

## A Systematic Literature Review of Bank's Financial Performance using CAMELS Model

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### ABSTRACT

**Purpose:** This study aims to synthesize the past decade of empirical research on evaluating bank financial performance using the CAMELS (Capital adequacy, Asset quality, Management efficiency, Earning quality, Liquidity, and Sensitivity) model. **Methodology:** The literature search was conducted using the specific keywords to define the scope of the study and identify a sample for further evaluation. We used CAMELS model, financial performance, profitability and banking Industry as the keywords. With the use of Systematic Literature review method, the present study reviews 80 research papers. The data included in the study is collected from the secondary sources. Secondary sources like, ProQuest, Ebscohost, Google Scholar, research Gate, Sage, Journal Papers. **Findings:** Detailed analysis reveals that most research employs the CAMELS model to examine banks financial performance, establishing its variables as significant evaluative tools. Existing literature includes public, private, Islamic and various other banking sectors, consistently highlighting Capital Adequacy and Asset Quality as the most influential performance drivers. However, the "S" (Sensitivity) aspect remains under-researched, presenting a scope for future research. Additionally, there is significant potential for further studies focusing on SFBs, RRBs, Cooperative banks and other banking sectors to broaden the current understanding of the sector.

**Keywords:** Asset Quality, Capital Adequacy, Earning Quality, Financial Performance, Liquidity, Management Efficiency, Sensitivity, Small Finance Banks.

### Introduction

India has been one of the fastest growing major economies since last many years. It is important that this growth continues to be equitable. Indian banks play a vital role in the country's economy. It balances the regulatory oversights, manages technical innovations and the other economic challenges. Banks serve as a foundation of the financial system; banks contribute to the efficiency and stability of the economy and also serve as critical driver of financial inclusion. According to section 5(1) (b) of the banking regulation act, 1949 banking means "The accepting for the purpose of lending or investment, of deposits from public, repayable on demand or otherwise and withdrawal by cheque, draft, order or otherwise." The financial performance of banks reflects how well a bank is managing its assets, liabilities and overall financial operations. It is a key indicator of measuring the financial health and efficiency of the banks. It is assessed through various metrics like profitability, liquidity, capital adequacy and assets. These metrics helps the regulators, investors, policy makers and stakeholders to ensure the stability, efficiency and sustainability of the banks. To measure the financial performance CAMELS model is widely used by the banking sector.

### CAMELS Model

CAMELS Model is originally developed in the U.S to measure the overall condition of the banks. CAMELS Model is a well-known framework use by the analyst and regulators to assess the financial performance of banks. Although initially used in the U.S the CAMELS model has been accepted by the banking authorities around the world, including India. The model is used as a comprehensive tool to measure the financial health of the banks through six attributes, Capital adequacy (**C**), Asset Quality (**A**), Management efficiency or quality (**M**), Earnings (**E**), Liquidity (**L**) Sensitivity (**S**). All the six parameters are relevant indicators for assessing the financial soundness of a bank, being recommended also by the IMF and the World Bank (2005), grouping, moreover, the financial soundness indicators of the banking sector, according to the six key areas of potential vulnerability, in the CAMELS approach (Roman, A., &Şargu, A. C. (2013).

- **Components of CAMELS Model**

**CAMELS Model:** Camels model is widely used tool to measure the overall financial health of banks. The camel model is developed by U.S regulators in 1979. The rating system works on scale of one to five, with one being the best and five being the worst. There are six components of Camels model:

- **Capital Adequacy:** Capital adequacy reflects the bank's capital to its risk weighted assets. It measures the capacity of a bank to absorb potential losses.
- **Asset Quality:** It evaluates the quality of bank's assets, mainly the loan portfolio. This attribute also examines the level of non-performing loans (NPLs).
- **Management Efficiency:** It assesses the bank's leadership efficiency and operational effectiveness. The financial health of the bank often gets effected because of the management efficiency.
- **Earning Quality:** The earning component focuses on the profitability and sustainability of income of the bank. Stable and sustainable earnings support the growth and risk mitigation factor of the bank.
- **Liquidity:** It measures the bank's ability to manage short-term obligation and cash flow. It also ensures that bank can handle any sudden withdrawal demands.
- **Sensitivity to Market Risk:** It ensures that the bank's risk management strategies are sturdy. It evaluates the bank's exposure to external risks.

