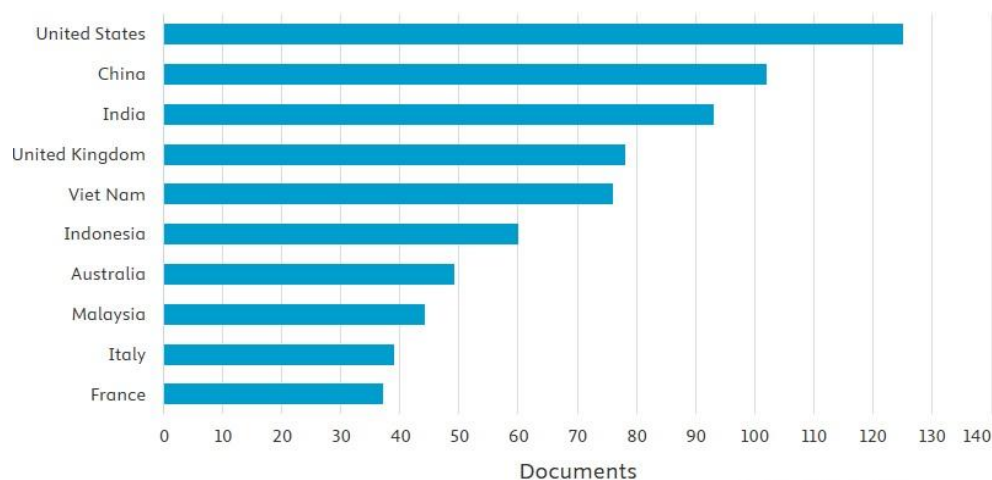
Source: Authors' compilation

The United States of America is the world leader in this field with 125 articles demonstrating its dominance in research output. With 102 articles, China comes in second, demonstrating its increasing sway over academic research. India makes a substantial contribution as well (93 publications), demonstrating its active participation in the scholarly community. With 78 and 76 articles, respectively, the United Kingdom and Vietnam come in second and third, demonstrating their significance in global research initiatives. With modest contributions to the field, Indonesia (60), Australia (49), Malaysia (44), Italy (39), and France (37) complete the list. Countries like China, USA, India, and UK have demonstrated their dominance in the publications in this field over Latin American, African, and other Asian nations. Though this study is a rigorous reflection of research on NII, other tools such as Meta-analysis, cross-country analysis, etc can be more helpful in deriving other aspects. There are also gaps in collaboration of authors. Besides all the odds, the trends of rising publications indicate that Non-interest income is not an uncovered and niche topic. It has gained momentum to a greater extent after 2015 with the advent of fintech services, and Internet penetration in populated countries like India and China.

8. Bibliometric Analysis

According to (Garfield, 1964), Bibliometric study refers to a visualization method to measure and monitor the current status of research on a particular topic under study. This study has an advantage over traditional methods when compared to SLR and Bibliometric. The Scopus database has been chosen for selecting the papers. Citation analysis in VOS viewer is used to obtain citations.

8.1 Citation Analysis

Citation analysis assesses the impact of research by looking at how frequently an author's work is cited by others, with citations signifying an article's impact and importance. Out of 735 papers on non-interest income, only 14 fulfilled the 25-citation criteria. Calmes and Christian's paper had the most citations (240), followed by Williams, Barry (184) and Gambacorta, Leonardo (27). Table 3 highlights these key contributions to the field. The citation analysis identifies various research gaps and opportunities for future investigation. Key limitations include insufficient geographical coverage—particularly in Latin America and smaller Asian countries—and insufficient emphasis on new topics such as fintech banking. While some studies look at commercial banks' risk-return dynamics, there isn't much study on the long-term relationship between non-interest income (NII) and bank stability. Integrating innovative banking approaches and linking NII with broader economic data may yield new insights. Furthermore, the influence of income diversification during systemic disruptions such as the COVID-19 pandemic is underexplored, necessitating further research.

