Estimating the Demand for Working Capital: Evidence from EID Parry (India) Ltd

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***Abstract*—Effective working capital management is essential for maintaining liquidity and ensuring the smooth operation of business activities. This study estimates the demand for working capital in EID Parry (India) Limited by examining the relationship between sales and major working capital components, namely cash, inventory, receivables, gross working capital, and net working capital. The study uses secondary data collected from the company's annual reports and the Capitaline database for the period 2011–12 to 2023–24. A log-linear regression model is employed to analyse the impact of current and previous year's sales on working capital demand. The findings reveal that sales have a positive and significant influence on working capital requirements, indicating that sales-based models are useful for forecasting working capital demand and supporting effective financial planning.**

***Index Terms*—Working Capital Demand, Sales, Inventory, Receivables, Log-Linear Regression**

I. Introduction

Working capital management is essential for maintaining liquidity and supporting the smooth operation of business activities. Estimating the demand for working capital helps firms forecast the funds required for cash, inventory, and receivables, enabling efficient financial planning **(Gitman, Juchau, & Flanagan, 2022)[1]** In the Indian sugar industry, seasonal operations, high inventory levels, and fluctuating market conditions make accurate estimation of working capital particularly important **(Indian Sugar & Bio-energy Manufacturers Association [ISMA], 2024)[2].** Against this backdrop, the present study estimates the demand for working capital in EID Parry (India) Limited by examining the relationship between sales and major working capital components.

II. Review of Literature

Sharma and Kumar (2020)[3] examined the determinants of working capital requirements and forecasting of future working capital needs among 150 BSE-listed Indian companies during the period 2009–2017. The study employed panel data techniques, including OLS, FMOLS, DOLS, and GMM models. The findings revealed that tangibility, leverage, the nature of business, and board size significantly influence working capital requirements. The study concluded that firm-specific characteristics play an important role in determining optimal working capital levels and forecasting future requirements. **Aktas, Croci, and Petmezas (2015)[4]** investigated whether efficient working capital management enhances firm value by analysing firm performance and investment decisions. Using firm-level data, the study employed empirical analysis to examine the relationship between working capital efficiency and corporate value. The findings showed that effective working capital management improves investment efficiency and firm performance. The study concluded that firms can create value by maintaining an optimal level of working capital investment.

III. Brief Background of EID Parry (India) Limited

EID Parry (India) Limited, established in 1788, is the flagship company of the Murugappa Group and one of India's leading integrated sugar manufacturers. Headquartered in Chennai, the company operates sugar mills across Tamil Nadu, Karnataka, Andhra Pradesh, and Puducherry, with diversified businesses in ethanol, nutraceuticals, bio-products, and renewable energy. Listed on the National Stock Exchange and the Bombay Stock Exchange, EID Parry is recognised for its operational efficiency, sound financial management, and sustainable business practices. Given its large sales volume and significant investment in current assets such as cash, inventory, and receivables, the company provides an appropriate setting for analysing the demand for working capital and the relationship between sales and working capital requirements.

IV. Objectives of the Study

1. To estimate the demand for working capital in EID Parry (India) Limited during the study period.
2. To examine the relationship between sales and the demand for working capital in EID Parry (India) Limited using a log-linear regression model.

V. Hypotheses of the Study

The following hypotheses are formulated to examine the relationship between sales and the demand for the major components of working capital in EID Parry (India) Limited.

Hypotheses of the Study

Model I: Current Sales (S_t)

H_{01}: There is no significant relationship between current sales and the demand for working capital components in EID Parry (India) Limited.

H_{11}: There is a significant relationship between current sales and the demand for working capital components in EID Parry (India) Limited.

Model II: Previous Year's Sales (S_{t-1})

H_{02}: There is no significant relationship between the previous year's sales and the demand for working capital components in EID Parry (India) Limited.

H_{12}: There is a significant relationship between the previous year's sales and the demand for working capital components in EID Parry (India) Limited.

VI. METHODOLOGY

Research Design

The study adopts a quantitative and analytical research design to estimate the demand for working capital in EID Parry (India) Limited. Using secondary financial data, the study applies a log-linear regression model to examine the relationship between current and previous year's sales and the major components of working capital, including cash, inventory, receivables, gross working capital, and net working capital

Data Collection

The study is based on secondary data collected from the annual reports of EID Parry (India) Limited and the Capitaline database for the period 2011–12 to 2023–24. Additional information was obtained from the company's official website, ISMA reports, and relevant literature. The data on sales, cash, inventory, receivables, gross working capital, and net working capital were analysed using a log-linear regression model.

Analytical Tools

The following analytical tools are used in the study:

- **Descriptive Statistics** – To summarise the characteristics of the study variables.
- **Log-Linear Regression Analysis** – To estimate the relationship between current sales, lagged sales, and the demand for working capital components.
- **Coefficient of Determination (R^2)** – To measure the explanatory power of the regression model.
- **t-statistic** – To test the significance of the regression coefficients.
- **F-statistic** – To assess the overall significance of the regression model

VII. Scope of the Study

The study is limited to EID Parry (India) Limited and examines the demand for working capital using secondary data for the period 2011–12 to 2023–24. It analyses the relationship between current- and previous-year sales and the major components of working capital using a log-linear regression model.

