

Impact of Marketing Analytics on Key Trends in the Banking Industry

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Abstract

As the need for marketing transparency and accountability has grown in tandem with advances in information and communication technologies, so needs marketing analytics and statistical tools to underpin academic and management inquiries. Therefore, the statistical technique is used in many research reports, marketing strategies, dissertations, and articles. It just takes a cursory examination of academic publications and conference proceedings to confirm this. Equally, businesses are increasingly relying on big data and marketing analytics to assess the efficacy of existing marketing initiatives and develop novel ones. Throughout this study, we will investigate the several prospects available and the integration and scalability issues that prevent financial institutions from treating analytics as a unified field. Next, we will discuss banks' strategic and organizational components to bring the analytics vision to life.

Keywords: *Marketing Analytics, Operational Efficiency, Non-Performing Assets (NPAs), Workforce Expansion, Performance Indicators, macroeconomic Factors.*

Introduction

In recent years, the banking industry has endured significant transformations driven by developments in information and communication technologies. Among these advancements, marketing analytics has emerged as a pivotal tool for enhancing transparency and accountability in banking operations. Marketing analytics involves the use of statistical techniques and big data to assess the efficiency of marketing strategies and to inform decision-making processes.

The importance of marketing analytics is underscored by the increasing reliance of businesses to evaluate existing marketing initiatives and develop innovative strategies. Financial institutions have recognized the potential of analytics to provide insights that drive strategic decisions and operational efficiencies. However, integrating and scaling analytics within the banking sector presents unique challenges that need to be addressed to realize their full potential.

This finding investigates the effect of marketing analytics on four key trends in the banking industry: changes in the number of bank employees, credit growth, operating results of credit institutions, and the NPA (Non-Performing Assets)-operating cost ratio. By investigating these key parameters, the study aims to elucidate the role of marketing analytics in shaping these trends and to feed an inclusive identification of its impact on the banking industry.

Marketing Analytics The importance of marketing responsibility, along with the constant advancement of information and communication technology, has steadily boosted the use of marketing analytics and statistical tools to assist academic and management research.

As a result, the statistical technique is used in many research reports, marketing strategies, dissertations, and publications. A simple search of conference proceedings and peer-reviewed publications demonstrates this claim. Similarly, businesses increasingly rely on analytics to analyse their marketing activity and develop new strategies (Prabhu, 2019)

As far as banking is concerned, analytics may be much more than a collection of separate tasks. Analytics becomes a meaningful business discipline if banks set their substantial strategic and organizational strength behind it. Banking predated the establishment of marketing and sales as recognized business disciplines, for example, in the 1970s, and today's business leaders may only have vague memories of what it was like. They may recall the days of the six-person IT department and the IBM mainframe in the basement. Looking at the various IT-supported businesses and processes in today's banks is a sobering reminder of the radical potential for change that a new discipline represents. Analytics has such capability. Following are the three pillars; in combination, they can kick-start the coming boom in the banking business (Working Paper: Are more productive banks always better?) Vardhan, 2023.

Role and Impact of Analytics in Banking

Accelerate Growth in an Anaemic Environment: Client acquisition, retention, cross- and upselling might all benefit from more in-depth customer profiles that include transactional and business strategies (Trelewicz, 2017).

Increasing Productivity: All banking processes have been optimized to be more rapid and effective. For instance, banks may use advanced analytics to provide teams with data management decision support and to speed up and improve their responses to regulatory obligations. To save money, one bank uses machine algorithms to predict the cash supplies for ATMs throughout the nation and combines this with route-optimization strategies (Saxena, 2023).

Enhancing Risk Management: Digitizes credit evaluation, pre-event warning systems, upcoming stress testing, and debt analytics are all examples of analytics-assisted operations that might help banks lower risk costs (Kalyani, 2023). Banks may utilize analytics to perceive the best possible financial return on their substantial investments in compliance and control, which have escalated in price in recent years. According to our estimates, a

streamlined portfolio of information sources and new analytics that create more accurate FDA reviews and present them immediately might save G-SIBs up to \$100,000,000, annually. It has been estimated that D-SIBs may annually save up to \$400,000,000. Analytics will allow banks to decrease cheat losses in the future (Wolgast, 2016).