Table 3: Bibliometric Data of Authors

Title of Articles	Journals	Authors	Citations
"Financial Structure change and Banking Income: A Canada–U.S. Comparison"	Journal of International Financial Markets, Institutions and Money	Calmes, Christian	240
"Non-Interest Income and Bank Risk: The Role of Financial Structure"	Pacific-Basin Finance Journal	Williams, Barry	184
"Bank Diversification Strategies Under Market Competition"	Sage Open	Huynh, Japan	178
"Income Structure and Performance: An Empirical Analysis of Islamic and Conventional Banks in Indonesia"	Bulletin of Monetary Economics and Banking	Ali, Mohsin	137
"The Effects of Business Models on Bank Risk Before, During and After Financial Crisis: Evidence from China"	Applied Economics	Cheng, Maoyong	131
"Noninterest Income Generating Activities and The Future of Banking"	Journal of Stock & Forex Trading	Theoret, Raymond	97
"How Does Bank Diversification Affect Efficiency? Insights of The Central Europe"	Global Business Review	Moudud-Ul-Huq, Syed	79
"Non-Interest Income and Bank Lending"	Journal of Banking & Finance	Tarazi, Amine	117
"The Interrelationship Between Net Interest Margin and Non-Interest Income: Evidence from Vietnam	International Journal Of Managerial Finance	Le, Tu D. Q.	37
Bank Profitability and The Business Cycle"	Journal of Financial Stability	Gambacorta, Leonardo	27

Source: Authors' compilation

8.2 Co-Citation Analysis

Co-citation analysis shows the strength of citations between publications (Small, 1973). Co-citation analysis aims to gauge the relationships between keywords, publications, themes, and researchers (Pilkington, 1999 Co-citation is the frequency with which two texts are cited together in other articles, showing a common thematic or conceptual link within a research stream. Cited authors and cited references form the analytical unit of co-citation analysis. Out of the total 30359 cited references in Figure 1, 165 items have at least 20 citations, meeting the requirement. Every single one of the 165

things has a network connection. This indicates strong thematic linkages and the figure indicates dense clusters of related research areas based on frequently co-cited research.

The co-citation study reveals that much of the existing research remains focused on traditional banking, with less linkages to developing areas such as behavioural finance, digital innovation, and regulatory reforms influencing modern banking. Surprisingly, research from powerful economies—frequently in the forefront of banking innovation—are underrepresented. However, highly cited works by researchers such as Williams and Calmes provide solid conceptual foundations. These studies can provide useful foundations for developing new theories in rapidly growing fields such as fintech and digital finance.
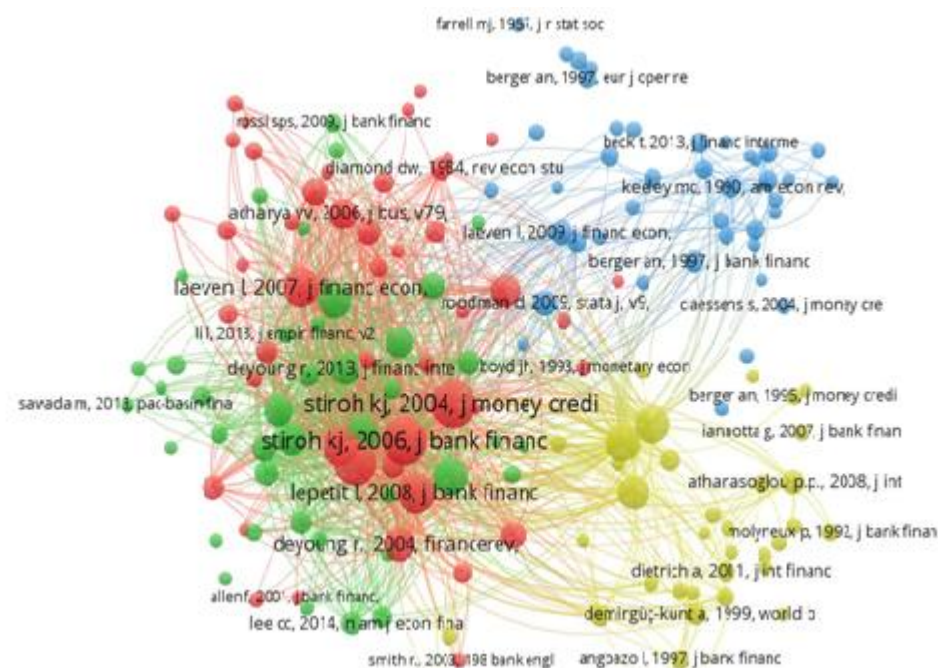

Figure 1: Cited references & Co-Citation analysis
Source: Retrieved through 'VOS Viewer

8.3 Cited Authors and Co-citation Analysis

Through cited authors, co-citation appears in Figure 2. 276 authors out of the 19136 pass the threshold when an author's minimum number of citations is 20. This refers to the minimum number of citations of each author shown in the above map is 20. A map of 276 authors sub-divided into four groups has been created for co-citation analysis. The highest number of citations goes to Berger, A.N. i.e. 819. Stiroh, K.J. and Ghosh, S. have been cited with 692 and 20 respectively.

