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Impact of Cash Flow Components on Profitability: A Comparative Empirical Study of Kotak Mahindra Bank and Indusind Bank":

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Abstract

This study aims to analyze the impact of cash flow components—Operating, Investing, and Financing activities—on the profitability of two major Indian private sector banks: Kotak Mahindra Bank and IndusInd Bank. Using secondary data from annual financial reports over a five-year period (2019-20 to 2023-24), this study employs statistical tools to assess the relationship between cash flow components and profitability metrics like Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The results are expected to provide valuable insights into financial management and policy implications for banks and stakeholders.

Key Words : *Cash Flow Components, Operating Activities, Investing Activities, Financing Activities, ROA, ROE, NPM, Private Sector Banks, Profitability, Kotak Mahindra Bank, IndusInd Bank.*

Introduction

Cash flow analysis is vital for evaluating a company's financial health, particularly in the banking sector where liquidity and performance are closely linked. This study compares two top Indian private banks—Kotak Mahindra Bank and IndusInd Bank—to understand how different cash flow components influence profitability.

Objectives of the Study

1. To analyze the cash flow trends of Kotak Mahindra Bank and IndusInd Bank over five years.
2. To examine the relationship between cash flow components (CFO, CFI, CFF) and profitability (ROA, ROE, NPM).
3. To compare the profitability performance of the two banks based on their cash flow structures.

Hypotheses of the Study

$H_{o}1$: There is no significant relationship between Cash Flow from Operating Activities and profitability (ROA, ROE, NPM).

$H_{o}2$: There is no significant relationship between Cash Flow from Investing Activities and profitability.

$H_{o}3$: There is no significant relationship between Cash Flow from Financing Activities and profitability.

$H_{o}4$: There is no significant difference in profitability between Kotak Mahindra Bank and IndusInd Bank due to cash flow variations.

Statement of the Problem

In a volatile financial environment, banks need robust internal financial management to sustain profitability. This study investigates whether different cash flow components significantly influence the profitability of leading private banks in India.

Importance of the Study

Helps in understanding internal financial efficiency. It Supports stakeholders and policy makers in financial decision-making. It provides a comparative perspective to enhance best practices among banks.

Review of Literature

1. Deloof (2003) found that efficient working capital and cash flow management significantly influence corporate profitability.
2. Raheman and Nasr (2007) highlighted a strong relationship between liquidity, cash flow patterns, and firm performance.
3. Bhunia (2010) emphasized the role of operating cash flow as a major driver of profitability in Indian private banks.

4. Panigrahi (2013) explored liquidity trends in private banks, indicating fluctuating effects on ROA and ROE.
5. Sharma and Kumar (2011) showed that cash flow management practices vary across firms, impacting net profit margins differently.

Research Gap

1. Most previous studies focused broadly on working capital or liquidity but not specifically on **cash flow components**.Limited research paper compares **individual cash flow activities** (CFO, CFI, CFF) with **multiple profitability indicators** like ROA, ROE, and NPM.There is a lack of comparative analysis between **private sector banks in India**, especially Kotak Mahindra and IndusInd Bank.Past studies often generalized results across industries without isolating the **banking sector's unique cash flow behavior**.Updated empirical studies post-pandemic (after 2020) are scarce, despite major cash flow changes in the banking sector.

Research Methodology: Type of Research : Quantitative and Analytical Research

Data Collection Table

Particulars	Details
Type of Data	Secondary Data
Data Source	Annual Reports, Capitaline, Moneycontrol
Period of Study	2019-20 to 2023-24
Sample Banks	Kotak Mahindra Bank, IndusInd Bank
Tools of Analysis	Correlation, ANOVA

Variables of the Study

Type	Variables
Independent Variables	- Cash Flow from Operating Activities (CFO) ,Cash Flow from Investing Activities (CFI) ,Cash Flow from Financing Activities (CFF)
Dependent Variables	-Return on Assets (ROA),Return on Equity (ROE) Net Profit Margin (NPM)

Hypotheses

1. **H_0 (Null Hypothesis):** There is no significant relationship between cash flow components (such as net profit margin, operating profit margin) and profitability indicators (like EPS, ROE).
2. **H_1 (Alternative Hypothesis):** There is a significant relationship between cash flow components and profitability.

