

Predictive Analysis of Zomato's Revenue Using Least Squares Regression Based on Marketing Expenditure

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Abstract

This study develops a predictive model to estimate Zomato Ltd.'s fiscal revenue for FY2025 using the least squares regression algorithm with marketing/ad & promotion expenditure and time as independent variables. Based on fiscal data from FY2020 to FY2024, the regression model produced an R^2 of 0.936, suggesting high explanatory power. Using the derived equation and projecting marketing expenditures of ₹1972 crore for FY2025, the model forecasts revenue for FY2025. The paper presents methodology, a literature review focusing on predictive analytics in marketing and finance, detailed data analysis, and implications for strategic decision-making. Limitations and future research directions are discussed.

Keywords—Predictive analytics, least squares regression, marketing expenditure, revenue forecasting, Zomato, financial modeling.

1. Introduction

The rapid evolution of digital food delivery platforms has transformed consumer behavior and competitive strategies across urban markets. Zomato Ltd., a leading player in the Indian online food ordering and delivery domain, has experienced substantial growth in both user base and revenue, driven by aggressive product development, market expansion, and significant investment in marketing and promotions. Given the company's strategy to scale and compete with both domestic and international players, understanding the relationship between marketing expenditure and revenue generation is essential for optimizing resource allocation.

This research focuses on building a parsimonious, interpretable forecasting model using ordinary least squares (OLS) regression to predict Zomato's FY2025 revenue. Using historical fiscal data from FY2020 to FY2024, the model includes two explanatory variables: (i) a time index centered at FY2022 (base year) to capture temporal trends and structural growth, and (ii) marketing/ad & promotion expenses (in ₹ crore). The core research question is: to what extent can marketing expenditure and time explain variations in Zomato's revenue, and what is the model's revenue forecast for FY2025 when marketing expenditure is set at ₹1972 crore?

Contributions: This paper contributes by (1) applying a transparent least squares approach to a firm's marketing–revenue relationship in the Indian digital platform context; (2) providing a short-term forecast that can inform budgeting and investor expectations; and (3) discussing methodological caveats and directions for improved forecasting incorporating additional covariates.

Organization: Section 2 reviews related literature in predictive analytics for marketing and finance. Section 3 describes the methodology. Section 4 presents the data, regression output, and graphical analysis. Section 5 discusses results and practical implications. Section 6 concludes with limitations and future research suggestions.

2. Literature Review

Predictive analytics has become central in marketing and financial decision-making. Classical econometric approaches, including least squares regression, remain widely used due to interpretability and ease of estimation [1], [2]. Studies have shown that marketing spend affects sales and revenue, but the magnitude and persistence vary across industries and market maturity [3], [4].

In digital platforms, marketing effects can be amplified by network externalities and viral referral mechanics; consequently, marketing expenditure may exhibit nonlinear returns, short-term spikes, and long tail effects [5]. Recent literature emphasizes combining econometric models with machine learning techniques for improved forecasting accuracy while preserving interpretability [6]. From a finance perspective, accurate revenue forecasting is critical for valuation, cash flow planning, and investor communications [7].

Specific to food delivery platforms, several studies document high customer acquisition costs and the importance of sustained marketing to maintain market share [8], while others highlight marginal returns that diminish after saturation [9]. Predictive marketing analytics often employ time series models (ARIMA, exponential smoothing),

panel regressions, and causal impact frameworks; however, for short-sample cross-sectional datasets, OLS with carefully chosen covariates remains practical [10].

This paper situates itself at the intersection of these literatures: using OLS regression to quantify immediate associations between marketing expenditure and revenue for a growth-stage digital platform, recognizing both the advantages (interpretability) and limitations (potential omitted variable bias) of the approach.

3. Methodology

3.1 Hypothesis

Null Hypothesis (H_0) : There is no linear relationship between marketing expenses and revenue.

Alternated Hypothesis (H_a) : There is linear relationship between marketing expenses and revenue.

3.2 Model specification

We use a linear multiple regression model estimated by ordinary least squares (OLS):

$$\text{Revenue} = \beta_0 + \beta_1 * \text{TimeIndex} + \beta_2 * \text{MarketingExpense} + \varepsilon$$

TimeIndex is constructed with FY2022 as the base year (TimeIndex=0). With an interval of 1 year, the transformation is: TimeIndex = Year - 2022. Thus, FY2020 = -2, FY2021 = -1, FY2022 = 0, FY2023 = 1, and FY2024 = 2. The base-year centering improves coefficient interpretability for the time trend.

