Financial Forecasting and Decision Support Report

1. Objective

The main purpose of this analysis was to predict future sales from past financial data, and to help budgeting decisions with scenario and sensitivity analysis. A time series forecasting model was built, its accuracy evaluated, and the financial impact of changes in sales assumptions assessed with the help of Microsoft Excel and the Analysis ToolPak.

2. Data Overview

The analysis was based on monthly historical data for the year 2023, including sales and estimated costs. From this data, profit was derived and used to understand the underlying relationship between revenue movements and profitability. The dataset was structured at a monthly level to ensure consistency and suitability for time-series modeling.

3. Forecast Model Development

An ARIMA-based approach was implemented in Excel by first transforming the sales data to achieve stationarity using first-order differencing. A lag-1 autoregressive component was then modeled using linear regression via the Analysis ToolPak, effectively representing an ARIMA(1,1,0) structure.

Model parameters (intercept and AR coefficient) were extracted from the regression output and used to generate predicted differenced sales values. These differenced forecasts were then converted back to predicted sales levels, enabling comparison with actual sales figures.

4. Forecast Accuracy Evaluation

Forecast performance was evaluated using two standard metrics:

- **Mean Absolute Percentage Error (MAPE): 55.26%**

- **Root Mean Squared Error (RMSE): 24,211**

These results indicate moderate forecast accuracy, which is reasonable given the limited historical data and observed variability in monthly sales. The model captures overall direction and volatility but is better suited for planning scenarios rather than precise month-level prediction.

5. Scenario Analysis

Scenario analysis was conducted to evaluate the impact of changes in sales on overall profitability. Sales were adjusted across multiple scenarios ranging from a 20% decrease to a 20% increase, while cost assumptions were held constant.

A one-variable data table was used to observe how profit responds to changes in sales assumptions. The analysis showed a nonlinear response, with profits declining sharply under negative sales scenarios and improving significantly under positive growth scenarios.

6. Goal Seek Analysis

To support budget planning, Goal Seek was used to determine the sales increase required to achieve a target profit of ₹100,000. The analysis showed that:

- **A sales increase of approximately 5% is required to reach the target profit.**

This result highlights that profitability is moderately sensitive to revenue growth under the current cost structure.

7. Key Insights and Recommendations

- Revenue growth is the primary driver of profitability under current cost assumptions.

- Even modest sales growth can meaningfully improve profit outcomes.

- Downside risk is significant in the event of declining sales, emphasizing the importance of demand stability.

Recommendation: Budget planning should prioritize initiatives that support revenue growth, such as pricing optimization, demand generation, or market expansion, while maintaining cost discipline.

8. Conclusion

This analysis demonstrates how Excel-based forecasting and decision-support tools can be effectively used to guide financial planning. While the forecast model has limitations due to data size and variability, it provides valuable directional insights. Combined with scenario analysis and Goal Seek, the model supports informed, data-driven budgeting decisions.