High co-cited authors like Bergers and Stiroh retain dominance in the particular literature available worldwide. Their research can be server as a device of direction for future research. Authors like Ghosh shows a very low citations but is having higher potential for future enquiry and gaining popularity gradually. The co-citation map shows a geographic bias in scholarly influence, with few scholars from India or underdeveloped countries. This indicates a research gap: incorporating regional and context-specific insights into global frameworks.
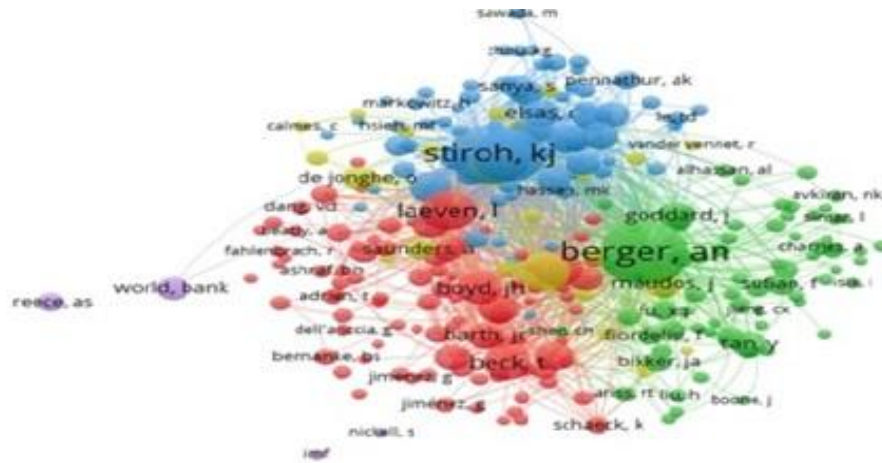
Figure 2: Cited Authors and Co- Citation analysis
Source: Retrieved through VOS Viewer

8.4 Bibliographic Coupling (Data Clustering)

Kessler introduced the idea of bibliographic coupling in 1963. When two articles cite a third work in common in their reference list, they are said to be bibliographically coupled. The intensity of bibliographic coupling is increased when two articles have more references that they frequently cite in their reference lists. Bibliographic coupling groups documents that share a common theme into clusters. 735 studies were categorized into six clusters using VOS Viewer. The bibliographic relationship of documents is shown in Figure 3.
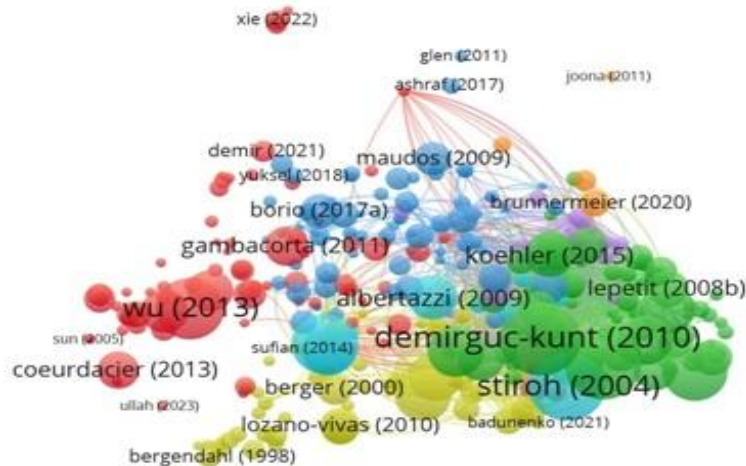

Figure 3: Clusters of Documents
Source: VOS Viewer

8.6 Analysis of Clusters

Cluster 1: One of the largest clusters is, Cluster 1 which is shown in red. There are 442 citations and 93 articles in it. Diversification and profits management strategies employed by African banks are the main topics of the first cluster. Ayenew and Wiese (2019) consist of 40 Citations and 04 link strengths followed by Altavilla (2018) having 165 Citations and 98 link strengths. Similarly, in the case of Asonku (2017), the Citations are 222 and the total link strength is 55.

