



A Study on Predictive Modelling for Customer Lifetime Value in Retail Sector

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Abstract:

Customer Lifetime Value (CLV) has become a critical metric in the retail sector for understanding long-term customer profitability and improving strategic decision-making. Predictive modelling techniques enable retailers to estimate the future value of customers by analyzing historical purchasing behavior, demographic characteristics, and engagement patterns. This study focuses on the application of predictive modelling techniques to estimate Customer Lifetime Value in the retail industry. The research examines the importance of CLV in customer segmentation, marketing optimization, and resource allocation. Data collected from retail customers is analyzed using statistical and predictive techniques to forecast customer value over time. The results demonstrate that predictive models can significantly enhance decision-making by identifying high-value customers and supporting personalized marketing strategies. The study concludes that predictive modelling is a powerful tool for improving customer relationship management and increasing profitability in the retail sector.

Keywords: *Customer Lifetime Value, Predictive Modelling, Retail Sector, Customer Analytics, Data Mining, Customer Segmentation, Retail Marketing.*

Introduction:

In today's highly competitive retail environment, understanding customer behavior and predicting future purchasing patterns are essential for business success. Retail organizations increasingly rely on data-driven strategies to enhance customer relationships and improve profitability. One of the most important metrics used for this purpose is Customer Lifetime Value (CLV).

Customer Lifetime Value refers to the total profit a business expects to earn from a customer throughout the entire duration of their relationship with the company. By predicting CLV, retailers can identify valuable customers, allocate marketing resources effectively, and develop long-term customer retention strategies.

Predictive modelling plays a significant role in estimating CLV by utilizing statistical techniques, machine learning algorithms, and historical customer data. These models help businesses forecast future purchasing behavior and design targeted marketing campaigns. The use of predictive analytics has become increasingly popular in the retail industry as organizations aim to maximize customer value and strengthen competitive advantage.

Problem Statement:

Retail companies often focus more on acquiring new customers rather than understanding the long-term value of existing customers. Without proper predictive analysis, businesses may fail to identify high-value

customers and may allocate marketing resources inefficiently. The lack of accurate predictive models for Customer Lifetime Value can lead to ineffective customer relationship management and reduced profitability. Therefore, there is a need to develop reliable predictive modelling techniques to estimate Customer Lifetime Value in the retail sector.

Literature Review:

Several researchers have studied Customer Lifetime Value and predictive modelling in marketing and retail analytics.

- Gupta and Lehmann (2003) emphasized the importance of Customer Lifetime Value as a strategic metric for evaluating customer profitability and guiding marketing investments.
- Fader, Hardie, and Lee (2005) proposed probabilistic models for predicting customer purchasing behavior and estimating CLV in non-contractual settings such as retail markets.
- Venkatesan and Kumar (2004) highlighted that firms using CLV-based marketing strategies achieve better customer retention and profitability.
- Kumar and Reinartz (2016) discussed the role of customer analytics and predictive modelling in improving long-term customer relationships.
- Recent studies indicate that machine learning techniques such as regression models, decision trees, and neural networks can significantly improve CLV prediction accuracy.

These studies demonstrate that predictive modelling is essential for understanding customer value and improving marketing efficiency in the retail sector.

Objectives of the Study:

1. To understand the concept and importance of Customer Lifetime Value in the retail sector.
2. To analyze customer purchasing behavior using predictive modelling techniques.
3. To identify high-value customers based on predicted CLV.
4. To examine the effectiveness of predictive analytics in retail marketing strategies.
5. To provide suggestions for improving customer relationship management using CLV analysis.

Research Questions:

1. What is the significance of Customer Lifetime Value in the retail sector?
2. How can predictive modelling be used to estimate Customer Lifetime Value?
3. What factors influence Customer Lifetime Value in retail businesses?
4. How can retailers use CLV predictions to improve marketing strategies and customer retention?

Research Methodology:

The research methodology describes the systematic approach used to conduct the study. It includes research design, sample selection, data collection methods, and analytical techniques used to evaluate Customer Lifetime Value in the retail sector.

• Research Design:

The study follows a descriptive and analytical research design. Descriptive research is used to understand customer behavior and purchasing patterns, while analytical research is used to analyze data using predictive modelling techniques.

• Sample Size:

A total of 100 retail customers were selected as the sample size for the study to

analyze purchasing behavior and estimate Customer Lifetime Value.

- **Sample Area:**

The study was conducted among retail customers in urban retail stores and supermarkets within the selected study region.

- **Data Collection:**

Both primary and secondary data were used in this research.