Key Indicators for Banking Performance

Credit Growth Rate: The credit growth rate in banking reflects the speed at which banks extend loans, offering insights into economic health. High growth rates indicate economic vigor, boosting bank profits, while low rates suggest economic slowdown, constraining investments, and consumer spending. Central banks use this data to adjust interest rates, impacting borrowing costs and economic activity. In India, the credit growth rate of scheduled commercial banks serves as a barometer for the country's economic momentum. During high growth periods, such as pre-COVID years, credit growth rates surged, reflecting strong industrial and consumer activity. In contrast, the pandemic-induced slowdown saw reduced credit growth, highlighting economic challenges and cautious lending practices (Rozyck, 2006).

Operating Costs: Operating Costs are the expenses incurred by a company in its normal course of business operations. It includes costs such as salaries, utilities, rent, and other expenses related to producing goods or services (Varshney, 2022).

Average Total Assets: This represents the average value of a company's assets over a specific period. *Operating Costs to Average Total Assets* are usually calculated by adding the beginning and ending total asset values for a period and dividing them by two.

Pre-Provision Operating Profit (PPOP): This represents the operating profit of the bank before accounting for loan loss provisions. It includes income from interest, fees, and other operating activities, minus operating expenses such as salaries, rent, and other administrative costs (Mohanty, 2018).

PPOP (Pre-Provision Operating Profit) to Average Total Assets is a financial ratio used specifically in the context of banking to measure the efficiency and profitability of a bank's core operations relative to its asset base. This ratio is particularly relevant in the banking sector because it focuses on the bank's ability to generate profits from its core activities before accounting for loan loss provisions (Mohanty, 2018).

Gross Non-Performing Assets (NPAs): GNPs as a percentage is a measure of the proportion of a bank's loans that are considered non-performing relative to its total loan portfolio. Non-performing assets are loans where the nonpayer has stopped making interest or

principal payments for a specified period, typically 90 days (Mukherjee, 2003). Total Gross Advances are the total value of all loans disbursed by the bank. A higher percentage of gross NPAs indicate a higher proportion of loans in the bank's portfolio that are not making earnings due to defaults by borrowers. This can signify higher credit risk and potential financial stress for the bank. A lower percentage of gross NPAs is seen as positive, indicating a healthier loan portfolio with fewer defaults (Vagrecha, 2022). *NPA to Operating Costs Ratio* measures the effectiveness of a bank in managing its non-performing assets relative to its operating costs. A higher ratio implies that a sizable portion of the bank's operating costs are associated with managing non-performing assets, which could indicate inefficiencies in the bank's operations or higher credit risk. A lower ratio suggests that the bank is managing its non-performing assets more efficiently relative to its operating costs.

Background and Significance of the study

Consider the recent phenomena of use of analytics' power in banking are set the tone for the background of this study. A European bank focused on inactive consumers to fight a dropping client base, but it had little effect. The bank used algorithms to predict which active clients would leave. This new understanding reduced turnover by 15%.

Research Objectives

Following objectives has listed out for this study:

1. Evaluate the Effect of Employment Trends in Banks
2. Evaluate Credit Growth in Relation to Banking in India
3. Analyse the Operating Results of Credit Institutions
4. Investigate the NPA-Operating Cost Ratio

Methodology

This quantitative research aims to offer a study of the banking industry and present market environment to identify issues, opportunities, and future innovations using market analytics. Empirical research, papers, interviews, and bank publications have been utilized. Using conventional banking key numbers, the market is statistically appraised through 2022, and the impact of analytics is examined.

Analysis and Result

Although low rates of interest and value measures have put a strain on the conventional banking sector, digitization has opened new prospects in consumer banking, such as the

Omni channel and sale assistance via market analytics. The following describes the impact of these changes on the banking market.

The use of marketing analytics in the Indian banking system has significantly influenced employment trends from 2015 to 2024. This impact is particularly evident when examining the changes in the workforce across banks.

Table 1:- Employee Data for the Schedule Commercial Banks

Year	Scheduled Commercial Banks	Public Sector Banks	Private Sector Banks
2015	11.41	7.97	3.43
2016	11.86	7.98	3.88
2017	11.99	7.73	4.26
2018	12.21	7.54	4.67
2019	12.50	7.48	5.02
2020	12.75	7.37	5.38
2021	13.02	7.22	5.80
2022	13.11	7.11	6.00
2023	13.35	7.05	6.30
2024	13.50	7.00	6.50

Source- *RBI publications*.