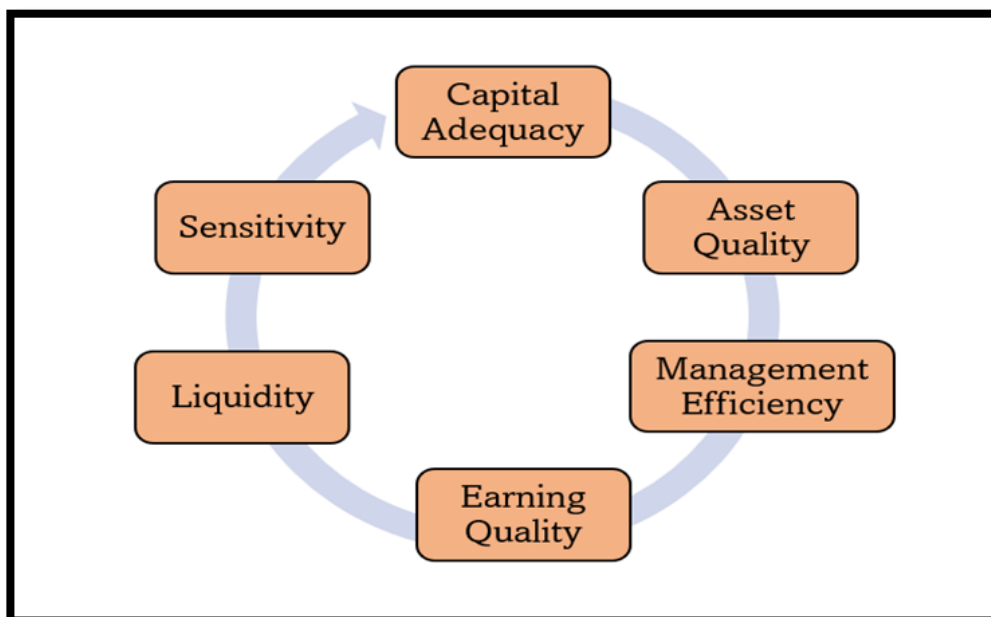


Figure 1: CAMELS Components

### Advantages of CAMELS Model

- **Thorough Evaluations** – It provides an overall perspective on bank's financial health by assessing various aspects.
- **Regulatory oversight** – It supports the regulators in monitoring the stability and efficiency of the bank.
- **Performance Comparison** – It allows banks to compare their performance with the other banks and improves the weak areas.

### • Financial Performance

The term "financial performance" refers to the evaluation and measurement of an institutions financial health, efficiency, and effectiveness in achieving its financial objectives. The key elements or metrics of financial performance are profitability, liquidity, solvency, and efficiency which are measured through financial ratios. Most of the studies uses profitability metric as dependent variable and the other CAMELS variables as independent variables.

The researcher included the papers which studied the financial performance of Commercial Banks, Small Finance Banks, Public sector Banks, Private Sector Banks, and other International Banks.

### Methodology of Literature Review

A literature review must use methodology which is systematic in approach, explicit in describing the procedures by which it was conducted and comprehensive in its scope of including all relevant material related to particular phenomena (Pratap Singh, H., & Kumar, S., 2014). In this research paper, the researcher conducted a search for published research papers on CAMELS model in various databases.

### Database Search

Research Papers were selected from the following database,

- **ProQuest**
- **Ebscohost**
- **Research Gate**
- **Google Scholar**
- **Sage**

Inclusion and exclusion of research papers is on the basis of relevance, keywords, time-frame, and peer review. The literature search was conducted using defined keywords to identify a sample for further screening. The search for the research papers started with the keywords CAMELS model and CAMELS variables. Then the next keywords are financial performance, profitability and Banking Industry. The keywords are examined within the titles, and abstracts for the selection of the research papers. The filtering process was carried out by identifying the papers with focus on their relevancy and suitability.