Kotak Mahindra Bank data sheet (cash flow statement)

Year	Net Profit/Loss Before Extraordinary Items and Tax (Rs. Cr.)	Net Cash Flow from Operating Activities (Rs. Cr.)	Net Cash Used in Investing Activities (Rs. Cr.)	Net Cash Used from Financing Activities (Rs. Cr.)	Foreign Exchange Gains/Losses (Rs. Cr.)	Net Increase/Decrease in Cash & Cash Equivalents (Rs. Cr.)	Cash & Cash Equivalents at Beginning of Year (Rs. Cr.)
Mar-24	18,013.72	13,900.79	2,021.50	4,314.44	9.36	20,246.09	32,542.31
Mar-23	14,390.99	-8,369.18	490.86	-2,541.91	38.59	-10,381.63	42,923.94
Mar-22	8,572.69	2,161.33	-1,334.92	2,456.07	14.92	3,297.40	39,626.53
Mar-21	6,964.84	-5,298.30	-1,769.10	-6,585.90	-12.47	-13,665.77	53,292.30
Mar-20	5,947.18	30,159.43	-7,454.06	5,882.91	28.47	28,616.76	24,675.54

Kotak Mahindra bank (Profitability Ratio)

Cash & Cash Equivalents at End of Year (Rs. Cr.)	Basic EPS (Rs.)	Net Profit Margin (%)	Operating Profit Margin (%)	Re Assets (%)	ts Begin of Year	Equity (%)	Margin (X)		
52,788.40	69.15	30.09	38	2.29	Cash And Cash Equivalen	56,801 .61	56,511 .14	68,274 .49	56,327 .19	16,003 .65
32,542.31	54.89	31.93	38.2	2.23	ts End Of Year	4.24	4.32			
42,923.94	43.02	31.7	36.99	1.99		13.17	4.39			
39,626.53	35.17	25.94	33.48	1.81		11.9	3.91			
53,292.30	30.88	22.08	31.51	1.65		11.01	4			

Indusland bank(Cash flow statement)

Cash Flow of IndusInd Bank (in Rs. Cr.)	Mar-24	Mar-23	Mar-22	Mar-21	Mar-20
Net Profit/Loss Before Extraordinary Items And Tax	11,941 .53	9,859. 65	6,173. 65	3,784. 15	6,120. 61
Net Cash Flow From Operating Activities	- 16,843 .41	- 12,437 .62	16,600 .07	44,645 .59	- 12,038 .66
Net Cash Used In Investing Activities	- 632.76	- 520.22	- 361.56	- 233.25	- 399.59
Net Cash Used From Financing Activities	- 2,241. 54	1,114. 83	- 4,302. 15	- 4,095. 79	12,732 .70
Foreign Exchange Gains / Losses	8.18	79.66	10.95	6.99	925.81
Net Inc/Dec In Cash And Cash Equivalents	- 19,709 .53	- 11,763 .35	11,947 .30	40,323 .54	1,220. 25
Cash And Cash Equivalen	56,511 .14	68,274 .49	56,327 .19	16,003 .65	14,783 .40

Indusland bank(Ratio)

Operating Cash Flow Ratio	Cash Flow to Debt Ratio	Investing Activity Ratio	Financing Activity Ratio	Cash Flow Margin	Cash Conversion Ratio
-1.41049	7.514213	0.037567	0.133081	-1.41049	7.796502
-1.26147	-11.1565	0.041826	-0.08963	-1.26147	-11.6232
2.688858	-3.85855	-0.02178	-0.25916	2.688858	-3.77451
11.79805	-10.9004	-0.00522	-0.09174	11.79805	-10.8434
-1.96691	-0.94549	0.033192	-1.05765	-1.96691	-0.97687

Prepare Data Sheet

structured data sheet for hypothesis testing:

Year	Basic EPS (Rs.)	Net Profit Margin (%)	Operating Profit Margin (%)	Return on Assets (%)	Return on Equity (%)	Net Interest Margin (X)
Mar-24	115.19	19.56	29.82	1.73	14.31	4.00
Mar-23	95.32	20.31	28.68	1.61	13.60	3.84
Mar-22	59.57	14.96	20.58	1.14	9.73	3.73
Mar-21	38.75	9.78	14.12	0.78	6.58	3.72
Mar-20	63.75	15.34	23.23	1.43	12.84	3.92

Results of Hypothesis Testing

1. Correlation Analysis

The correlation matrix shows a strong positive correlation between:

- **Net Profit Margin (%) and Basic EPS (Rs.)**: r=0.93r = 0.93r=0.93 (Very strong positive correlation)
- **Operating Profit Margin (%) and Basic EPS (Rs.)**: r=0.96r = 0.96r=0.96 (Very strong positive correlation)
- **Return on Assets (%) and Return on Equity (%)**: r=0.99r = 0.99r=0.99 (Extremely strong positive correlation)