Cluster 2: The color green is used to represent this. It is cited 666 times and has 75 articles. The second cluster's theme is bank risk-taking with stability and diversification dynamics. The two most cited papers in this cluster are De Jonghe (2010), having 287 citations and a link strength of 832, and 318 citations and 598 link strength goes to Baele (2007)

Cluster 3: Blue colour shows Cluster 3. It is cited 141 times and has 71 articles. The cluster's theme is bank competition and diversification. The two most cited papers in this cluster are by Amidu (2013), with 185 citations and 254 link strength, and 78 Citations by Fang (2020),

Cluster 4: The yellow color demonstrates this Cluster. It is cited 128 times and has 53 articles. This cluster's theme is banking concentration in the European region. The two most cited papers in this cluster are Berth (2013), with 145 citations and 300 link strength, and Lojano (2023), with 58 citations and 25 link strength.

Cluster 5: It is shown by Sky blue colour and is cited 37 times and has 53 articles within. This cluster's theme is banking risks and earnings volatility. The two most cited papers in this are adesina (2014), with 147 citations and 145 link strength, and hou (2023), with 42 citations and a 54 link strength.

Cluster 6: Cluster 6 is colored in light blue color. It is cited 20 times and consists of 12 articles. This cluster's theme is bank profitability and the business cycle. Two prominent authors in this section are Chen (2014) and Juna (2011) having 154 and 289 citations respectively.

8.7 Mapping of Contributions of Countries to Research in Non-interest Income

Six clusters of international research on non-interest income are depicted in Figure 4. With 74 and 72 documents, respectively, England and India lead the first cluster, which is highlighted in red. The United States, Canada, and Belgium make up the second cluster, which is shown in green. Ghana leads the third cluster (shown in blue), which is followed by Finland, Greece, and Nigeria. Australia, Russia, and Poland are all included in the fourth cluster, which is dominated by China with 127 documents. Spain contributed 28 documents to the fifth cluster, which is represented in violet and includes Bangladesh, Romania, Chile, and Spain. Portugal, France, and Turkey make up the sixth cluster, which is shown in sky blue. France has the most documents (47). According to the map, research collaboration on non-interest income is influenced by area, with the United States, China, England, and Russia working with the most nations worldwide.

There are significant research gaps that these clusters have shown. The lack of numerous developing countries in the collaborative network, especially those from Africa, Latin America, and the Middle East. These areas are underrepresented even though non-interest revenue is becoming more and more crucial for maintaining financial stability. Global banking narratives are generally molded by their financial systems, which may not represent the realities of other regions, leading to an imbalance in banking theories, as evidenced by the dominance of nations like the USA, China, and England in research output.
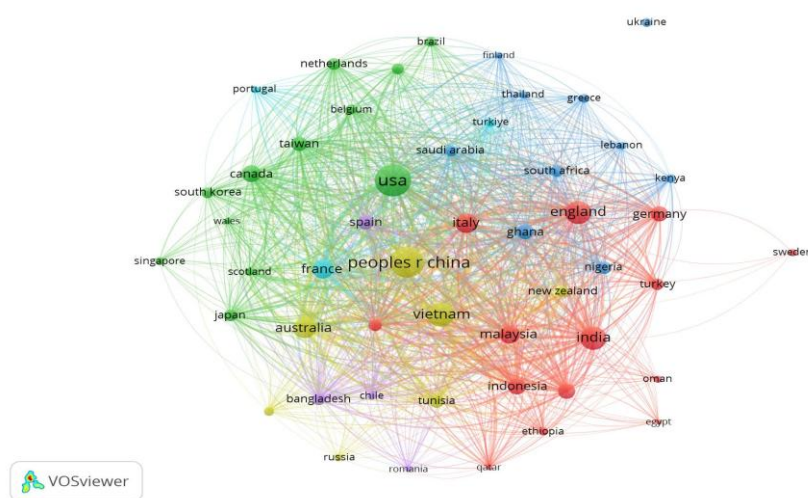

