



A Study On Customer Data Analysis for Improving Banking Services with Special Reference to Indian Overseas Bank

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Abstract – Customer data has become one of the most valuable assets for banks in understanding customer needs, preferences, and behaviour and in improving the quality of financial services. This study examines how customer data analysis can be used to improve banking services, with special reference to Indian Overseas Bank (IOB). The study is based on practical exposure gained during an internship at IOB, where activities such as customer account opening, KYC verification support, and customer-data updation highlighted the importance of maintaining accurate and updated customer information in banking operations. Primary data were collected from 100 customers of Indian Overseas Bank using a structured questionnaire covering demographic characteristics, banking-service usage, digital banking adoption, and customer satisfaction. The collected data were analysed using percentage analysis and the Chi-Square test. The findings indicate that a majority of customers hold savings accounts and actively use digital banking services such as mobile banking, internet banking, and UPI. The results also indicate a generally positive level of customer satisfaction with the banking services provided by IOB. The Chi-Square analysis further identified significant associations among selected customer-related variables, indicating differences in customer perceptions across categories. The study concludes that effective customer data analysis enables banks to understand customer behaviour, personalize financial products and services, strengthen customer relationships, and support data-driven decision-making. The study recommends strengthening customer-data management systems, improving digital banking awareness, and using customer analytics continuously to enhance service quality and customer satisfaction.

Keywords – Customer Data Analysis, Banking Services, Customer Satisfaction, Digital Banking, Business Analytics, Customer Relationship Management, Chi-Square Test, Percentage Analysis, Indian Overseas Bank.

I. INTRODUCTION

Customer data has become a strategic asset for banks seeking to improve service quality, strengthen customer relationships, and support data-driven decision-making. This study looks at how the analysis of customer data affects banking operations and customer satisfaction, based on practical exposure gained during an internship at Indian Overseas Bank (IOB), where activities such as customer account opening, KYC verification, and data updation are performed.

The banking sector is one of the most significant pillars of the economy, mobilizing savings, providing credit facilities, and facilitating financial transactions. In recent years, the banking industry has undergone rapid transformation due to digital banking services, internet banking, mobile banking, UPI, and the increasing use of customer data for decision-making.

In today's competitive banking environment, customer satisfaction has become a key factor in determining the success of a bank. Customers expect banking services that are fast, secure, convenient, and personalized. To meet these expectations, banks increasingly rely on customer data analysis to understand customer behaviour,

preferences, financial needs, and service usage patterns. This study aims to understand how customer data analysis can be used to improve banking services and support better decision-making at Indian Overseas Bank.

Major Theories Used

This study draws on established theories that explain how customer information improves organisational performance. The SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry, measures service quality through five dimensions — reliability, responsiveness, assurance, empathy, and tangibles — and is widely used in the banking sector to evaluate customer satisfaction. Customer Relationship Management (CRM) theory explains how organisations collect, manage, and analyse customer data to improve customer retention, loyalty, and service quality.

The Diffusion of Innovation theory explains how new technologies such as mobile banking, internet banking, and UPI spread among customers over time — first adopted by a few early users and gradually reaching the wider customer base. Together, these theories support the view that customer data, when analysed effectively, helps banks deliver better, more personalised, and more efficient financial services.



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Research Objectives

PRIMARY OBJECTIVE:

To analyse customer data and examine how it can be effectively utilised to improve banking services, enhance customer satisfaction, and support data-driven decision-making at Indian Overseas Bank.

Secondary Objectives:

- To understand the significance of customer data in improving banking operations and delivering better customer service.
- To analyse the demographic profile of customers, including age, gender, educational qualification, occupation, and income level.
- To identify the banking products and services most frequently used by customers of Indian Overseas Bank.
- To examine customer preferences and expectations regarding various banking services and facilities.
- To evaluate the overall level of customer satisfaction with the quality, efficiency, and reliability of banking services.
- To assess customer awareness and usage of digital banking services such as Mobile Banking, Internet Banking, UPI, NEFT, RTGS, IMPS, and ATM.

Research Questions

- Does customer data analysis have an impact on the quality and personalisation of banking services?
- How does customer data help Indian Overseas Bank make informed decisions and improve customer service?
- Do customers actively use digital banking services, and how aware are they of these facilities?
- What is the overall level of customer satisfaction with the banking services provided by Indian Overseas Bank?
- What are the key factors influencing customer satisfaction, such as staff behaviour, service speed, and security?

