Abstract: Owners and Managers are naturally interested in financial soundness of their Business Enterprise. Financial soundness can be measured in terms of operating efficiency. Operating efficiency of an enterprise means its ability to earn adequate returns to owners and depends ultimately on the profits earned by the enterprise. The profitability of an enterprise is measured by profitability ratios. In this paper, an attempt is made to do Profitability Analysis of Power Plant Engineering Works. Power Plant Engineering Works is a reputed Indian electrical transformer manufacturer catering to people in Visakhapatnam, Kakinada, Rajahmundry, Srikakulam and Vizianagaram regions in the state of Andhra Pradesh. Profitability analysis was done through analyzing various profit margins, Profitability ratios relating to investments and Profitability ratios relating to various expenses. Profit margins covered include Gross Profit Margin, Operating Profit Margin and Net Profit Margin. Profitability ratios relating to investments include Return on Assets (ROA), Return on Capital Employed (ROCE) and Return on Share holder’s equity (ROSE). Profitability ratios relating to various expenses include Cost of Goods sold Ratio, Operating Expenses Ratio, Administrative Expenses Ratio, Selling Expenses Ratio and Financial Expenses Ratio. Chi-square test is used for testing the hypotheses formed.

Index Terms - Cost of Goods sold Ratio, Financial Expenses Ratio, Gross Profit Margin, Operating Profit Margin, Return on Assets (ROA), Return on Capital Employed (ROCE)

I. Introduction

Owners and Managers are naturally interested in financial soundness of their Business Enterprise. Financial soundness can be measured in terms of operating efficiency. Operating efficiency of an enterprise means its ability to earn adequate returns to owners and depends ultimately on the profits earned by the enterprise. The profitability of an enterprise is measured by profitability ratios. There are three important profitability ratios namely profitability ratios relating to sales, profitability ratios relating to investment and profitability ratios relating to expenses. In this paper, an attempt is made to do Profitability Analysis of Power Plant Engineering Works. Power Plant Engineering Works is a reputed Indian electrical transformer manufacturer catering to people in Visakhapatnam, Kakinada, Rajahmundry, Srikakulam and Vizianagaram regions in the state of Andhra Pradesh. It is a Micro and Partnership enterprise. Power Plant Engineering Works was serving people for the last Twenty four years. The company is popular for offering quality and reliable products to the customers. Their institutional clients include big giants like VCTTL, CPWD and BHEL. This Enterprise has an annual turnover of Rs.127.6 lakhs as per 2015-16 annual accounts. The total Assets of the company are Rs.116.9 lakhs.

II. Review of Literature


III. Objectives

The general objective of the study is to do Profitability Analysis of Power Plant Engineering Works. The specific objectives include the following.

1. To examine Gross profit margin, Operating profit margin and Net Profit Margin of Power Plant Engineering Works during the period of study.
2. To investigate into various profitability ratios relating to investment in Power Plant Engineering Works during the period of study.
3. To analyze various profitability ratios related to expenses in Power Plant Engineering Works during the period of study.
4. To examine the overall profitability of Power Plant Engineering Works during the period of study.
5. To offer suggestions for improvement of profitability of the Enterprise, if required.

IV. Hypotheses

H01: Gross Profit Margin of Power Plant Engineering Works is uniform during the period of study.
H02: Operating Profit Margin of Power Plant Engineering Works is uniform during the period of study.
H03: Net Profit Margin of Power Plant Engineering Works is uniform during the period of study.
H04: Return on Assets (ROA) in Power Plant Engineering Works is uniform during the period of study.
H05: Return on Capital Employed (ROCE) in Power Plant Engineering Works is uniform during the period of study.
H06: Return on Share holder’s equity (ROSE) in Power Plant Engineering Works is uniform during the period of study.
H07: Cost of Goods sold Ratio in Power Plant Engineering Works is uniform during the period of study.
H08: Operating Expenses Ratio in Power Plant Engineering Works is uniform during the period of study.
H09: Administrative Expenses Ratio in Power Plant Engineering Works is uniform during the period of study.
H10: Selling Expenses Ratio in Power Plant Engineering Works is uniform during the period of study.
H11: Financial Expenses Ratio in Power Plant Engineering Works is uniform during the period of study.