### Data Collection

Research Papers were selected on the basis of following criteria:

- Papers published in peer-reviewed journals are considered for the study.
- Papers were collected for 15 years (2012-2026).
- Papers with full-text were considered for the review.
- Papers related to keywords were considered for further study.

The literature search was conducted using the specific keywords to define the scope of the study and identify a sample for further evaluation. We used CAMELS model, financial performance, Profitability and Banking Industry as the keywords and checked in the titles, abstracts and introductions of the research papers for the identification and selection process. The initial search resulted in 150 research papers within defined boundaries. These papers were then screened to select most relevant papers for our research context. Following a thorough analysis, 80 research papers were selected for final review.

### Data Selection

The data selection process is explained in the figure 2, it presents the flow chart of the methodology for data selection. At first, we identify the papers related to our study from the databases, then the screening process starts

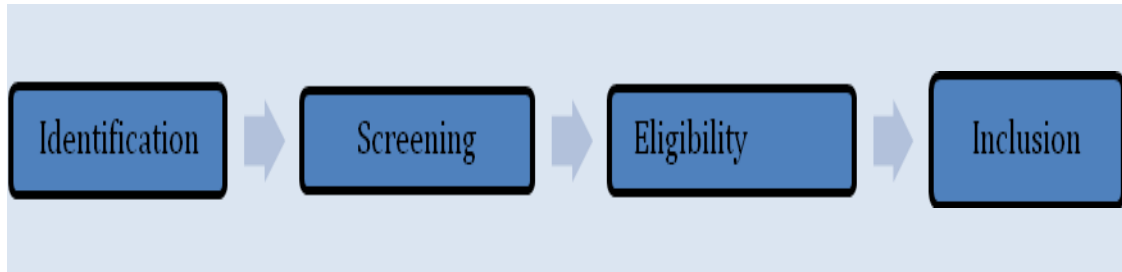


Figure 2: Data selection process

Figure No.3 presents the summary of the research paper selection process. A systematic method is used to identify and select the research papers for the study. The methodology is used by (Jayasekara & Perera 2020) in their literature review paper.