Development Of Hypothesis

H₀ (Null Hypothesis): There is no significant difference among the levels of customer satisfaction (and among the levels of digital banking awareness) reported by customers of Indian Overseas Bank; responses are evenly distributed across categories.

H₁ (Alternative Hypothesis): There is a significant difference among the levels of customer satisfaction (and among the levels of digital banking awareness); responses are not evenly distributed across categories.

Statement Of Problem

In today's competitive banking environment, customers expect fast, secure, personalised, and high-quality banking services. Although banks collect a vast amount of customer data through account opening, transactions, digital banking, and KYC processes, this information is not always fully utilised to improve customer experience and operational efficiency. Many banks face challenges such as identifying changing customer needs, delivering personalised services, reducing customer complaints, improving customer retention, and enhancing service quality. Ineffective use of

customer data may result in delayed decision-making, lower customer satisfaction, and missed opportunities to develop products that meet customer expectations. This study addresses how customer data analysis can be effectively used to improve banking services at Indian Overseas Bank, based on practical exposure gained during an internship where customer data management activities highlighted the importance of accurate customer information.

II. REVIEW OF LITERATURE

A number of researchers have studied how organisations use customer data and how it affects service performance. Kotler and Keller stated that understanding customer needs and preferences is essential for delivering high-quality services and building long-term customer relationships. Parasuraman, Zeithaml, and Berry introduced the SERVQUAL model, which is widely used in banking to evaluate customer satisfaction through reliability, responsiveness, assurance, empathy, and tangibles. Payne and Frow explained that Customer Relationship Management enables organisations to collect, manage, and analyse customer data to improve retention, loyalty, and service quality, while Davenport and Harris highlighted that business analytics transforms raw customer data into insights that support better strategic and operational decisions.

Kothari emphasised that systematic data collection and analysis are essential for reliable, evidence-based decision-making, and Malhotra noted that customer research helps organisations understand expectations and buying behaviour. Gupta explained that statistical analysis plays a significant role in interpreting customer data for managerial decisions, while Chandra observed that financial institutions improve operational performance by adopting data-driven strategies. Kumar and Reinartz concluded that customer analytics helps predict behaviour and improve long-term profitability, and Rust and Oliver found that service quality directly influences customer satisfaction and loyalty in service industries including banking.

Zeithaml, Bitner, and Gremler stated that superior customer service improves trust and long-term relationships with financial institutions, while Reichheld and Sasser explained that retaining existing customers is more profitable than acquiring new ones. Porter emphasised that organisations gain competitive advantage through service quality and effective use of information, and Laudon and Laudon noted that information systems and analytics improve organisational efficiency through faster, more accurate decisions. Turban, Sharda, Delen, and King highlighted that business intelligence helps identify customer trends and supports strategic planning, and Chen, Chiang, and Storey emphasised that big data analytics improves customer service and competitive performance. Rogers' Diffusion of Innovation theory explains how digital banking adoption spreads among customers over time, and the Reserve Bank of India has consistently highlighted the importance of



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digital banking, customer protection, data security, and financial inclusion in strengthening the Indian banking system.

Subburaj et al. (2026) found that digital marketing, influencer campaigns, online demonstrations, and customer reviews significantly influence purchasing decisions in the Indian home appliance market. Subburaj (2025) highlighted convenience, technology, product availability, and customer satisfaction as major factors affecting online shopping, while trust, security, and delivery remain concerns. Subburaj, et.al (2026) showed that social media content, influencers, reviews, discounts, and advertisements influence consumer spending and engagement. Sathyanarayan and Subburaj (2021) found that emotional attachment strengthens brand loyalty and long-term customer relationships. Subburaj et al. (2018) emphasised that AI improves data analysis, customer targeting, automation, and decision-making in finance and marketing. Purushothaman and Subburaj (2014) identified product quality, price, availability, freshness, and distribution as key determinants of customer satisfaction and loyalty.

Purushothaman and Subburaj (2014) studied customer satisfaction towards Aavin milk with special reference to Chennai City. The study highlighted product quality, price, availability, freshness, packaging, and distribution as important factors influencing customer satisfaction and purchasing decisions. The findings emphasized the importance of understanding customer expectations and continuously improving product and service quality to build customer satisfaction and loyalty.

Overall, the review of literature indicates that customer data analysis is a key factor in improving banking services. Previous studies consistently show that effective customer data management, business analytics, customer relationship management, and digital banking adoption contribute to better customer satisfaction, operational efficiency, and informed decision-making, providing a strong theoretical foundation for the present study.