V. Methodology

The present study is mainly based on secondary data. The data is taken from the financial statements including balance sheet, trading account and profit and loss account of Power Plant Engineering Works. The period of study is ten years covering the financial years from 2006-07 to 2015-16. The data gathered is analyzed through the ratios relating to profitability of the enterprise. Profitability analysis was done through analyzing various profit margins, Profitability ratios relating to investments and Profitability ratios relating to various expenses. Profit margins covered include Gross Profit Margin, Operating Profit Margin and Net Profit Margin. Profitability ratios relating to investments include Return on Assets (ROA), Return on Capital Employed (ROCE) and Return on Share holder’s equity (ROSE). Profitability ratios relating to various expenses include Cost of Goods sold Ratio, Operating Expenses Ratio, Administrative Expenses Ratio, Selling Expenses Ratio and Financial Expenses Ratio. Chi-square test is used for testing the hypotheses formed.
VI. Profitability Analysis with Profit Margins

Profit Margins are based on the assumption that an Enterprise should earn sufficient profit on each Rupee of sales.

Gross Profit Margin

Gross Profit Margin has varied between 12.7 and 43.3 during the period of study. Gross Profit Margin is low during the first seven years of the study period. A good sign is that it has increased during the last three years. Management should continue same efforts to reduce cost of production. It is found in the significance test that Gross Profit Margin is not uniform during the period of study.

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<tbody>
<tr>
<td>Gross Profit Margin</td>
<td>12.7</td>
<td>12.7</td>
<td>18.6</td>
<td>24.1</td>
<td>15.9</td>
<td>18.7</td>
<td>26.0</td>
<td>38.8</td>
<td>39.1</td>
<td>43.3</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.

Calculated value of Chi-Square for Gross Profit Margin = 47.7. Calculated value is greater than critical Value at 5% level of Significance i.e., 14.0<16.919, Hence, H₀ is Rejected.

Operating Profit Margin

Operating Profit Margin has varied between 1.7 and 9.0 during the period of study. Operating Profit Margin is low indicating that the management is not effectively controlling its operating costs. It is found in the significance test that Operating Profit Margin is uniform during the period of study.

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</thead>
<tbody>
<tr>
<td>Operating Profit Margin</td>
<td>1.7</td>
<td>2.0</td>
<td>3.3</td>
<td>3.0</td>
<td>3.0</td>
<td>4.1</td>
<td>5.7</td>
<td>8.7</td>
<td>9.0</td>
<td>7.4</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.

Calculated value of Chi-Square for Operating Profit Margin = 14.0. Calculated value is less than critical Value at 5% level of Significance i.e., 47.7>16.919, Hence, H₀ is Accepted.

Net Profit Margin

Net Profit Margin has varied between 0.2 and 3.5 during the period of study. Net Profit Margin is low during the study period indicating that there is a necessity for better profitability management in the enterprise. Positive Net Profit Margin indicates that the firm is covering its financial expenses. It is found in the significance test that Net Profit Margin is uniform during the period of study.

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<tbody>
<tr>
<td>Net Profit Margin</td>
<td>0.1</td>
<td>0.2</td>
<td>1.1</td>
<td>1.8</td>
<td>1.5</td>
<td>1.3</td>
<td>3.5</td>
<td>3.7</td>
<td>4.4</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.

Calculated value of Chi-Square for Net Profit Margin = 9.1. Calculated value is less than critical Value at 5% level of Significance i.e., 9.1<16.919, Hence, H₀ is Accepted.

VII. Profitability Analysis with Profitability Ratios Related to Investment

Profitability ratios relating to investment are based on the assumption that an Enterprise should earn good profit on its investment.

Return on Assets (ROA)

Return on Assets Ratio has varied between 0.3 and 5.1 during the period of study. Return on Assets Ratio is less than 10 during the entire period, which indicates that there is need for better profitability management in the enterprise. It is found in the significance test that Return on Assets Ratio is uniform during the period of study.