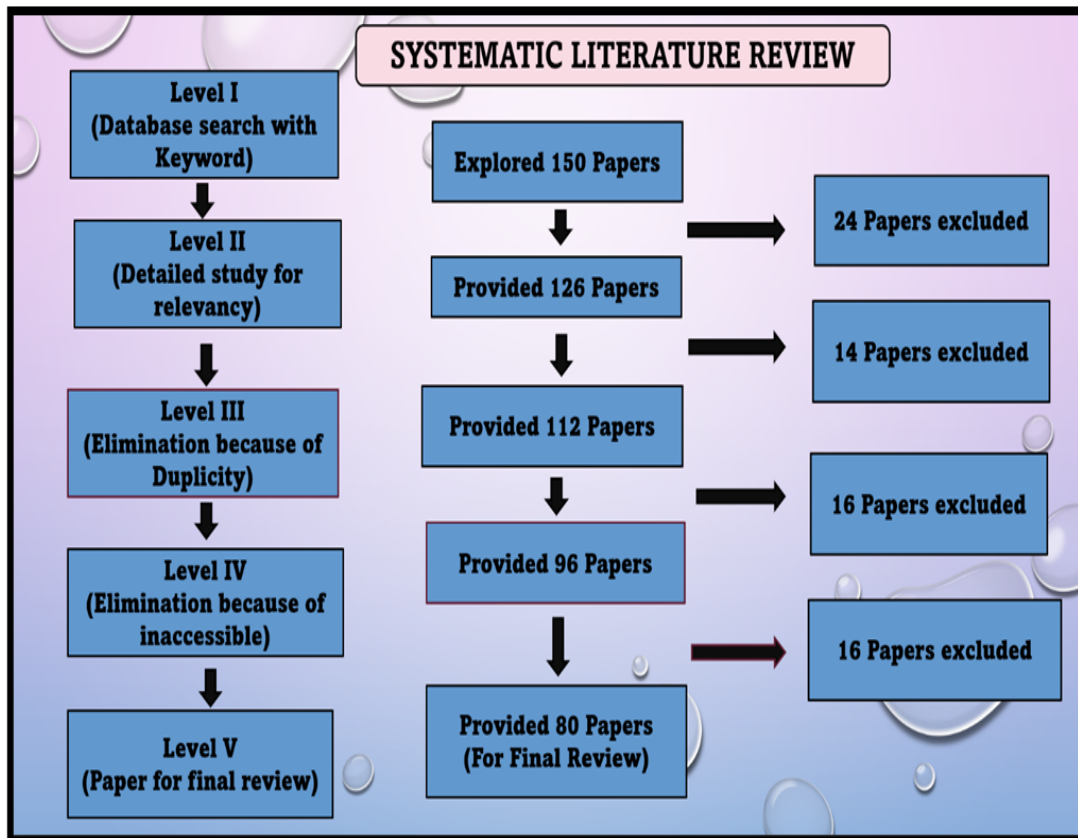
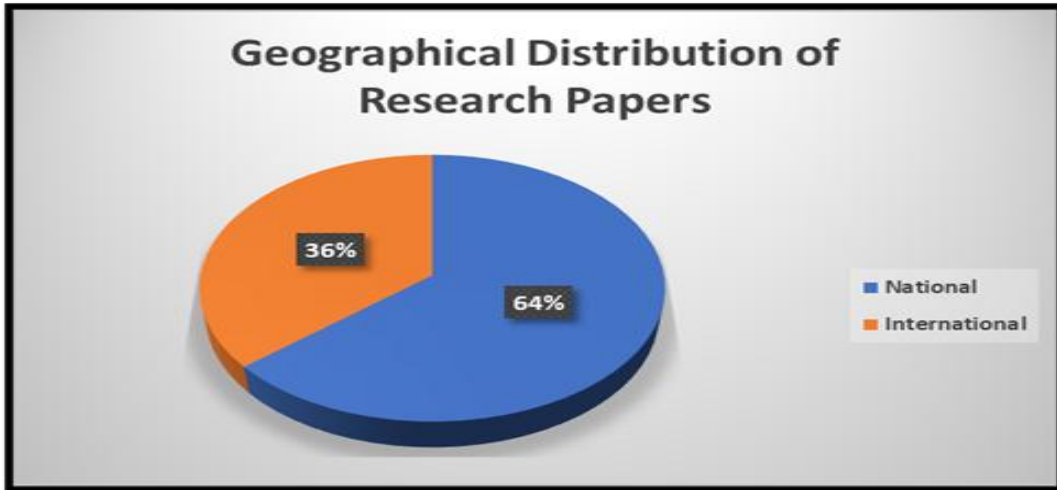