VIII. Data Analysis, Results and Discussion

Model I: Estimating the Demand for Working Capital Based on Current Sales

Table 1 presents the regression results for estimating the demand for working capital components in EID Parry (India) Limited using current-year sales (S_t) as the explanatory variable. The findings show that current-year sales are positively related to all components of working capital. The coefficients for cash (0.12), inventory (0.19), receivables (0.16), and net working capital (0.27) are positive and statistically significant, indicating that higher sales increase the demand for these working capital components. The R^2 and F-statistics further suggest that the models provide a satisfactory explanation of the relationship between sales and working capital demand.

Gross working capital also records a positive coefficient (0.41), suggesting that an increase in sales is associated with higher investment in current assets. However, the coefficient is not statistically significant. Overall, the results indicate that current-year sales are a key factor influencing the demand for working capital in EID Parry (India) Limited. As sales increase, the company requires higher levels of cash, inventory, and receivables, as well as greater net working capital, to support its operations.

Model II: Estimating the Demand for Working Capital Based on the Previous Year's Sales

Table 2 presents the regression results for estimating the demand for working capital components in EID Parry (India) Limited using the previous year's sales (S_{t-1}) as the explanatory variable. The results reveal a positive relationship between the previous year's sales and all working capital components. The coefficients for cash (0.08), inventory (0.24), receivables (0.05), gross working capital (0.20), and net working capital (0.05) are positive and statistically significant, indicating that higher sales in the preceding year increase the demand for working capital. The R^2 and F-statistics show that the regression models are statistically significant and explain a reasonable proportion of the variation in the dependent variables.

Overall, the findings suggest that the previous year's sales are an important predictor of working capital demand in EID Parry (India) Limited. As sales increase, the company requires greater investment in cash, inventory, receivables, gross working capital, and net working capital to support its operations. These results highlight the usefulness of the previous year's sales in forecasting future working capital requirements and improving financial planning.

IX. Conclusion

The study concludes that both current sales and previous year's sales have a positive influence on the demand for working capital components in EID Parry (India) Limited. The findings indicate that sales are a significant determinant of working capital requirements and provide a reliable basis for forecasting cash, inventory, receivables, gross working capital, and net working capital. Therefore, sales-based estimation models can support effective working capital planning, improve liquidity management, and facilitate sound financial decision-making.

X. Recommendations

Based on the findings of the study, the following recommendations are suggested for EID Parry (India) Limited:

1. The company should adopt sales-based working capital forecasting techniques, as current and previous years' sales significantly influence working capital requirements.
2. Inventory management practices should be strengthened by aligning procurement and production decisions with sales forecasts to avoid excessive investment in inventory.

3. Effective cash management policies should be implemented to maintain adequate liquidity while minimising idle cash balances.
4. The company should improve receivables management through efficient credit policies and timely collection mechanisms to enhance cash flow efficiency.
5. Historical sales trends should be considered while estimating future working capital requirements, as previous sales performance influences current working capital needs.
6. An integrated working capital management framework should be developed by coordinating sales planning, inventory control, receivables management, and financing decisions.
7. Periodic review of working capital requirements should be undertaken to respond effectively to seasonal fluctuations and changing business conditions in the sugar industry.

References

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Table 1
EID Parry (India) Ltd
Estimating Demand for Working Capital Management
(Model I: Current Sales)
$\log Y = b_0 + b_1 \log S_t$

Particulars	Constant	Sales (S_t)	R^2	F
Cash	-2.84	0.12 (3.18)***	0.62	10.17
Inventory	4.83	0.19 (3.86)***	0.72	16.10
Receivables	16.44	0.16 (2.10)**	0.70	38.16
Gross Working Capital	-12.22	0.41 (1.65)	0.24	28.16
Net Working Capital	1.30	0.27 (2.65)***	0.36	4.17

*** - Significant at 1 per cent level**
**** - Significant at 5 per cent level**
***** - Significant at 10 per cent level**
Source: Computed

Table 2
EID Parry (India) Ltd
Estimating Demand for Working Capital Management
(Model II: Previous year's Sales)
$\log Y = b_0 + b_1 \log S_{t-1}$

Particulars	Constant	Sales (S_{t-1})	R_2	F
Cash	0.74	0.08 (3.68)***	0.29	10.92
Inventory	4.04	0.24 (2.96)***	0.49	26.40
Receivables	1.99	0.05 (2.16)**	0.52	10.86
Gross Working Capital	10.49	0.20 (2.65)***	0.18	9.40
Net Working Capital	5.97	0.05 (3.06)***	0.23	40.16

*** - Significant at 1 per cent level**
**** - Significant at 5 per cent level**
***** - Significant at 10 per cent level**
Source: Computed