Figure 4: Clusters of Countries
Source: VOS Viewer

8.6 Analysis of Co-occurrences Map

VOS viewer is used to construct a co-occurrence map to find out the most often happening keywords that have occurred the most times in the articles. A map based on specific bibliographic information has been created using VOS Viewer. The way of counting that was chosen is the full counting method. Of the 3430 keywords, 302 reach the limit when five is set as the minimum number of occurrences.
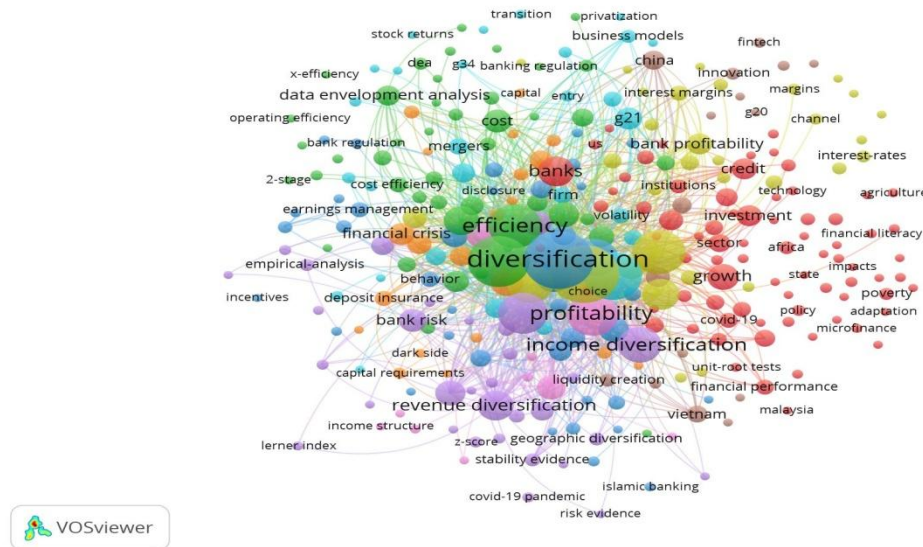

Figure 5: Keyword Occurrences through Network Visualization Map
Source: VOS Viewer

This map in Figure 5 provides a thorough overview of research gaps and trends in examining the effect of income diversification on bank performance. Strong connections between terms such as profitability, efficiency, and diversity imply that they are the main topics of current research. The Green Cluster emphasizes data envelopment analysis (DEA), diversification tactics, and operating efficiency. Blue Cluster uses words like bank risk, z-score, and stability evidence to describe risk, stability, and financial crises, Red Cluster emphasizes growth, investment, and development components. Orange/Yellow Cluster focuses on financial success, geographic diversification, and profitability. Current issues and advancements in the banking industry are reflected in terms like microfinance, fintech, and the COVID-19 pandemic.

The patterns of clusters formed reflect a segmented yet interconnected stream of research in the study of non-interest income. Many research gaps like not participation of small banks, RRBs of emerging economies, Non-inclsuion of behavioural and digital finance, lack of studying the role of ESG and sustainability, impact of pandemic etc. have been found and future directions of research can be better understood if these gaps can be identified and studied.

9. Findings and Recommendations

This study demonstrates by using SLR and Bibliometric analysis to find out about the Prolific authors in the field, Most Prominent Journals having large numbers of citations, citations & co-citations analysis, forms of clusters, etc. The six research questions have been addressed by the authors. Through various analyses conducted during the study, the results of each research topic are highlighted and presented appropriately.

9.1 Major Findings

➢ RQ (1) depicts the most leading and popular journals on the subject of Non-interest Income research. Results show that the Journal of Banking and Finance, Banks & Bank Systems, as

well as International Business Research are the leading authors with 31, 19, and 14 publications, in that order.

➢ RQ (2) deals with the most Prolific and influential authors having large number of citations. According to our research, Dang, V.D. and Sufian, F. are the top authors in the field of Non-interest Income, each having 11 papers and a H-index of 10. These authors have emerged as the most important researchers having numerous scientific contributions to this field.

➢ RQ (3), shows that the United States leads the world with 125 research papers, followed by China with 102 and India with 93.

➢ Regarding top articles and their citations under RQ (4) in the field of Non-Interest income research. Among the most cited articles in that subject area are Christian's Change of Financial Structure and Banking Income: A Canada–U.S. Comparison, which has 240 citations followed by Non-Interest Income and Bank Risk. The Role of Financial Structure by Williams, Barry has 184 citations.

➢ RQ(5) demonstrates authors who have collaborated among themselves towards Non-interest Income research. An article co-authored by Berger A. N., Stiroh K. J., and Fukuyarna H. constitutes one cluster.

➢ Based on the similarity of the papers RQ(6) identified three clusters. The highly cited papers from all Six clusters include Ayenew and Wiese (2019), Altavilla (2018), De Jonghe (2010), Baele (2007), Amidu (2013), fang (2019), Lojano (2023), hou (2023), Chen (2014) and Juna (2011)

After addressing the research questions, there is a need to go beyond the factual data and analyze the research gaps, contributions, and implications that need to be highlighted.