Figure 3: Summary of Research Papers Selection Process

### Geographical Distribution of Reviewed Research Papers

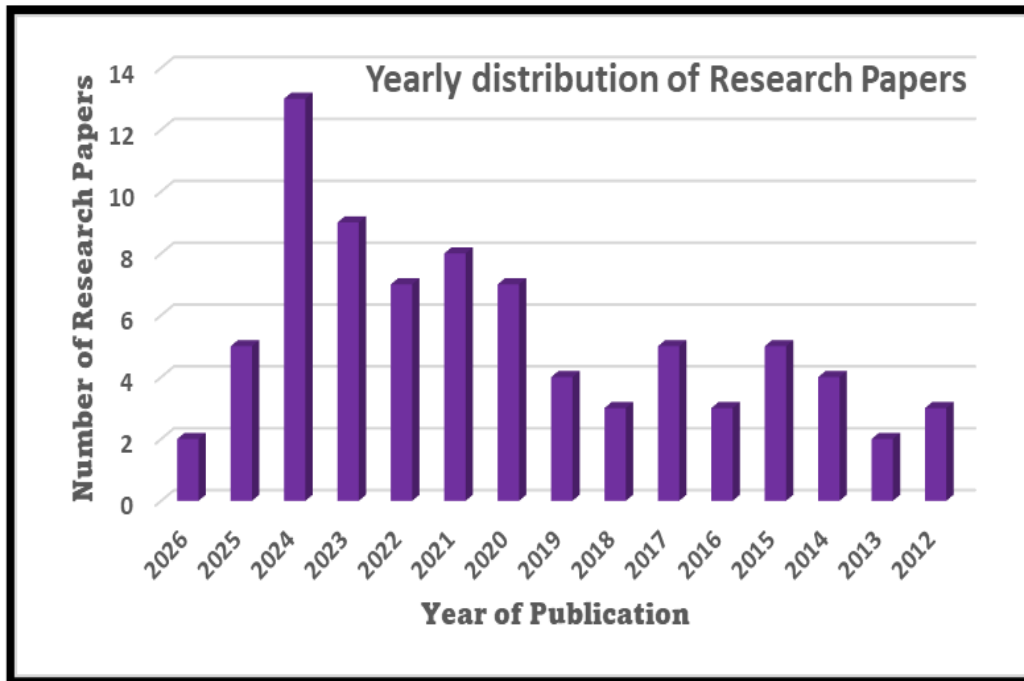
The figure No. 4 presents the geographical distribution of all the reviewed research papers. The literature review consists of 64% (51) national and 36% (29) international research papers.



**Figure 4: Geographical Distribution of Research Papers**

**Data Collection by Year of Publication**

In the bar chart presented in Figure No. 5, there appear the publication of reviewed research papers year by year. The selected research papers are published from the year 2012 to 2026.



**Figure 5: Yearly Distribution of Research Papers**

**Most Cited Research Papers**

The most cited ten research papers are illustrated in the below mentioned in the table no. 1. When considering the most cited global research paper, the research by Ongore, V.O. & Kusa G.B. (2013), Determinants of financial performance of commercial banks in Kenya has the highest citation, with 1893. It was published in the International Journal of Economics and Financial Issues.

**Table 1: Most Cited Research Papers**

<b>Authors and Year</b>	<b>Citation</b>	<b>Findings</b>
Ongore, V. O., & Kusa, G. B. (2013)	1893	Bank specific variables significantly affect the financial performance of the commercial banks, except for the liquidity variable. The overall effect of macroeconomic variable was at inconclusive at 5% significance level. There is an insignificant relation between the ownership and financial performance of the banks.
Jha, S., & Hui, X. (2012).	369	Public sector banks are significantly less efficient but private sector banks are equally efficient to foreign owned banks. ROA was significantly influence by capital adequacy ratio, interest expenses to total loan and net interest margin. ROE was affected by capital adequacy ratio.
Roman, A., &Şargu, A. C. (2013)	344	RBS Bank holds first position in regard to asset quality, management quality, and liquidity. OTP Bank holds first rank in regard of capital adequacy and BRD-GSG holds first rank in Earning ability.
Adam, M. H. M. (2014)	267	The study shows that There is an insignificant relationship between ROA, ROE, Return on deposits and bank size. Operational efficiency is negatively related with the ROA. Loan variables have a significant positive impact on ROE.
Ledhem, M. A., &Mekidiche, M. (2020)	248	ROE significantly and positively affect the endogenous growth of Islamic banks and other CAMELS parameter does not significantly affect the GDP.
Alkhatib, A., &Harasheh, M. (2012)	199	The result reveals that Bank size, operational efficiency, and Asset management has significant effect on ROA. Credit risk insignificantly affects the ROA. Bank size significantly affects Tobin's Q and the other three variables, Credit risk, Operational efficiency, and Asset management are found insignificant and doesn't affect Tobin's Q. EVA has a significant effect on Bank size, operational efficiency, and asset management. Credit risk has an insignificant effect on EVA.
Kumar, M. A., Harsha, G. S., Anand, S., & Dhruva, N. R. (2012).	167	The result shows that private sector banks perform better than public sector banks.
Muhmad, S. N., & Hashim, H. A. (2015)	129	Capital adequacy, asset quality, earning quality, and liquidity has a significant impact on performance of the Malaysian banks.
Dincer, H., Yuksel, S., &Hacioglu, U. (2015)	118	Asset quality, management quality and sensitivity to market risk have significant effect on credit ratings of the banks and capital adequacy and earnings ratio are not effective on credit ratings of the banks.
Ferrouhi, E. M. (2014).	115	CDM bank is the best ranked bank according to CAMEL model and BMCI bank is ranked the lowest.