The correlation matrix of Kotak Mahindra Bank

Variables	EPS	Net Profit Margin (%)	Operating Profit Margin (%)	ROA (%)	ROE (%)
EPS	**1.000**	**0.692**	**0.857**	**0.955**	**0.882**
Net Profit Margin (%)	0.692	**1.000**	**0.964**	**0.855**	**0.408**
Operating Profit Margin (%)	0.857	0.964	**1.000**	**0.960**	**0.627**
ROA (%)	0.955	0.855	0.960	**1.000**	**0.770**
ROE (%)	0.882	0.408	0.627	0.770	**1.000**

- **EPS & ROA (0.955) → Very Strong Positive Correlation**
  - A high return on assets (ROA) is directly related to higher earnings per share (EPS).
  - This suggests that an efficient use of assets significantly improves shareholder value.
- **EPS & Operating Profit Margin (0.857) → Strong Positive Correlation**
  - Higher operating margins indicate better control of operational costs, leading to higher EPS.
  - This means that operating efficiency plays a vital role in improving earnings per share.
- **EPS & ROE (0.882) → Strong Positive Correlation**
  - A high return on equity (ROE) means the company effectively utilizes shareholders' funds, resulting in higher EPS.
  - Investors looking for high EPS should focus on companies with strong ROE.
- **EPS & Net Profit Margin (0.692) → Moderate Positive Correlation**
  - While higher net profit margins usually lead to higher EPS, the relationship is weaker than that of EPS with ROA or Operating Profit Margin.
  - This suggests that net profit margin alone does not drive EPS growth as significantly as asset efficiency or operational performance.

(b) Profitability Margins vs Other Indicators

- **Net Profit Margin & Operating Profit Margin (0.964) → Very Strong Positive Correlation**
  - A higher operating margin typically results in a higher net profit margin.
  - This suggests that controlling operating costs is a key driver of net profitability.
- **Net Profit Margin & ROA (0.855) → Strong Positive Correlation**
  - A higher net profit margin indicates better efficiency in utilizing assets.
  - Companies with higher net profit margins tend to have a more efficient asset utilization strategy.
- **Net Profit Margin & ROE (0.408) → Weak Positive Correlation**
  - The relationship between net profit margin and return on equity is weaker.
  - This suggests that profitability at the net level does not always translate into higher returns for shareholders.

(c) Return on Assets (ROA) & Other Indicators

- **ROA & Operating Profit Margin (0.960) → Very Strong Positive Correlation**
  - Higher operating margins directly improve return on assets.

- This implies that a company's asset efficiency is highly dependent on its operational profitability.

- **ROA & ROE (0.770) → Moderate to Strong Positive Correlation**
  - A high ROA often leads to a higher ROE, but it is not a perfect relationship.
  - This suggests that while asset utilization impacts shareholder returns, other factors (such as financial leverage) also play a role.

(d) Return on Equity (ROE) & Other Indicators

- **ROE & EPS (0.882) → Strong Positive Correlation**
- Higher ROE translates into higher earnings per share.
  - This confirms that shareholder returns are closely linked to the company's ability to generate profits.
- **ROE & Net Profit Margin (0.408) → Weak Positive Correlation**
  - Net profit margins do not directly translate into higher ROE.
  - This suggests that other factors, such as financial leverage, significantly impact shareholder returns.
- **ROE & Operating Profit Margin (0.627) → Moderate Positive Correlation**
  - A company's operating efficiency contributes to higher ROE, but the relationship is not as strong as that of ROA or EPS.
  - This indicates that while profitability matters, shareholder returns depend on more than just operating performance.

4. Key Insights for Business Decision-Making

- **ROA is the most crucial driver of EPS (0.955 correlation).** This means that companies looking to improve EPS should focus on efficient asset utilization.
- **Operating Profit Margin is a key factor influencing both ROA (0.960) and EPS (0.857).** This suggests that improving operational efficiency directly benefits profitability and investor returns.
- **Net Profit Margin has a weaker link to ROE (0.408),** meaning that increasing net profits does not always lead to higher shareholder returns.
- **ROE and EPS (0.882) are highly correlated,** which confirms that companies with high returns on equity tend to have higher earnings per share, making them attractive for investors.

Step 3: ANOVA (Analysis of Variance)

ANOVA checks whether there are significant differences between the means of EPS for each year. This can tell us if EPS values differ significantly across years.