III. RESEARCH DESIGN AND METHODOLOGY

Research Design

A descriptive research design has been adopted for this study. Descriptive research is used to describe the characteristics, opinions, and behaviour of customers regarding banking services. It helps in understanding customer demographics, service usage, satisfaction levels, and preferences without manipulating any variables, and supports the objective of examining how customer data analysis can improve banking services at Indian Overseas Bank.

Nature Of The Study

This study combines a qualitative dimension, capturing what customers think and feel about banking services, with

a quantitative dimension, analysing numerical data collected through a structured questionnaire. Percentage analysis and the Chi-Square test are used to interpret the survey responses, giving a comprehensive picture of customer perceptions and their relationship with banking service quality.

Sampling Technique And Sample Size

The respondents for this study are customers of Indian Overseas Bank who were selected using the Convenience Sampling technique, a non-probability sampling method under which respondents are chosen based on their accessibility, availability, and willingness to participate. Customers who visited the branch during the internship period and were willing to respond to the questionnaire were selected for data collection. A total of 100 customers responded to the questionnaire, representing different age groups, occupations, income levels, and banking experience. This sample size was considered adequate to analyse customer perceptions and identify areas for improving banking services through customer data analysis.

Tools For Analysis

The data collected was analysed using Microsoft Excel. Percentage analysis was used to understand the demographic and behavioural profile of respondents, and the data was presented using tables for easy interpretation. Since the questionnaire response data is categorical (nominal) in nature rather than interval-scaled, the Chi-Square Goodness-of-Fit test was used, in place of ANOVA or Pearson correlation, to examine whether customer responses on satisfaction and digital banking awareness are evenly distributed across categories or show a significant concentration in particular categories.

IV. DEMOGRAPHIC ANALYSIS

This section presents the demographic profile of the 100 respondents surveyed for the study, covering age, gender, educational qualification, occupation, and monthly income.

Table 4.1: Age Distribution of Respondents

Age Group	Frequency	Percentage (%)
Below 25 years	30	30.00%
25 – 35 years	40	40.00%
36 – 45 years	18	18.00%
Above 45 years	12	12.00%
Total	100	100.00%

Interpretation: The largest share of respondents (40%) falls in the 25–35 years age group, followed by 30% below 25 years. This indicates that young and middle-aged customers are the primary users of banking services at Indian Overseas Bank.

Table 4.2: Gender Distribution

Gender	Frequency	Percentage (%)
Male	55	55.00%



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Female	45	45.00%
Total	100	100.00%

Interpretation: Male respondents constitute 55% of the sample while female respondents account for 45%, reflecting reasonably balanced participation from both genders among the bank's customer base.

Table 4.3: Educational Qualification of Respondents

Qualification	Frequency	Percentage (%)
School Level	15	15.00%
Undergraduate	35	35.00%
Postgraduate	40	40.00%
Others	10	10.00%
Total	100	100.00%

Interpretation: Postgraduates form the largest group of respondents (40%), followed by undergraduates (35%), indicating that a majority of the customers surveyed are well educated.

Table 4.4: Occupation of Respondents

Occupation	Frequency	Percentage (%)
Student	20	20.00%
Employee	45	45.00%
Business	20	20.00%
Others	15	15.00%
Total	100	100.00%

Interpretation: Employees form the largest respondent group (45%), followed by students and business persons at 20% each, ensuring that the study captures the views of customers with steady banking needs.

Table 4.5: Monthly Income of Respondents

Income	Frequency	Percentage (%)
Below ₹20,000	25	25.00%
₹20,001 – ₹40,000	35	35.00%
₹40,001 – ₹60,000	25	25.00%
Above ₹60,000	15	15.00%
Total	100	100.00%

Interpretation: Most respondents (35%) earn between ₹20,001 and ₹40,000 per month, indicating that the sample is largely representative of middle-income banking customers.

V. DATA ANALYSIS AND INTERPRETATION

Type of Bank Account

Table 5.1: Type of Bank Account Held

Account Type	Frequency	Percentage (%)
Savings Account	75	75.00%
Current Account	15	15.00%
Fixed Deposit	10	10.00%

Total	100	100.00%
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Interpretation: The majority of respondents (75%) hold a savings account, confirming it as the most commonly used banking product, followed by current accounts (15%) and fixed deposits (10%).

Digital Banking Usage

Table 5.2: Usage of Digital Banking Services

Response	Frequency	Percentage (%)
Yes	82	82.00%
No	18	18.00%
Total	100	100.00%

Interpretation: A large majority (82%) of respondents use digital banking services, confirming strong customer preference for convenient, fast, and secure banking channels that can be accessed anytime and anywhere.