From 2015 to 2024, the number of employees in private sector banks nearly doubled, rising from 3.43 lakh to 6.50 lakh. The rise in employment also reflects the banks' need to innovate and diversify their product offerings based on data-driven insights. As private banks introduce new financial products and services tailored to the specific needs of their customers, they require more specialized staff to develop, market, and manage these offerings. This strategic use of analytics not only drives customer engagement but also supports the banks' competitive advantage in a rapidly evolving market (Arora & Agarwal, 2009). Marketing analytics has significantly enhanced CRM efforts across the banking sector. By providing detailed insights into customer interactions and satisfaction levels, analytics enables banks to offer more personalized services and proactive engagement.

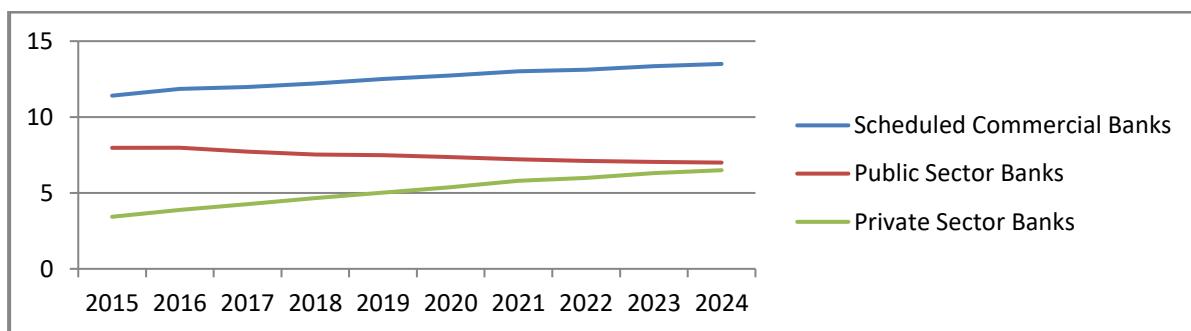


Figure 1: Employee Data

The adoption of marketing analytics has had a profound impact on employment trends in the Indian banking. Private sector banks have significantly increased their workforce to support growth driven by customer-centric strategies and product innovation. Public sector banks, in contrast, have focused on operational efficiencies, resulting in a more streamlined workforce.

This analysis highlights the analytical function of marketing analytics in determining the opportunity for employment in the Indian banking industry.

Table-2 shows the representation of the Credit Growth Rate (%) for both banks in India across the years 2015 to 2024. The credit growth for PSBs has shown significant recovery post-pandemic, with a growth rate of 14.3% in 2023. This trend is projected to stabilize slightly at 13.5% in 2024. PVBs have consistently exhibited higher growth rates compared to PSBs. For 2023, the growth rate was 18.5%, with a slight projected decrease to 17.2% in 2024.

Table 2: Credit Growth Rate (%) Year-on-Year

Year	Net Credit Growth	Public Sector Banks	Private Sector Banks
2015	8.8	7.0	14.5
2016	5.4	4.0	14.2
2017	8.3	3.1	15.1
2018	9.9	6.3	21.3
2019	14.4	8.0	20.9
2020	6.1	3.6	11.3
2021	7.3	4.6	13.5
2022	15.1	12.1	17.9
2023	16.2	14.3	18.5
2024	15.5	13.5	17.2

Source- *RBI publications*.

Analyzing the data reveals several trends and insights.

The adoption of marketing analytics played an essential function in shaping these credit growth trends. Marketing analytics empowers banks to influence data-driven perceptions for customer segmentation, targeted marketing campaigns, credit risk assessment, and product innovation. By analyzing customer behavior, creditworthiness, and market trends, banks can optimize their lending strategies to identify profitable market segments, mitigate risks, and enhance customer experience.