1. **Variables for ANOVA**:
   - The variable we want to analyze is **EPS** across the years (Mar-20 to Mar-24).
2. **ANOVA Formula**:
   ANOVA tests the null hypothesis that all group means are equal:

$H0:\mu1=\mu2=\mu3=\mu4=\mu5H$

Where each μ represents the mean EPS for each year.

The formula for the F-statistic is:

$$F=\frac{\text{Between-group variance}}{\text{Within-group variance}}$$

Interpretation:

If the **p-value** for the F-statistic is less than 0.05, reject the null hypothesis, indicating that there is a significant difference in EPS across the years.

ANOVA Results and Interpretation :ANOVA Formula

ANOVA compares the variance between groups (Kotak Mahindra and IndusInd Bank) with the variance within each group. The formula is:

$$F=\frac{\text{Variance Between Groups}}{\text{Variance Within Groups}}$$

Where: SSB (Sum of Squares Between Groups): Measures variation due to differences between the two banks.

SSW (Sum of Squares Within Groups): Measures variation within each bank over the years.

MSB (Mean Square Between Groups)}: $MSB=\frac{SSB}{dfB}$

MSW (Mean Square Within Groups)}: $MSW=\frac{SSW}{dfW}$

F-Statistic: $F=\frac{MSB}{MSWF}$

Degrees of Freedom (df):

dfB=k−1 (where kis the number of groups, here 2)

dfW=N−k (where Nis total observations)

calculation of each metric

Compute ANOVA for CFO (Cash Flow from Operations)

Year	Kotak Mahindra (CFO)	IndusInd Bank (CFO)
2020	30,159.43	-12,038.66
2021	-5,298.30	44,645.59
2022	2,161.33	16,600.07
2023	-8,369.18	-12,437.62
2024	13,900.79	-16,843.41

=0.0339(attached in apendix)

After .calculation it is observed that

P-Value Lookup (from F-distribution table):

p-value ≈ 0.8586 (greater than 0.05)

Thus, we fail to reject the null hypothesis → No significant difference in CFO between the two banks.

Compare with the 0.05 significance level to determine if there is a difference.

Final Conclusion

Significant Differences (p < 0.05):

ROA → Kotak Mahindra Bank performs better.

NPM → Kotak Mahindra Bank has better profit margins.

No Significant Differences (p > 0.05):

CFO, CFI, CFF, Net Profit, ROE.

The following table presents the ANOVA F-statistics and p-values for the financial performance metrics comparing Kotak Mahindra Bank and IndusInd Bank.

Metric	F-Statistic	P-Value	Interpretation
CFO (Cash Flow from Operations)	0.0339	0.8586	No significant difference between the banks.
CFI (Cash Flow from Investing)	0.5358	0.4851	No significant difference between the banks.
CFF (Cash Flow from Financing)	0.0003	0.9875	No significant difference between the banks.
Net Profit	1.3590	0.2773	No significant difference between the banks.
ROA (Return on Assets)	9.7560	0.0142	**Significant difference** between the banks.
ROE (Return on Equity)	0.5111	0.4950	No significant difference between the banks.
NPM (Net Profit Margin)	21.2640	0.0017	**Significant difference** between the banks.

Intrepretation

ROA (Return on Assets) and NPM (Net Profit Margin) show significant differences between the two banks (p-values < 0.05). This indicates that the return on assets and profitability margins of Kotak Mahindra Bank and IndusInd Bank differ significantly over the years.Other variables, such as CFO, CFI, CFF, Net Profit, and ROE, have p-values greater than 0.05, suggesting that their variations between the banks are not statistically significant.

The null hypothesis (H_0: No significant difference) is rejected for ROA and NPM, meaning these financial metrics vary significantly between the banks.

For other metrics, we fail to reject H_0, indicating that they do not differ significantly.

Findings

1) The Basic EPS increased from ₹38.75 in 2021 to ₹115.19 in 2024, indicating significant earnings improvement over the period.
2) Volatility in Net Profit Margin (NPM): The NPM fluctuated between 9.78% (2021) and 20.31% (2023), ending at 19.56% in 2024, showing resilience but inconsistency in profitability.
3) Operating Profit Margin (OPM) Growth improved from 14.12% (2021) to 29.82% (2024), showing enhanced operational efficiency.
4) Return on Assets (ROA) Remains Low: ROA increased marginally from 0.78% (2021) to 1.73% (2024), indicating limited asset utilization efficiency.
5) Return on Equity (ROE) Improves: ROE surged from 6.58% in 2021 to 14.31% in 2024, reflecting stronger shareholder returns.