Table 5.3: Internet Banking Usage

Response	Frequency	Percentage (%)
Yes	70	70.00%
No	30	30.00%
Total	100	100.00%

Interpretation: Internet banking is used by 70% of respondents, indicating that a majority of customers prefer online banking for financial transactions due to convenience and speed.

Table 5.4: Mobile Banking Usage

Response	Frequency	Percentage (%)
Yes	80	80.00%
No	20	20.00%
Total	100	100.00%

Interpretation: Mobile banking is widely used, with 80% of respondents relying on it, reflecting the growing preference for app-based banking among customers of Indian Overseas Bank.

Table 5.5: Awareness of Digital Banking Facilities

Response	Frequency	Percentage (%)
Fully Aware	60	60.00%
Partially Aware	30	30.00%
Not Aware	10	10.00%
Total	100	100.00%

Interpretation: A majority of respondents (60%) are fully aware of digital banking facilities and a further 30% are partially aware, while only 10% remain unaware, indicating generally strong awareness levels.

Table 5.6: Ease of Using Digital Banking Services

Response	Frequency	Percentage (%)
Very Easy	35	35.00%



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Easy	45	45.00%
Moderate	15	15.00%
Difficult	5	5.00%
Total	100	100.00%

Interpretation: Most customers find digital banking easy to use — 45% rate it as easy and 35% as very easy — while only 5% report difficulty, confirming that IOB's digital platforms are broadly user-friendly.

Table 5.7: Perceived Security of Online Transactions

Response	Frequency	Percentage (%)
Highly Secure	30	30.00%
Secure	50	50.00%
Neutral	15	15.00%
Not Secure	5	5.00%
Total	100	100.00%

Interpretation: Most respondents (80% combined) consider online banking transactions to be secure or highly secure, reflecting customer confidence in the bank's digital security measures.

Service Quality And Satisfaction

Table 5.8: Staff Behaviour

Response	Frequency	Percentage (%)
Excellent	35	35.00%
Good	45	45.00%
Average	15	15.00%
Poor	5	5.00%
Total	100	100.00%

ered easy by most customers — 40% rate it very easy and 35% easy — reflecting an efficient onboarding process supported by accurate customer data handling.

Table 5.9: Account Opening Process

Response	Frequency	Percentage (%)
Very Easy	40	40.00%
Easy	35	35.00%
Moderate	20	20.00%
Difficult	5	5.00%
Total	100	100.00%

Interpretation: The account opening process is considered easy by most customers — 40% rate it very easy and 35% easy — reflecting an efficient onboarding process supported by accurate customer data handling.

Table 5.10: ATM Service Satisfaction

Response	Frequency	Percentage (%)
Excellent	25	25.00%
Good	50	50.00%
Average	20	20.00%
Poor	5	5.00%
Total	100	100.00%

Interpretation: Half of the respondents (50%) rate ATM services as good, and a further 25% rate them as excellent, indicating general satisfaction with ATM facilities.

Table 5.11: Overall Satisfaction with Banking Services

Satisfaction Level	Frequency	Percentage (%)
Highly Satisfied	30	30.00%
Satisfied	50	50.00%
Neutral	15	15.00%
Dissatisfied	5	5.00%
Total	100	100.00%

Interpretation: A combined 80% of respondents are satisfied or highly satisfied with the bank's services, while 15% remain neutral and only 5% are dissatisfied, confirming an overall positive perception of Indian Overseas Bank's service quality.

Table 5.12: Recommendation of Indian Overseas Bank to Others

Response	Frequency	Percentage (%)
Yes	82	82.00%
No	18	18.00%
Total	100	100.00%

Interpretation: Most customers (82%) are willing to recommend Indian Overseas Bank to others, reflecting strong customer loyalty and satisfaction with the overall banking relationship.

VI. STATISTICAL ANALYSIS

A Chi-Square Goodness-of-Fit test was used to examine whether customer responses are evenly distributed across categories or show a statistically significant concentration in particular response categories, in place of ANOVA and Pearson correlation, since the survey responses are categorical rather than interval-scaled.

Chi-Square Test: Overall Customer Satisfaction

H_0 : Customer satisfaction responses are evenly distributed across the four categories (Highly Satisfied, Satisfied, Neutral, Dissatisfied).

H_1 : Customer satisfaction responses are not evenly distributed across the four categories.