Primary Data:

Collected through structured questionnaires distributed to retail customers.

Secondary Data:

Collected from journals, books, research articles, retail reports, and online databases.

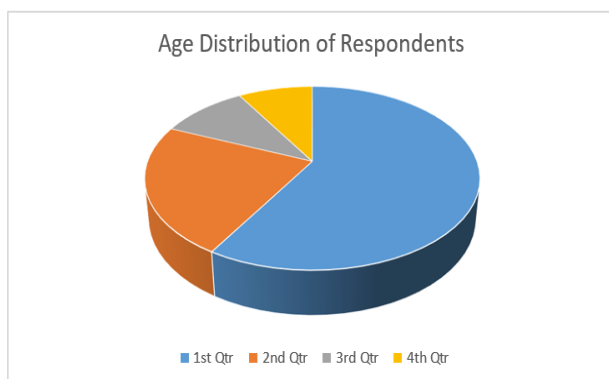
- **Sampling Technique:**

The study used a convenience sampling technique to select respondents from retail customers who were easily accessible during the survey period.

Data Analysis:

Table 1: Age Distribution of Respondents

Age Group	Number of Respondents	Percentage
18–25	25	25%
26–35	35	35%
36–45	20	20%
46–55	12	12%
Above 55	8	8%
Total	100	100%

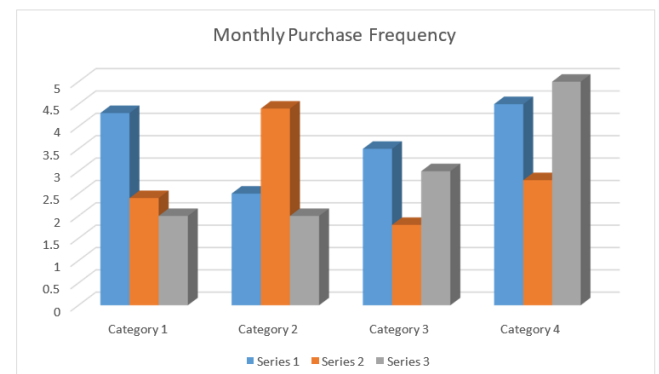


Interpretation:

The table shows that the majority of respondents (35%) belong to the 26–35 age group, indicating that young adults are the most active retail customers. This segment is likely to generate higher customer lifetime value due to frequent purchases and long-term engagement with retail brands.

Table 2: Monthly Purchase Frequency

Purchase Frequency	Number of Respondents	Percentage
Once a month	20	20%
2–3 times	40	40%
4–5 times	25	25%
More than 5 times	15	15%
Total	100	100%



Interpretation:

The table indicates that 40% of customers shop 2–3 times per month, making them the largest customer segment. Customers with higher purchase frequency contribute more to the predicted Customer Lifetime Value.

Findings:

- Most retail customers prefer personalized offers and discounts.
- Customers with frequent purchases tend to generate higher lifetime value.
- Predictive modelling helps retailers identify profitable customer segments.

- Customer retention strategies significantly influence Customer Lifetime Value.
- Data-driven marketing improves customer satisfaction and long-term profitability.

Suggestions:

- Retailers should adopt predictive analytics tools to estimate Customer Lifetime Value.
- Companies should focus on customer retention rather than only customer acquisition.
- Personalized marketing strategies should be implemented for high-value customers.
- Retail businesses should maintain customer databases for better analysis and forecasting.
- Investment in data analytics technologies can improve decision-making and marketing efficiency.

Conclusion:

Customer Lifetime Value is a powerful metric for evaluating customer profitability and improving marketing strategies in the retail sector. Predictive modelling techniques enable retailers to analyze customer behavior and

forecast future purchasing patterns effectively. The study highlights the importance of using data analytics to identify valuable customers and optimize marketing efforts. By adopting predictive modelling approaches, retail organizations can improve customer relationship management, enhance customer retention, and achieve long-term business growth.

Bibliography:

1. Gupta, S., & Lehmann, D. (2003). Customers as Assets. *Journal of Interactive Marketing*.
2. Fader, P., Hardie, B., & Lee, K. (2005). Counting Your Customers the Easy Way: An Alternative to the Pareto/NBD Model. *Marketing Science*.
3. Kumar, V., & Reinartz, W. (2016). Creating Enduring Customer Value. *Journal of Marketing*.
4. Venkatesan, R., & Kumar, V. (2004). A Customer Lifetime Value Framework for Customer Selection and Resource Allocation Strategy. *Journal of Marketing*.
5. Kotler, P., & Keller, K. (2016). *Marketing Management*. Pearson Education.