6) Stable Net Interest Margin (NIM): The NIM remained between 3.72 and 4.00 over the five years, showing a stable core banking business.
7) Strongest Performance in 2024: Highest EPS (₹115.19), ROE (14.31%), and OPM (29.82%) in 2024 indicate overall business improvement.
8) 2021 Was the Weakest Year: Lowest EPS (₹38.75), NPM (9.78%), ROA (0.78%), and ROE (6.58%) in 2021 suggest pandemic-related financial struggles.
9) Gradual Recovery Post-2021: The bank recovered significantly post-pandemic, showing consistent improvement in profitability indicators.
10) Need for Better Asset Utilization: Despite profitability improvements, ROA remains below 2%, suggesting room for optimizing asset allocation.

Suggestions

1. Enhance Asset Efficiency: The bank should improve asset utilization strategies to increase ROA, focusing on high-yield assets and better loan management.
2. Diversify Revenue Streams: Increase non-interest income sources (e.g., fees, commissions, and wealth management) to reduce dependency on core lending activities.
3. Risk Management Strategies: Strengthen credit risk assessment and loan recovery measures to maintain stability in financial performance.
4. Digital and Technological Innovation: Invest in AI-driven banking solutions, digital payments, and fintech collaborations to improve operational efficiency and customer engagement.
5. Cost Control Measures: Reduce operational expenses and improve cost-to-income ratio to sustain long-term profitability growth.

Conclusion:

The financial performance of IndusInd Bank has shown significant improvements from 2021 to 2024, particularly in EPS, ROE, and OPM. However, ROA remains low, indicating inefficiencies in asset utilization. The bank's profitability has been volatile, but the long-term trend is positive. To sustain growth, cost control, risk management, and diversification of income streams are essential strategies. The study concludes that Cash Flow from Operating Activities (CFO) plays a critical role in determining the profitability of Indian private sector banks. Among the two banks analyzed, Kotak Mahindra Bank demonstrated superior profitability and financial stability, backed by positive cash flows and efficient financial management. While IndusInd Bank experienced fluctuating cash flows, its profitability indicators show signs of gradual improvement.

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Apendix

Compute Means

$$\bar{X}_{Kotak}=\frac{30,159.43+(-5,298.30)+2,161.33+(-8,369.18)+13,900.79}{5}$$

$$=6,510.41$$

$$\bar{X}_{IndusInd}=\frac{-12,038.66+44,645.59+16,600.07+(-12,437.62)+(-16,843.41)}{5}$$

$$=3,985.99$$

$$\bar{X}_{Overall}=\frac{6,510.41+3,985.99}{2}$$

$$=5,248.20$$

Compute Sum of Squares

$$SSB=ngroup(\bar{X}_{Kotak}-\bar{X}_{Overall})2+ngroup(\bar{X}_{IndusInd}-\bar{X}_{Overall})2$$

$$SSB=5(6,510.41-5,248.20)2+5(3,985.99-5,248.20)2$$

SSB=5(1,262.21)2+5(−1,262.21)2=5(1,592,174.28)+5(1,592,174.28)
SSB=15,921,742.8+15,921,742.8
=31,843,485.6
dfB=2−1=1
MSB=31,843,485.6 / 1
=31,843,485.6

Now Compute SSW (Within-Group Variation):

$SSW=\sum(X-\bar{X})^2$

For Kotak Mahindra:

(−5,298.30−6,510.41)2+(2,161.33−6,510.41)2+(30,159.43−6,510.41)2+(−8,369.18−6,510.41)2+(13,900.79−6,510.41)2
=(−11,808.71)2+(−4,349.08)2+(23,649.02)2+(−14,879.59)2+(7,390.38)2
=139,447,254+18,913,668+559,972,476+221,488,155+54,607,713
SSW_{Kotak}=994,429,266

For IndusInd:

(−12,038.66−3,985.99)2+(44,645.59−3,985.99)2+(16,600.07−3,985.99)2+(−12,437.62−3,985.99)2+(−16,843.41−3,985.99)2
=(−16,024.65)2+(40,659.60)2+(12,614.08)2+(−16,423.61)2+(−20,829.40)2
=256,788,995+1,653,151,068+159,109,657+269,793,521+433,839,367
$SSW_{IndusInd}$=2,772,682,608
=3,767,111,874
SSW = 994,429,266 + 2,772,682,608
= 3,767,111,874
dfW=N−k=10−2=8
MSW=3,767,111,874 / 8
=470,888,984.3

Compute F-Statistic

F=MSB / MSW
=31,843,485.6 / 470,888,984.3
=0.0339