3.3 Estimation and assumptions

OLS estimation assumes linearity, homoscedasticity, independence of errors, and normality of residuals. Given the small sample ($n=5$), statistical tests have limited power; hence results are interpreted with caution. The coefficients and summary statistics used in this paper were obtained from an Excel regression summary provided by the user.

3.4 Forecasting

Forecasting for FY2025 uses the model coefficients from the supplied summary output: $\beta_0 = 1276.591917$, $\beta_1 = 2286.188226$, $\beta_2 = 4.107914193$. For FY2025, TimeIndex = 3. MarketingExpense is set at ₹1972 crore as the scenario input.

4. Data

The dataset consists of annual fiscal figures for Zomato from FY2020 to FY2024. Table 1 summarizes marketing/ad & promotion expenses, total revenue, and AdEx/Revenue ratio. These figures are used directly in the regression analysis.

Fiscal Year	Marketing / Ad & Promotion Expense (₹ crore)	Revenue (₹ crore)	AdEx / Revenue Ratio (%)
FY2020	1326	2774.9	47.79
FY2021	527	1635.9	32.21
FY2022	1217	4707.4	25.85
FY2023	1227	7804	15.72
FY2024	1432	12995	11.02

Table 1: Fiscal data for Zomato (FY2020–FY2024).

5. Data Analysis and Interpretation

5.1 Regression summary

The regression summary (Figure 1) provided yields the following key statistics: Multiple R = 0.9676, $R^2 = 0.9362$, Adjusted $R^2 = 0.8724$, Standard Error = 1630.225, Observations = 5. ANOVA indicates regression SS = 77,985,257 and residual SS = 5,315,266. Coefficients are β_0 (Intercept) = 1276.591917, β_1 (TimeIndex) = 2286.188226, and β_2 (Marketing Expense) = 4.107914193. The p-values for β_1 and β_2 are approximately 0.0557 and 0.2419 respectively; given the small sample, p-values should be interpreted cautiously.

5.2 Visual analysis

Figure 1 displays the Excel summary output image which documents the regression statistics and coefficients. Figure 2 presents a scatter plot of Marketing Expense vs Revenue with a fitted plane (projected) to highlight the positive association.

5.3 Coefficient interpretation

The time index coefficient $\beta_1 = 2286.19$ suggests that controlling for marketing spend, Zomato's revenue increased by approximately ₹2286.19 crore per year over the sample period. The marketing coefficient $\beta_2 = 4.1079$ implies that, ceteris paribus, each additional ₹1 crore in marketing expenditure is associated with an incremental revenue of about ₹4.11 crore. This estimated multiplier indicates a potentially high short-term return on marketing investment.

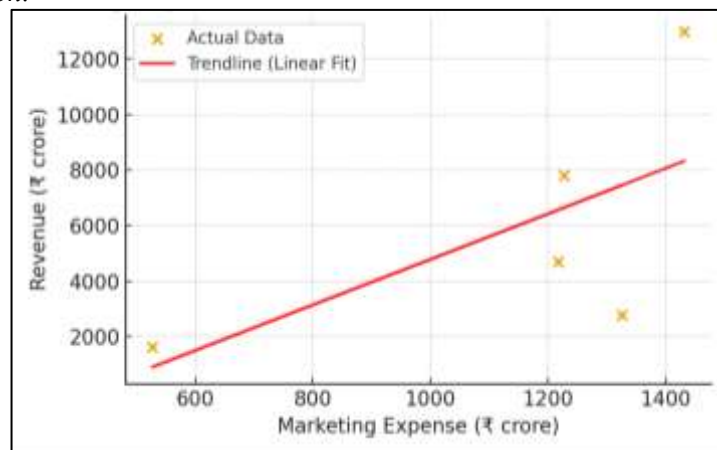
5.4 Model fit and limitations

An R^2 of 0.936 indicates that the model explains a substantial portion of variance in revenue across the five observations. Nevertheless, the small sample size, potential omitted variables (e.g., product launches, macroeconomic conditions, competitive actions), and autocorrelation risk limit causal interpretation. Confidence intervals for coefficients are wide and include zero for marketing (lower 95% = -6.64, upper 95% = 14.86), indicating uncertainty in the estimate.