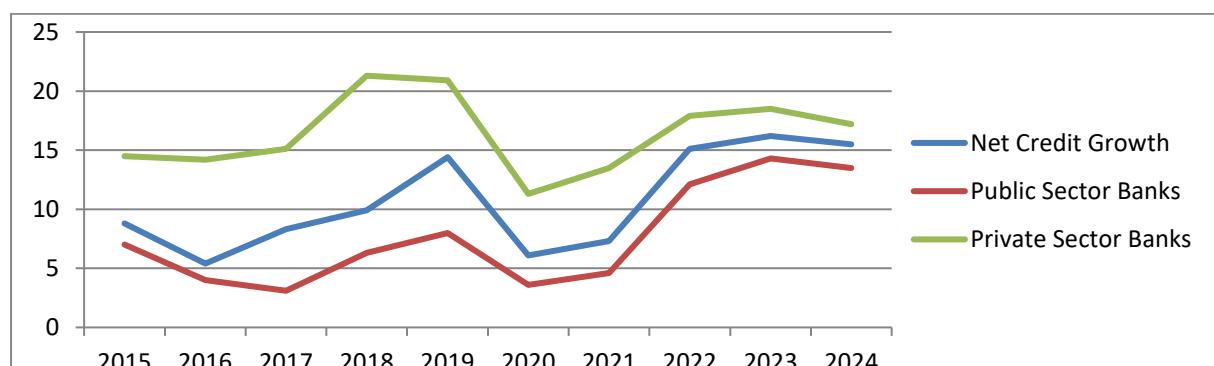


Figure 2: Credit Growth Rate (SEN), 2024

The observed peaks in credit growth rates, especially in 2019 and beyond, coincide with the increasing integration of marketing analytics into banking operations.

In conclusion, the data-driven analysis underscores the transformative influence of marketing analytics on credit growth within Indian banking system.

Table-3 presents the operating costs and PPOP to Average Total Assets Ratios data. Examining the trend in Operating Costs to Average Total Assets (%) over the years reveals a gradual increase from 2.10% in 2015 to 2.42% in 2023.

Table 3: Operating Costs and PPOP to Average Total Assets Ratios

Year	Operating Costs to Average Total Assets (%)	PPOP to Average Total Assets (%)
2015	2.10	2.80
2016	2.15	2.85
2017	2.18	2.90
2018	2.20	2.95
2019	2.25	3.00
2020	2.30	3.00
2021	2.35	3.05
2022	2.40	3.10
2023	2.42	3.15

In parallel, the trend in PPOP to Average Total Assets (%) displays a steady increase from 2.80% in 2015 to 3.15% in 2023. PPOP represents the operating profit of a bank before accounting for loan loss provisions, and this ratio assesses the bank's ability to generate profits from its core operations relative to its asset base. The consistent uptrend in this ratio reflects recovering productivity and functioning proficiency over the years.

The observed increase in Operating Costs to Average Total Assets (%) could be partially attributed to investments in marketing analytics infrastructure, software, and talent acquisition to support data-driven decision-making and customer-centric initiatives. While these investments may initially contribute to rising operating costs, they can yield long-term benefits by enhancing the value of marketing operations, raising customer arrangement, and driving business outcomes.