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<tbody>
<tr>
<td>Net Profit</td>
<td>0.1</td>
<td>0.2</td>
<td>1.1</td>
<td>1.8</td>
<td>1.5</td>
<td>1.3</td>
<td>3.5</td>
<td>3.7</td>
<td>4.4</td>
<td>3.9</td>
</tr>
</tbody>
</table>
The study period. A good sign is that it has decreased during the last three years. Management should found in the significance test that Operating Expenses Ratio is not uniform during the period of study.

Operating Expenses Ratio has varied between 7.1 and 22.3 during the period of study. Operating Expenses Ratio is high during 2010 and last four years of the study period indicating that management should make efforts to reduce Operating expenses. It is found in the significance test that Return on capital employed is uniform during the period of study.

Return on Capital Employed (ROCE)

Return on capital employed has varied between 2.9 and 12.6 during the period of study. Return on Capital Employed is less than 10 during five years of the study which is good for owners. There are wide fluctuations in the ratio. Hence, Return on Capital Employed is not uniform during the period of study.

Table-5: Return on Capital Employed (ROCE) (Figures in Lakhs)

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<tbody>
<tr>
<td>EBIT</td>
<td>6.9</td>
<td>1.1</td>
<td>4.4</td>
<td>5.0</td>
<td>5.2</td>
<td>5.8</td>
<td>8.1</td>
<td>9.2</td>
<td>11.2</td>
<td>9.5</td>
</tr>
<tr>
<td>Average Total Capital</td>
<td>31.2</td>
<td>32.8</td>
<td>36.9</td>
<td>74.4</td>
<td>95.2</td>
<td>80.7</td>
<td>83.4</td>
<td>72.8</td>
<td>111.3</td>
<td>116.9</td>
</tr>
<tr>
<td>ROCE</td>
<td>2.9</td>
<td>3.4</td>
<td>11.9</td>
<td>6.7</td>
<td>5.5</td>
<td>7.2</td>
<td>9.7</td>
<td>12.6</td>
<td>10.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.

Calculated value of Chi-Square for ROCE = 12.7. Calculated value is less than critical Value at 5% level of Significance i.e., 12.7<16.919, Hence, H₀₅ is Accepted.

Return on Share Holders’ Equity (ROSE)

Return on Shareholders’ Equity has varied between 0.8 and 14.6 during the period of study. Return on Shareholders’ Equity is more than 10 during five years of the study which is good for owners. There are wide fluctuations in the ratio. Hence, Return on Shareholders’ Equity is not uniform during the period of study.

Table-6: Return on Share Holders’ Equity (ROSE) (Figures in Lakhs)

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<tbody>
<tr>
<td>Net Profit</td>
<td>0.1</td>
<td>0.2</td>
<td>1.1</td>
<td>1.8</td>
<td>1.5</td>
<td>1.3</td>
<td>3.5</td>
<td>3.7</td>
<td>4.4</td>
<td>3.9</td>
</tr>
<tr>
<td>Average Share Holders’ Equity</td>
<td>12.3</td>
<td>12.4</td>
<td>10.1</td>
<td>12.3</td>
<td>15.2</td>
<td>18.3</td>
<td>26.0</td>
<td>29.8</td>
<td>39.6</td>
<td>36.2</td>
</tr>
<tr>
<td>ROSE</td>
<td>0.8</td>
<td>1.6</td>
<td>10.9</td>
<td>14.6</td>
<td>9.9</td>
<td>7.1</td>
<td>13.5</td>
<td>12.4</td>
<td>11.1</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.

Calculated value of Chi-Square for ROSE = 25.1. Calculated value is greater than critical Value at 5% level of Significance i.e., 25.1>16.919, Hence, H₀₆ is Rejected.

VIII. Profitability Analysis with Profitability Ratios Related to Expenses

These ratios are based on the assumption that Enterprise should reduce its expenses in relation to sales.

Cost of Goods Sold Ratio

Cost of Goods Sold Ratio has varied between 56.7 and 87.3 during the period of study. Cost of Goods Sold Ratio is high during the first seven years of the study period. A good sign is that it has decreased during the last three years. Management should continue same efforts to reduce cost of production. It is found in the significance test that Cost of Goods Sold Ratio is uniform during the period of study.

