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COMPARATIVE FINANCIAL PERFORMANCE ANALYSIS OF PUBLIC AND PRIVATE SECTOR BANKS IN INDIA

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Abstract

The banking sector constitutes a cornerstone of India's economic infrastructure, facilitating financial intermediation, mobilizing savings, and channelling credit to productive sectors. Over the past three decades, the Indian banking landscape has undergone substantial transformation driven by liberalization, technological innovation, and regulatory reform. This study conducts a comparative financial performance analysis of selected public sector banks (State Bank of India, Punjab National Bank, and Bank of Baroda) and private sector banks (HDFC Bank, ICICI Bank, and Axis Bank) over a ten-year period from 2016 to 2025. The research adopts a quantitative and comparative research design, employing secondary data sourced from annual reports, Reserve Bank of India publications, and official bank databases. Key financial indicators, namely Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), Credit-Deposit Ratio (CDR), and Cost-to-Income Ratio (CIR), are analysed using descriptive statistics, trend analysis, and independent sample t-tests. The findings reveal that private sector banks consistently outperform public sector banks across all major financial indicators. Private banks demonstrate significantly higher profitability, superior liquidity management, and greater operational efficiency. Hypothesis testing confirms that the differences between the two sectors are statistically significant at the five percent level for all variables tested. Among individual banks, ICICI Bank and HDFC Bank emerge as the strongest performers, while SBI leads among public sector banks. The study concludes that ownership structure, management efficiency, technological adoption, and risk management practices are critical determinants of banking performance. The findings carry implications for policymakers, banking professionals, and investors seeking to understand the evolving dynamics of the Indian banking industry.

Keywords: Financial Performance, Public Sector Banks, Private Sector Banks, Profitability, CAMEL, India

1. Introduction

The banking sector serves as a fundamental pillar of economic development by performing the essential function of financial intermediation, connecting surplus economic units with deficit units, and facilitating the efficient allocation of financial resources. In developing economies such as India, banks are instrumental in mobilizing savings, extending credit to agriculture, industry, and services, and advancing the broader objectives of financial inclusion and economic stability. The health and performance of the banking system, therefore, directly influence the pace and quality of national economic growth.

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The Indian banking industry has traversed a remarkable evolutionary path over the past several decades. Prior to the economic reforms of 1991, the sector was predominantly governed by public sector banks operating under substantial government control. These institutions played a pivotal role in extending formal banking services to rural and semi-urban areas, supporting priority sector lending mandates, and broadening the reach of the organized financial system. Public sector banks established extensive branch networks that became the backbone of retail banking in India, serving millions of depositors and borrowers who otherwise had limited access to institutional credit.

The liberalization reforms of the early 1990s, however, introduced a paradigm shift. The entry of private sector banks, accompanied by new regulatory frameworks and the deregulation of interest rates, catalysed a wave of competition that fundamentally altered the structure of the industry. Private sector banks introduced advanced technological platforms, customer-centric product offerings, and professional management practices that raised the competitive bar for the entire sector. The rapid adoption of internet banking, mobile banking applications, and digital payment systems by private banks not only enhanced operational efficiency but also redefined customer expectations across the industry.

In the contemporary landscape, the Indian banking system comprises a heterogeneous mix of public sector banks, private sector banks, foreign banks, and regional rural banks. Among these categories, public and private sector banks collectively dominate in terms of total assets, deposit mobilization, and credit distribution. Public sector banks continue to command a significant share of total banking assets, supported by their extensive branch infrastructure, government ownership, and policy-directed lending programmes. Private sector banks, meanwhile, have steadily expanded their market share by leveraging technological innovation, efficient risk management, and strategic diversification of financial services.

The assessment of banking performance is conventionally conducted through the analysis of key financial indicators that capture dimensions of profitability, liquidity, asset quality, and operational efficiency. Profitability ratios such as Return on Assets and Return on Equity measure the capacity of a bank to generate earnings from its asset base and shareholders' equity, respectively. Liquidity indicators, including the Credit-Deposit Ratio, reflect the extent to which banks convert their deposit base into income-generating lending activity. Asset quality metrics, particularly the Gross and Net Non-Performing Asset ratios, indicate the level of credit risk embedded in a bank's loan portfolio. Efficiency ratios, such as the Cost-to-Income Ratio, evaluate the effectiveness of a bank in managing its operational expenditure relative to income generation.