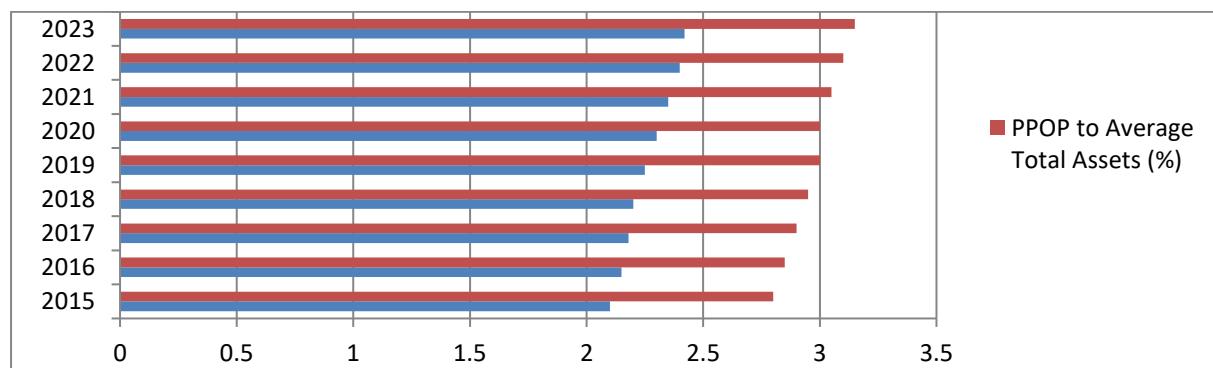


Figure 3: Operating Costs and PPOP

Conversely, the upward trajectory in PPOP to Average Total Assets (%) indicates that banks are successfully translating their operational efficiencies and strategic initiatives, including those driven by marketing analytics, into improved profitability. In conclusion, the data-driven analysis highlights the transformative ability of marketing analytics in the Indian banking system.

Analyzing the data provided in Table-4 on Gross NPAs (%) and the NPA to Operating Costs ratio across the years 2015 to 2023 offers valuable insights into the effectiveness of Marketing Analytics in the Indian banking system.

Table 4: GNPA to Operating Costs Ratios

Year	Gross NPAs (%)	NPA to Operating Costs
2015	2.8	2.1
2016	3.8	2.5
2017	6.8	2.4
2018	11.2	2.5
2019	9.7	2.3
2020	8.21	2.2
2021	7.33	2.1
2022	5.82	2.2
2023	3.87	2.1

Meanwhile, the NPA to Operating Costs ratio measures the efficiency of a bank in managing its non-performing assets relative to its operating expenses. A higher ratio suggests that a higher fraction of the bank's operating costs are allocated towards managing NPAs, potentially indicating inefficiencies in credit risk management practices or higher credit-related expenses.

The observed trend in Gross NPAs (%) reveals a fluctuating pattern over the years, with a peak of 11.2% in 2018 and a decline to 3.87% in 2023. This trend reflects the dynamic nature of credit risk within the banking sector, influenced by aspects such as monetary environments, regulatory changes, and the effectiveness of credit risk management frameworks.

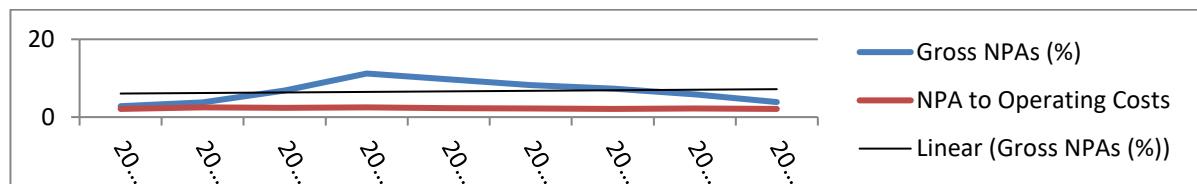


Figure 4: GNPA to Operating Costs Ratios

The role of marketing analytics in managing credit risk and optimizing operational efficiency cannot be understated. By leveraging data-driven perceptions, banks can enhance their credit

underwriting processes, identify early warning signals of potential defaults, and tailor recovery strategies to minimize NPA levels.

Research Findings Based on the analysis the research findings for each of the set objectivize are listed as follows:

Objective 1: - Assessment of the Impact of Employment Trends in Banks

- From 2015 to 2024, the figure of employees in scheduled commercial banks increased from 11.41 lakh to 13.50 lakh.
- Private sector banks saw a significant rise in employment, nearly doubling from 3.43 lakh to 6.50 lakh. This growth is driven by the adoption of marketing analytics, which facilitated customer acquisition, product innovation, and targeted marketing strategies.
- Public sector banks experienced a decline in employment from 7.97 lakh to 7.00 lakh. This is attributed to efforts in operational efficiency and automation, reducing the workforce.

Objective-2: Evaluation of the Credit Growth in Relation to Banking in India

- Private sector banks consistently showed higher credit growth rates compared to public sector banks. For instance, in 2023, the growth rate for private banks was 18.5%, while it was 14.3% for public sector banks.
- Public sector banks exhibited significant credit growth recovery post-pandemic, stabilizing at 13.5% in 2024.
- The integration of marketing analytics contributed to optimizing lending strategies, risk assessment, and customer segmentation, leading to enhanced credit growth.