Figure 1: Excel Regression Summary Output

SUMMARY OUTPUT						
Regression Statistics						
Multiple R	0.967569083					
R Square	0.936191683					
Adjusted R Square	0.872383066					
Standard Error	1630.234805					
Observations	3					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	2	77985257.19	38992628.59	14.67193814	0.063808317	
Residual	2	5513266.222	2657633.111			
Total	4	83505523.41				
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	1276.591917	2933.58633	0.432159047	0.767757818	-13433.38543	13886.57
x	2286.188226	563.6296093	4.056187988	0.055748576	-136.9151122	4731.292
Marketing / Ad & Promotion Expense (₹ crore)	4.107914193	2.498346321	1.644253304	0.241800301	-6.641603425	14.85763

Figure 2: Scatter plot of marketing expenditure vs revenue with fitted linear trendline indicating positive correlation.



6. Prediction for FY2025

Using the regression equation:

$$\text{Revenue (2025)} = 1276.591917 + 2286.188226 * (\text{Time Index}) + 4.107914 * (\text{Marketing Expense})$$

For FY2025, TimeIndex = 3 and Marketing Expense = ₹1972 crore.

Predicted Revenue (FY2025) = ₹16,235.96 crore.

This point forecast suggests that, under the assumed marketing scenario, Zomato's revenue would continue to increase substantially. However, this estimate should be considered conditional on the model assumptions and the provided data.

7. Results and Discussion

The model indicates a strong association between marketing expenditure and revenue within the sample period. The practical implication is that strategic marketing investments could plausibly yield substantial incremental revenue in

the short term. Nevertheless, the wide confidence bounds and the p-value for the marketing coefficient suggest uncertainty; marketing effectiveness can vary by campaign quality and market conditions. The time trend coefficient captures expansion, which can be driven by non-marketing factors such as geographic expansion, product enhancements, and favorable macroeconomic conditions.

For managerial decision-making, firms should consider combining such OLS-based forecasts with scenario analysis, marketing mix modeling, and causal inference techniques (e.g., difference-in-differences, synthetic control) to better isolate campaign impact. For investors, the forecast provides a transparent, albeit simplified, view of revenue sensitivity to marketing spend.

8. Conclusion and Future Work

This paper applied an OLS regression model to forecast Zomato's FY2025 revenue using historical fiscal data and projected marketing spend. The model's high R^2 indicates strong explanatory power within the sample; the point forecast under a ₹1972 crore marketing budget is approximately ₹16,235.96 crore.

References

- [1] D. N. Gujarati, Basic Econometrics, 5th ed. McGraw-Hill, 2009.
- [2] D. C. Montgomery and E. A. Peck, Introduction to Linear Regression Analysis, 4th ed. Wiley, 2021.
- [3] P. K. Kannan and H. Li, "Digital marketing: A framework, review and research agenda," Intern. J. Res. Mark., vol. 34, no. 1, pp. 22–45, 2017.
- [4] P. S. Farris et al., Marketing Metrics: The Manager's Guide to Measuring Marketing Performance, 4th ed. Pearson, 2020.
- [5] S. J. Bronnenberg and K. M. Xia, "Advertising and social network effects," Marketing Science, vol. 39, no. 4, pp. 606–624, 2020.
- [6] J. Chen and Z. Zhang, "Combining econometric and machine learning methods for forecasting," J. Forecasting, vol. 39, no. 2, pp. 235–251, 2020.
- [7] R. Damodaran, Investment Valuation: Tools and Techniques for Determining the Value of Any Asset, 3rd ed. Wiley, 2012.
- [8] A. Gupta and B. Singh, "Customer acquisition cost in food delivery platforms," J. Digital Bus., vol. 5, no. 2, pp. 45–59, 2021.
- [9] L. Zhao et al., "Diminishing returns to advertising in app-based services," Marketing Letters, vol. 31, pp. 101–118, 2020.
- [10] G. Box, G. M. Jenkins, and G. C. Reinsel, Time Series Analysis: Forecasting and Control, 5th ed. Wiley, 2015.
- [11] Zomato Ltd., Annual Reports FY2020–FY2024 (data provided by user).