The comparative performance of public and private sector banks has been a subject of considerable academic and policy interest. While public sector banks benefit from government backing and enjoy deep customer trust, they have historically contended with challenges such as elevated levels of non-performing assets, slower decision-making attributable to bureaucratic structures, and operational inefficiencies. Private sector banks, by contrast, are frequently credited with greater agility, stronger risk management frameworks, and more

efficient resource utilization, albeit with a more concentrated presence in urban and metropolitan markets.

Recent developments in the Indian banking sector, including the consolidation of public sector banks through large-scale mergers, the acceleration of digital transformation, and the implementation of stricter regulatory norms by the Reserve Bank of India, have created a dynamic environment that warrants fresh empirical examination. The present study addresses this need by conducting a systematic comparative analysis of the financial performance of three leading public sector banks and three prominent private sector banks over the period 2016 to 2025. The research employs multiple financial indicators and statistical techniques to provide a comprehensive and empirically grounded assessment of performance differences, contributing to the existing body of knowledge and offering actionable insights for stakeholders across the banking ecosystem.

2. Literature Review

The financial performance of banks has been the subject of extensive scholarly inquiry, with researchers employing diverse methodological approaches and analytical frameworks to evaluate profitability, efficiency, liquidity, and asset quality. A review of the extant literature reveals several recurring themes and a broad consensus on the comparative advantages of private sector banking, while also highlighting gaps that the present study seeks to address.

Gupta (2020) examined the relationship between ownership structure, bank size, capitalization, and financial performance using panel data analysis across developing economies. The study concluded that privately owned banks generally demonstrate higher profitability and operational efficiency due to superior managerial practices and stronger capital structures. In a related investigation, Sharma and Mehta (2022) identified asset quality, operational efficiency, and capital adequacy as significant determinants of bank profitability through regression modelling, underscoring the centrality of robust financial management in driving banking performance.

Kumar, Srivastava, and Maheshwari (2021) conducted a comparative analysis of public and private sector banks in India using financial ratio analysis and found that private banks outperformed their public counterparts in profitability and efficiency, attributing this advantage to improved management practices and greater technological adoption. Gupta (2020) reinforced these findings through an analysis of profitability and liquidity indicators, concluding that ownership structure meaningfully influences financial outcomes. Sathiya (2020) similarly reported that private banks exhibited higher profitability driven by better technological infrastructure and effective risk management.

Several studies have adopted the CAMEL framework to evaluate banking performance. Kaur and Sukhija (2019) applied the CAMEL model to compare public and private banks, finding that private banks performed better in earnings and management efficiency, while public banks demonstrated relatively stronger capital adequacy. Saroha (2024, 2025) produced two separate CAMEL-based studies that yielded consistent results, confirming the superior earnings and efficiency of private sector banks alongside the capital adequacy advantages of government-

backed institutions. Kumar (2024) employed the EAGLES model and arrived at similar conclusions regarding the relative strengths of each sector.

The impact of external economic shocks has also been explored. Anithabose (2021) analysed public sector bank performance before and during the COVID-19 pandemic, finding a temporary decline in profitability due to increased credit risk and loan restructuring, though regulatory support and capital infusion helped stabilize financial positions. This study highlighted the resilience mechanisms available to government-backed banks during periods of systemic stress.

Corporate governance has emerged as another significant factor in banking performance. Kaur (2023) and Reddy (2025) both found that banks with stronger governance frameworks demonstrate better financial stability and profitability, suggesting that transparency, board structure, and accountability mechanisms contribute meaningfully to performance outcomes. Sharma (2023) and Satyanarayana (2023) explored the influence of capital structure on bank performance, concluding that well-managed capital structures improve operational efficiency and financial stability.

Despite this extensive body of research, certain gaps persist. Many studies have relied on limited financial indicators or small samples, potentially constraining the comprehensiveness of their findings. Several investigations have covered short time periods, limiting their capacity to capture long-term trends and the effects of structural reforms. Furthermore, relatively few studies provide an integrated comparison that simultaneously evaluates profitability, liquidity, asset quality, and efficiency across both banking sectors over an extended period that encompasses recent developments such as digital transformation, regulatory reform, and post-pandemic recovery. The present study addresses these gaps by analysing six major banks across five financial dimensions over a ten-year period.