### Research Paper by Country

The table no. 2 presents the countries in which studies have been conducted.

**Table 2: Research Papers by Country**

Country	Number of Research Papers
India	51
Iraq	2
Africa	2
Bangladesh	2
Sri Lanka	2
Kenya	2
Turkey	2
Iran	2
Other countries	15

CAMELS model is a very popular tool in Central Asia due to the facts that many studies are conducted with the Indian banks, SriLankan banks, and Iran and Iraq regions. 15 research papers are from other countries of eastern and western regions.

### Review of Research Papers on the Basis of Banks

The table no. 3 presents the reviewed papers on the basis of banks selected studied.

**Table 3: Review on the Basis of Banks**

GlobalBanks	Indian Banks	Small Finance Banks
29	34	17

A large number of research work covered Indian Banks which includes Public sector banks, Private sector banks and Foreign banks but a very less studies include Small Finance Banks. The reason could be that SFBs are introduced recently by the RBI in the niche banking category.

### Research Paper on the Basis of Tools

The table no. 4 presents the reviewed papers on the basis of tools selected for the studies.

**Table 4: Research Paper on the Basis of Tools**

CAMELS Model	CAMEL Model	Other
14	43	23

As we can see a very less number of studies include "S" aspect of CAMELS model in their research work. So, there is a future scope to study the S aspect with the niche bank category.

### Findings

The researcher identified and analysed 80 research papers published during 2012-2026 on the financial performance of banks through CAMEL/CAMELS model. There is a trend of increasing research papers, year 2024 records the highest number of research papers which is 13. Overall the researcher observes the CAMELS variables impact the financial performance (profitability) of the banks. A significant portion of current research relies on panel data regression analysis and ANOVA. Many papers also rely on only ranking method on the basis of CAMELS variables. Citation trends shows, however the older publications garnered more citations, while the recent works have lower citation counts. Overall, the ranking method shows that Private sector banks perform better than Public sector banks in all the regions. Many researchers established that there is a significant relationship between CAMELS variables and financial performance of the banks. Many studies conclude that Capital adequacy and Asset quality shows more significant impact on the financial performance. The "S" aspect of CAMELS model is studied less, therefore there is a future scope to study the sensitivity variable of the model. Some studies are based on merger of the banks, the analysis shows the banks are working more effectively and efficiently after the merger. Existing studies also offers valuable insights into Small Finance Banks, but the overall scope of research is limited. There is future research scope for studies related to Small Finance Banks and other types of banks such as Cooperative banks, RRBs and foreign operating banks.

## Conclusion

Banks functions as the fundamental pillars of economic stability and growth, acting as primary source of credit allocation and wealth creation. Therefore, it is necessary to measure the financial performance of the banks for the growth and development of a country. The CAMELS model is globally a very popular model of assessing financial performance, efficiency, and effectiveness of the banks. The main objective of this study is to synthesize the empirical research on the application of CAMELS model over the last decade. The study also aims to identify which Component of CAMELS model reliably predict and impact the financial performance. Overall the researcher observes that the CAMELS variables impact the financial performance (profitability) of the banks. Most of the studies shows a positive and significant impact on the financial performance of the banks. The above study is helpful for the investors, stakeholders and management of the banks for making regulatory decisions. It provides an inclusive assessment of the financial health of the banks.

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