9.2 Identification of Research Gaps

i. Most of the studies are related to traditional banking concepts and there is a huge gap of integration with emerging topics like behavioural finance, technology, Digital innovations and regulatory overhauls in modern banking.

ii. There are also underrepresentations of developed economies like Southeast Asia and African countries towards these emerging areas which are the powerhouse of innovating banking products.

iii. Non-inclusion of crisis centric studies like impact of Non-interest income on performances of banks during global financial crisis and COVID-19 Crisis.

iv. In-depth research on Long-term empirical impact studies with modern banking concepts as mediating factors has been found absent.

9.3 Contributions

The research posits a lot of contributions for future studies.

i. By knowing the top influential authors, Top contributing journals, cocitation networks, etc. this study offers a mapping of the evolution and concentration of this area as well as facilitates the future researchers to navigate inside the literature conveniently and to get the collaboration easily for working and publishing the research.

ii. With the help of keyword and co-word analysis, this paper highlights the important themes of research like digital finance, fintech, behavioural finance, risk, income diversification as the conceptual frame work for further study.

9.4 Recommendations

From the above analysis following recommendations can be found out.

i. Future researchers should focus on Non-intrerst income strategies evoving rapidly in emerging markets.

ii. More number of comaparative studies acroos countries and banking systems should be undertaken to find out the impact of NII and financial performance.

iii. Under-researched themes like ESG related income sources, fintech, Pandemic crisis impact on non-interest incomes should be studied.

iv. To increase revenue stability, banks should intentionally expand their non-interest revenue streams, particularly during times of unstable interest rates or recessions.
v. The risk-return trade-offs of non-interest income activities, particularly those associated with fee-based services and off-balance sheet operations, should be carefully considered.
vi. Regulatory bodies should consider frameworks that encourage healthy diversification of income streams in commercial banks while monitoring associated risks,
vii. More funding should be allocated to data-driven studies that use advanced bibliometric and econometric techniques to uncover insights in banking performance.

9.4 Policy Implications

The findings of the study can have several policy and practical implications;
i. Banking sectors in developing countries can be benefitted by knowing how non-interest income affects the stability profitability as a part of the banking performance.
ii. The extent of exposure to risky transactions such as bank guarantees, LOCs. Etc can be effectively calculated to take decisions.
iii. Banks can go for developing innovative and sustainable fintech products that will serve as an alternative to traditional interest generating products.

10. Conclusion

This study on non-interest income and Commercial banks and the contributions of various authors in this area are the main objectives of this study. For a comprehensive understanding, it combines bibliometric analysis with Systematic Literature Reviews (SLR) with the studies conducted between 2005 and 2024, paying particular attention to the expanding field of non-interest income. It shows that more authors are working together to publish in reputable journals, indicating an upward trend. Leading authors and their influence based on citation data are highlighted in the analysis. Bibliometric mapping is used to visualize author networks and clusters of linked studies. It provides an invaluable basis for upcoming studies, assisting researchers in carrying out thorough literature reviews and locating possible gaps in the field. This effort encourages more research into non-interest income and its function in commercial banking by highlighting trends and collaboration. Most of the studies are related to traditional banking concepts and there is a huge gap in integration with emerging topics like behavioral finance, Digital innovations, and regulatory overhauls in modern banking. A lot of research gaps like the underrepresentation of developed economies in this area of research, Non-inclusion of crisis-centric studies like the impact of Non-interest income on performances of banks during COVID-19, absence of In-depth research on Long-term empirical impact have been found. This study is a valuable tool for scholars, providing a summary of earlier research and directing further studies in this emerging field. Based on the relevance and findings of the study, actionable recommendations and implications can be suggested. Empirical models should be designed to study the impact of Non-interest income and performance of Indian banks with a segmentation of Public, Private, and Foreign banks. The study of under-researched areas such as fintech-led NII, ESG and its role in generating fee-based services of banks, the impact of post-COVID income diversification, etc. can be undertaken. Reserve Bank of India should develop a strategy where banks can leverage their fee-based services by developing non-interest income practices. Banks should disclose detailed components of non-interest income in line with BASEL norms. Without compromising customer satisfaction, banks should bank upon digital banking, e-payments, etc. as new income sources.

Declaration of Conflicting Interests
The authors have no conflicting interests regarding the Contents and publication of this article.

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