3. Methodology

3.1 Research Design and Scope

The study adopts a quantitative and comparative research design to analyse and compare the financial performance of selected public and private sector banks in India. The research is based entirely on secondary data collected from annual reports of the selected banks, Reserve Bank of India publications, official bank websites, and financial databases. The study period spans ten years from 2016 to 2025, enabling the capture of long-term performance trends, the impact of digital transformation, regulatory reforms, economic fluctuations, and post-pandemic recovery effects.

3.2 Sample Selection

Banks were selected through purposive sampling based on market significance, asset size, and availability of consistent financial data. The sample comprises three public sector banks — State Bank of India (SBI), Punjab National Bank (PNB), and Bank of Baroda (BOB) — and three private sector banks — HDFC Bank, ICICI Bank, and Axis Bank. These institutions

represent the leading banks in their respective sectors and provide a balanced basis for comparative analysis.

3.3 Variables

The financial performance of banks is evaluated using variables categorized into four dimensions, as presented in Table 1.

Table 1: Variables of the Study

Category	Variable	Description
Profitability	Return on Assets (ROA)	Measures profit generated per unit of total assets
Profitability	Return on Equity (ROE)	Measures return generated on shareholders' equity
Profitability	Net Profit Margin (NPM)	Measures net income as a percentage of total revenue
Liquidity	Credit-Deposit Ratio (CDR)	Measures the proportion of deposits deployed as loans
Operational Efficiency	Cost-to-Income Ratio (CIR)	Measures operating expenses as a proportion of operating income

3.4 Analytical Techniques

The study employs three primary analytical approaches. First, descriptive statistical analysis, including computation of mean, standard deviation, minimum, and maximum values, is used to summarize and characterize the data. Second, trend analysis is conducted to examine year-wise performance patterns across the study period. Third, hypothesis testing is performed using independent sample t-tests at a five percent significance level to determine whether observed differences between public and private sector banks are statistically significant. All analysis is conducted using Python programming tools, with Pandas for data manipulation, NumPy for numerical computation, SciPy for statistical testing, and Matplotlib and Seaborn for visualization.

3.5 Hypotheses

The following hypotheses are tested:

H1: There is a significant difference in profitability (ROA, NPM) between public and private sector banks.

H2: There is a significant difference in Return on Equity between public and private sector banks.

H3: There is a significant difference in liquidity (Credit-Deposit Ratio) between public and private sector banks.

H4: There is a significant difference in operational efficiency (Cost-to-Income Ratio) between public and private sector banks.

4. Data Analysis and Implications

4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the key financial indicators of public and private sector banks during the period 2021–2025.

Table 2: Descriptive Statistics of Public and Private Sector Banks (2021–2025)

Metric	Public Mean	Public SD	Public Min	Public Max	Private Mean	Private SD	Private Min	Private Max
Return on Assets (%)	0.66	0.36	0.07	1.12	1.60	0.45	0.67	2.22
Return on Equity (%)	10.01	5.38	1.08	16.19	13.62	3.09	6.48	17.15
Net Profit Margin (%)	9.12	4.72	0.99	14.18	19.35	4.91	8.71	24.71
Credit-Deposit Ratio (%)	71.52	6.14	60.94	82.17	87.59	6.06	78.68	104.42
Cost-to-Income Ratio (%)	52.35	3.16	45.79	57.20	42.06	4.43	35.45	51.38

The descriptive analysis reveals a pronounced performance differential between the two sectors. Private sector banks record a mean ROA of 1.60 percent, which is approximately 2.4 times the public sector mean of 0.66 percent, indicating substantially superior asset utilization in profit generation. The ROE differential, though narrower, still favours private banks (13.62 percent versus 10.01 percent), reflecting more efficient deployment of shareholders' equity. The most striking divergence appears in Net Profit Margin, where the private sector mean of 19.35 percent is more than double that of public sector banks at 9.12 percent, demonstrating markedly stronger income generation capability.