Objective-3: Analysis of the Operating Results of Credit Institutions

- The operating costs to average total assets ratio increased from 2.10% in 2015 to 2.42% in 2023. This rise may reflect investments in marketing analytics and other operational improvements.
- The PPOP (Pre-Provision Operating Profit) to average total assets ratio also showed an upward trend from 2.80% to 3.15% over the same period, indicating better productivity and operating effectiveness.
- Investments in marketing analytics have improved customer engagement, targeted marketing, and revenue generation, positively impacting operational results.

Objective-3: Investigate the NPA-Operating Cost Ratio

- Gross NPAs (Non-Performing Assets) showed fluctuations, peaking at 11.2% in 2018 and declining to 3.87% in 2023, indicating varying credit risk levels over the years.
- The NPA to operating costs ratio remained stable, ranging from 2.1 to 2.5. This suggests a consistent allocation of resources towards managing NPAs.

- The decline in Gross NPAs in recent years points to effective credit risk management aided by marketing analytics, which helps in early detection of defaults and optimizing recovery strategies.

The research highlights the transformative influence of marketing analytics.

Discussion

The correlation coefficient of +1 indicates a strong positive monotonic trend in employment numbers in the studied period. This finding suggests a considerable change in workers. The correlation coefficient of -1 for 2015-17 indicates a decline in credit growth, but a substantial shift took place towards the end of fiscal year 2016-17. The correlation coefficient of +1 suggests a strong positive trend during 2017-24. The initial slowdown in credit growth, felt across organizations, underscores the challenges by the banking sector, potentially influenced by macroeconomic factors and changes in consumer behavior. The correlation coefficient of 0.12 for operational costs indicates a mild monotonic rise, which is statistically insignificant. This suggests that while operational performance has been volatile yearly, there has not been a consistent trend of increasing operational costs over the period studied. However, the banking industry's operational performance has remained flat, indicating potential challenges in cost management despite fluctuations in performance.

The statement mentions a significant decline of about ten percentage points in the GNPA Ratio between 2015 and 2018, followed by a reversal by 2018. While not explicitly mentioned, the data and trends support the notion that the ratio of NPA to operating costs has been steadily deteriorating over time. This indicates challenges in managing non-performing assets relative to operating costs, potentially influenced by issues such as economic restrictions and credit risk management practices.

The interpretations align with the provided correlation and hypotheses, contributing acumen to the changing dynamics of the banking sector, including workforce trends, credit growth shifts, operational performance, and the management of non-performing assets. These findings highlight the embryonic environment of the banking industry, shaped by digitization, economic factors, and regulatory changes, highlighting the requirement for effective strategies to navigate challenges and capitalize on emerging opportunities.

Conclusion

The data and analyses presented provide a comprehensive view of the impact of marketing analytics on various aspects of the Indian banking sector, including employment trends, credit growth, operational performance, and management of non-performing assets (NPAs). The

correlation analysis reveals a strong positive trend in employment numbers from 2015 to 2024. This employment growth is attributed to the aggressive adoption of marketing analytics by private-sector banks, leading to increased customer acquisition and retention. In contrast, public sector banks have focused on operational efficiencies through automation, resulting in decreased employment.

The correlation analysis indicates fluctuations in credit growth, with a notable shift towards positive trends in later years. The initial slowdown in credit growth is attributed to macroeconomic factors and changes in consumer behavior. However, the adoption of marketing analytics has played a foremost role in improving credit disbursement and risk management, leading to a reversal in credit growth trends and supporting sustainable lending activities in banking. While operational costs have shown a mild monotonic rise, the correlation analysis suggests that there has not been a consistent trend of increasing operational costs over the period studied. This indicates potential challenges in cost management despite fluctuations in operational performance. The data reveals fluctuations in Gross NPAs (%) and the NPA to Operating Costs ratio over the period studied. While the Gross NPA ratio experienced a decline followed by a reversal, the NPA to Operating Costs ratio indicates challenges in managing NPAs relative to operating costs.

The adoption of marketing analytics has significantly influenced various aspects of this sector, contributing to positive employment trends, improved credit growth, and enhanced operational performance. While challenges remain, particularly in managing NPAs, the strategic integration of marketing analytics has positioned banks to navigate dynamic market conditions and capitalize on emerging opportunities.

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