Table 6.1: Chi-Square Test – Overall Satisfaction

Category	Observed (O)	Expected (E)	(O-E) ² /E
Highly Satisfied	30	25	1.00
Satisfied	50	25	25.00
Neutral	15	25	4.00
Dissatisfied	5	25	16.00
Total	100	100	46.00

Chi-Square value (χ^2) = 46.00, Degrees of Freedom (df) = 3, Critical value at 5% level = 7.815, p-value < 0.001.



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Since the calculated χ^2 value (46.00) is much higher than the critical value (7.815), the null hypothesis is rejected. This confirms that customer satisfaction responses are not evenly spread across categories — they are heavily concentrated in the "Satisfied" and "Highly Satisfied" categories, indicating a genuinely positive overall perception of Indian Overseas Bank's services rather than a random or neutral spread of opinion.

VII. DISCUSSION

The findings of this study support the theoretical basis established in the review of literature. Most respondents are young to middle-aged, educated customers who are comfortable using digital banking technologies, and savings accounts remain the most commonly held banking product. The study found that customer data — captured through account opening, KYC verification, and everyday transactions — plays an important role in helping the bank understand customer needs and deliver appropriate services. Digital banking usage is high across mobile banking, internet banking, and related services, and the Chi-Square results confirm that both overall satisfaction and digital banking awareness are significantly skewed toward positive categories rather than being randomly distributed. This suggests that Indian Overseas Bank's customer-centric practices, courteous staff behaviour, and simplified account opening process are contributing meaningfully to a favourable customer experience. At the same time, the presence of a neutral or dissatisfied segment (20% combined) and a residual awareness gap (10% not aware of digital banking) point to specific, addressable areas where better use of customer data — for targeted communication, service recovery, and digital literacy support — could further strengthen performance.

VIII. CONCLUSION

This study shows that customer data analysis plays an important role in improving banking services and enhancing customer satisfaction at Indian Overseas Bank. The findings reveal that customer data helps the bank understand customer behaviour and preferences, supports personalised banking services, and strengthens the account opening and service delivery process. The percentage analysis and Chi-Square test results confirm that customers are largely satisfied with the bank's services and are aware of and actively using its digital banking facilities, particularly mobile and internet banking.

The study also highlights that customer data should not be viewed merely as operational records, but as a strategic resource that supports better decision-making, personalised financial products, and long-term customer relationships. Continued investment in customer data management, digital banking awareness, and analytics-driven service improvement can help Indian Overseas Bank further enhance customer satisfaction and operational performance in the future.

IX. FINDINGS

- Most respondents (40%) belong to the 25–35 years age group, indicating that young and middle-aged customers are the primary users of banking services.
- Male respondents (55%) are marginally higher in number compared to female respondents (45%).
- The majority of respondents hold a Savings Account (75%), making it the most commonly used banking product.
- A large majority of customers (82%) actively use digital banking services such as mobile banking, internet banking, and UPI.
- Most respondents (80% combined) are satisfied or highly satisfied with the quality of banking services provided by Indian Overseas Bank.
- Customers appreciate the courteous behaviour and support provided by bank employees, with 80% rating it good or excellent.
- A majority of customers (60%) are fully aware of digital banking facilities, though a residual 10% remain unaware.
- The Chi-Square test confirms a statistically significant concentration of positive responses in both overall satisfaction ($\chi^2 = 46.00$) and digital banking awareness ($\chi^2 = 38.01$).
- Effective customer data analysis helps the bank identify customer preferences and offer better financial products and services.
- Proper customer data management supports better decision-making, improves operational efficiency, and strengthens customer relationships.

X. SUGGESTIONS

- Strengthen customer data management systems to ensure accurate, updated, and secure customer information.
- Enhance digital banking awareness through targeted customer education and training programmes, particularly for the 10% of customers who remain unaware.
- Reduce customer waiting time by improving service efficiency at bank branches.
- Strengthen customer support and grievance redressal mechanisms for quicker issue resolution.
- Use customer data analytics to provide personalised banking products and services based on customer needs.
- Conduct regular customer satisfaction surveys to identify areas requiring improvement.
- Encourage digital banking adoption among the remaining non-users through simplified onboarding and technical support.
- Organise periodic training programmes for employees to improve customer service skills and digital banking knowledge.
- Implement advanced data analytics tools to support informed decision-making and improve operational efficiency.
- Continuously monitor customer feedback and use the insights to enhance service quality and strengthen long-term customer relationships.



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