In terms of liquidity, the Credit-Deposit Ratio of private sector banks stands at 87.59 percent compared to 71.52 percent for public sector banks, suggesting that private institutions are more aggressive and effective in channelling deposits into lending activity. Regarding operational efficiency, the Cost-to-Income Ratio of private banks (42.06 percent) is approximately ten percentage points lower than that of public banks (52.35 percent), indicating significantly better

cost management. Notably, the standard deviation values for public sector banks are generally comparable to or lower than those of private banks, yet the range of their performance (as indicated by minimum and maximum values) reveals greater instances of weak performance, particularly the minimum ROA of 0.07 percent.

4.2 Individual Bank Performance

Table 3 provides the average financial performance of each individual bank for the period 2021–2025.

Table 3: Average Financial Performance of Individual Banks (2021–2025)

Bank	Sector	ROA (%)	ROE (%)	NPM (%)	CDR (%)	CIR (%)
PNB	Public	0.41	5.83	5.52	65.26	54.40
BOB	Public	0.76	10.81	10.45	77.50	50.49
SBI	Public	0.81	13.39	11.37	71.81	52.17
ICICI	Private	1.87	14.78	22.55	82.58	39.73
Axis	Private	1.16	11.36	14.13	88.49	43.91
HDFC	Private	1.75	14.73	21.38	91.71	42.52

Within the public sector, SBI demonstrates the strongest performance, recording the highest ROE (13.39 percent) and NPM (11.37 percent) among public banks. Bank of Baroda occupies an intermediate position, while PNB exhibits the weakest performance across nearly all indicators, with an ROA of just 0.41 percent and a CIR of 54.40 percent, pointing to significant operational challenges. Among private sector banks, ICICI Bank leads with the highest ROA (1.87 percent) and NPM (22.55 percent), closely followed by HDFC Bank. HDFC Bank records the highest Credit-Deposit Ratio (91.71 percent), indicating the most aggressive credit deployment strategy. Axis Bank, while trailing its private sector peers, still outperforms all three public sector banks on profitability and efficiency metrics. This intra-sectoral variation underscores that while ownership structure creates a systemic performance differential, individual management quality and strategic orientation introduce meaningful variation within each sector.

4.3 Hypothesis Testing

Table 4 presents the results of the independent sample t-tests conducted to evaluate the statistical significance of performance differences between public and private sector banks.

Table 4: Results of Independent Sample t-Test

Hypothesis	Metric	t-value	p-value	Result
H1	Return on Assets (ROA)	−6.118	0.0000	Reject H_0

H1	Net Profit Margin	−5.622	0.0000	Reject H_0
H2	Return on Equity (ROE)	−2.177	0.0381	Reject H_0
H3	Credit-Deposit Ratio	−6.966	0.0000	Reject H_0
H4	Cost-to-Income Ratio	7.082	0.0000	Reject H_0

The hypothesis testing results provide robust statistical evidence supporting the observed performance differentials. All p-values fall below the five percent significance threshold, leading to the rejection of the null hypothesis in every case. The profitability indicators, ROA and NPM, yield highly significant results with p-values effectively equal to zero, confirming that private sector banks possess significantly superior profit-generating capacity. The ROE test, while producing a comparatively higher p-value (0.0381), still falls within the rejection region, confirming a statistically meaningful difference in equity returns. The Credit-Deposit Ratio test returns a t-value of −6.966 with a near-zero p-value, validating the significantly higher lending efficiency of private banks. The positive t-value of 7.082 for the Cost-to-Income Ratio reflects the higher cost ratios in public banks, confirming that the operational efficiency gap is statistically significant.

4.4 Implications

The findings carry substantial implications across theoretical, managerial, and policy dimensions. From a theoretical standpoint, the results validate the Efficiency Structure Theory, which holds that operationally efficient firms achieve superior profitability. They also support the Structure-Conduct-Performance framework by demonstrating that variations in ownership and management structure systematically influence competitive behaviour and financial outcomes. The Financial Intermediation Theory is reinforced through the evidence that private banks perform the intermediation function more efficiently, as reflected in their higher Credit-Deposit Ratios.

For banking practitioners and managers, the findings underscore the imperative for public sector banks to accelerate digital transformation, streamline cost structures, and strengthen credit appraisal mechanisms. The substantial gap in the Cost-to-Income Ratio points to opportunities for operational restructuring, process automation, and reduction of legacy inefficiencies. Enhanced adoption of data analytics for credit risk assessment could help public banks reduce non-performing asset levels and improve profitability.

From a policy perspective, the results suggest that regulatory frameworks should incentivize efficiency improvements across the sector while maintaining the financial inclusion mandates that public sector banks fulfil. The ongoing consolidation of public sector banks through mergers, if accompanied by genuine operational integration and cultural transformation, could help close the performance gap. Furthermore, policies that promote competitive neutrality between public and private banks in areas such as governance flexibility and human resource management could enhance the overall efficiency of the banking system.

5. Discussion and Conclusion

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The empirical analysis conducted in this study establishes a clear and statistically significant performance advantage for private sector banks over public sector banks across all five financial dimensions examined. Private sector banks record higher profitability as measured by ROA, ROE, and NPM; demonstrate superior liquidity management through higher Credit-Deposit Ratios; and exhibit greater operational efficiency through lower Cost-to-Income Ratios. These differences are not merely observational but are confirmed through rigorous hypothesis testing at conventional significance levels.

The superior performance of private sector banks can be attributed to a constellation of interrelated factors. Foremost among these is the quality of management and organizational governance. Private banks operate with greater managerial autonomy, enabling faster decision-making, more agile strategic responses to market conditions, and a stronger orientation toward performance-based accountability. This contrasts with the more bureaucratic decision-making structures that characterize many public sector institutions, where government oversight, political considerations, and regulatory mandates can introduce operational rigidities.

Technological adoption represents another critical differentiator. Private sector banks in India have been at the forefront of digital banking innovation, deploying advanced platforms for internet and mobile banking, leveraging data analytics for credit scoring and customer segmentation, and investing in automation to reduce operational costs. While public sector banks have made significant strides in digital adoption in recent years, they continue to lag in the depth and sophistication of their technological integration.

The role of asset quality also warrants attention. Although the present study does not include NPA ratios in the primary variable set, the broader literature and ancillary evidence suggest that public sector banks have historically carried higher levels of non-performing assets, which erode profitability through reduced interest income and increased provisioning requirements. The credit appraisal and monitoring systems of private banks are generally regarded as more rigorous, contributing to better loan portfolio quality and, consequently, stronger financial performance.

It is important to note, however, that the analysis also reveals improvement trajectories within the public sector. SBI, in particular, demonstrates competitive performance metrics that approach those of some private sector banks, suggesting that institutional reform, managerial improvement, and strategic investment can meaningfully enhance public bank performance. The post-2020 improvement in profitability indicators across public sector banks also indicates that regulatory interventions, capital infusion, and post-pandemic economic recovery have had positive effects.

The study concludes that ownership structure, management efficiency, technological capability, and risk management practices are the principal determinants of financial performance in the Indian banking sector. The performance gap between public and private sector banks, while persistent, is not immutable. Strategic reforms focused on operational efficiency, technological modernization, governance strengthening, and human capital development can help public sector banks improve their competitive position. The findings

provide an empirical foundation for evidence-based policy formulation and strategic planning in the banking industry.

6. Future Scope for the Research

Several avenues exist for extending and deepening the present research. Future studies could expand the sample to include a larger number of public and private sector banks, foreign banks, small finance banks, and regional rural banks to provide a more comprehensive representation of the Indian banking ecosystem. The inclusion of non-financial variables such as customer satisfaction, service quality indices, digital adoption metrics, and employee productivity measures would enable a more holistic evaluation of bank performance beyond purely financial dimensions.

Methodologically, the application of advanced econometric techniques such as panel data regression, Data Envelopment Analysis, and machine learning-based predictive models could yield deeper insights into the causal relationships and predictive patterns underlying banking performance. Longitudinal studies that track the performance effects of specific policy interventions, such as the public sector bank merger programme or the implementation of the Insolvency and Bankruptcy Code, would contribute valuable evidence to the policy discourse.

The impact of fintech innovations and digital transformation on banking efficiency and profitability represents a particularly promising area of inquiry given the rapid pace of technological change in the financial services industry. Comparative studies spanning multiple countries or regions could provide insights into how institutional environments, regulatory regimes, and economic structures interact with ownership models to shape banking outcomes. Finally, research examining the evolving role of Environmental, Social, and Governance (ESG) criteria in banking performance assessment would address an increasingly important dimension of contemporary financial analysis.

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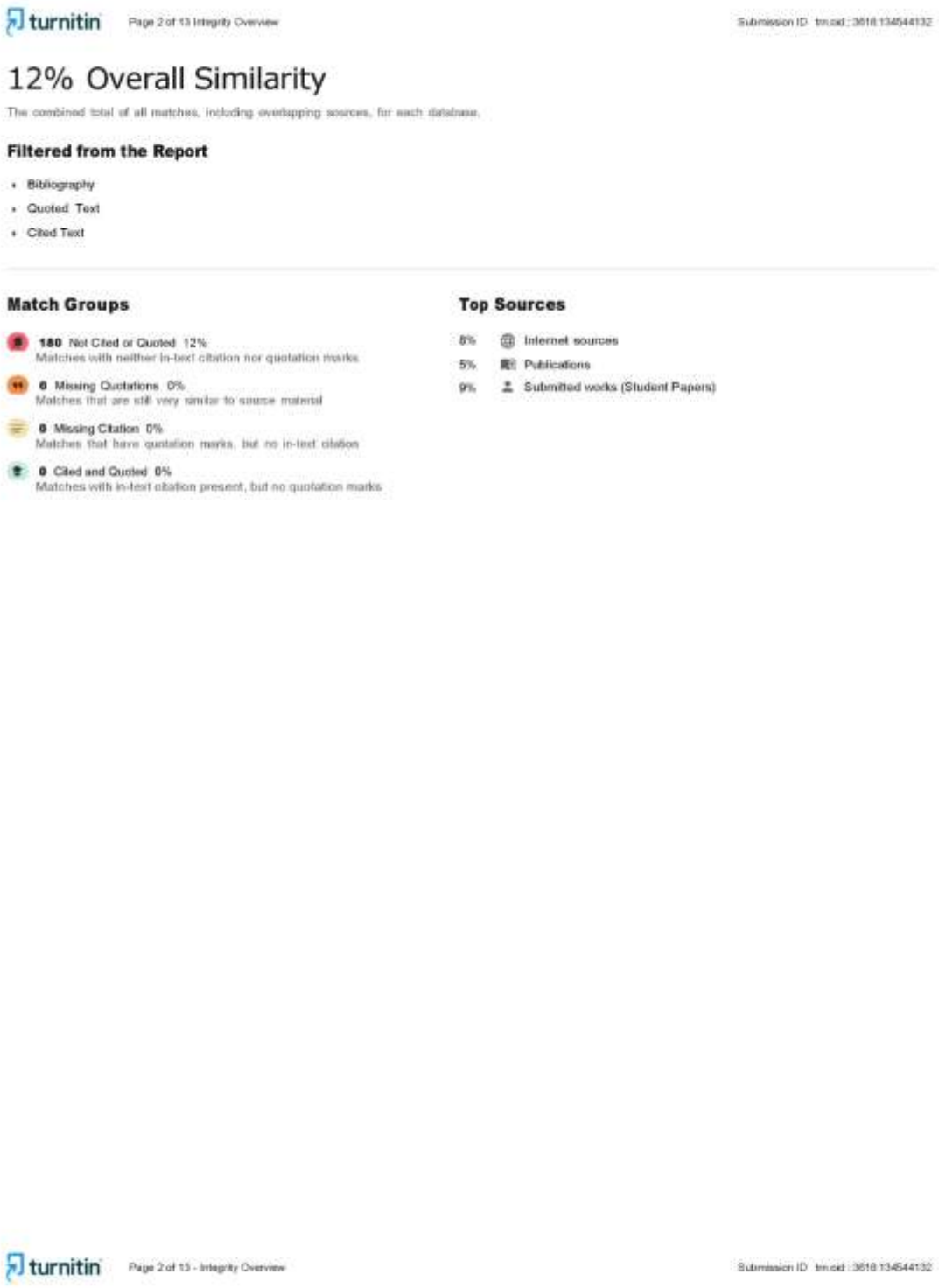

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Non-qualifying text, such as bullet points, annotated bibliographies, etc., will not be processed and can create disparity between the submission highlights and the percentage shown.

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