Table-7: Cost of Goods Sold Ratio (Figures in Lakhs)

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<tbody>
<tr>
<td>Cost of goods sold</td>
<td>45.2</td>
<td>47.5</td>
<td>107.6</td>
<td>124.7</td>
<td>147.2</td>
<td>115.8</td>
<td>105.9</td>
<td>64.6</td>
<td>75.5</td>
<td>72.4</td>
</tr>
<tr>
<td>Sales</td>
<td>51.8</td>
<td>54.4</td>
<td>132.2</td>
<td>164.4</td>
<td>175.0</td>
<td>142.5</td>
<td>143.2</td>
<td>105.6</td>
<td>124.0</td>
<td>127.6</td>
</tr>
<tr>
<td>Ratio</td>
<td>87.3</td>
<td>87.3</td>
<td>81.4</td>
<td>75.9</td>
<td>84.1</td>
<td>81.3</td>
<td>74.0</td>
<td>61.2</td>
<td>60.9</td>
<td>56.7</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.

Calculated value of Chi-Square for Cost of Goods sold Ratio = 15.9. Calculated value is less than critical Value at 5% level of Significance i.e., 15.9<16.919, Hence, H₀₇ is Accepted.

Operating Expenses Ratio

Operating Expenses Ratio has varied between 7.1 and 22.3 during the period of study. Operating Expenses Ratio is high during 2010 and last four years of the study period indicating that management should make efforts to reduce Operating expenses. It is found in the significance test that Operating Expenses Ratio is not uniform during the period of study.

Table-8: Operating Expenses Ratio (Figures in Lakhs)

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</thead>
<tbody>
<tr>
<td>Operating Expenses</td>
<td>7.1</td>
<td>8.7</td>
<td>14.6</td>
<td>16.4</td>
<td>17.5</td>
<td>14.2</td>
<td>14.3</td>
<td>10.6</td>
<td>12.0</td>
<td>12.7</td>
</tr>
<tr>
<td>Ratio</td>
<td>78.3</td>
<td>78.3</td>
<td>71.4</td>
<td>65.9</td>
<td>65.1</td>
<td>62.3</td>
<td>61.3</td>
<td>59.2</td>
<td>58.3</td>
<td>56.7</td>
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</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.
Administrative Expenses Ratio

Administrative Expenses Ratio has varied between 6.8 and 21.2 during the period of study. Administrative Expenses Ratio is high during 2010 and last four years of the study period indicating that management should make efforts to reduce Administrative expenses. It is found in the significance test that Administrative Expenses Ratio is not uniform during the period of study.

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<tbody>
<tr>
<td>Sales</td>
<td>51.8</td>
<td>54.4</td>
<td>132.2</td>
<td>164.4</td>
<td>175.0</td>
<td>142.5</td>
<td>143.2</td>
<td>105.6</td>
<td>124.0</td>
<td>127.6</td>
</tr>
<tr>
<td>Ratio</td>
<td>6.8</td>
<td>6.8</td>
<td>9.3</td>
<td>16.0</td>
<td>9.4</td>
<td>9.5</td>
<td>12.5</td>
<td>21.2</td>
<td>17.7</td>
<td>19.4</td>
</tr>
</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.
Calculated value of Chi-Square for Administrative Expenses Ratio = 19.8. Calculated value is greater than critical Value at 5% level of Significance i.e., 19.8>16.919, Hence, H₀ is Accepted.

Selling Expenses Ratio

Selling Expenses Ratio has varied between 0.1 and 1.2 during the period of study. A low Selling Expenses Ratio is indicating that management is making good efforts in reducing selling expenses. It is found in the significance test that Selling Expenses Ratio is uniform during the period of study.

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<tbody>
<tr>
<td>Sales</td>
<td>51.8</td>
<td>54.4</td>
<td>132.2</td>
<td>164.4</td>
<td>175.0</td>
<td>142.5</td>
<td>143.2</td>
<td>105.6</td>
<td>124.0</td>
<td>127.6</td>
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<tr>
<td>Ratio</td>
<td>0.4</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>1.0</td>
<td>1.0</td>
<td>0.3</td>
<td>1.2</td>
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</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.
Calculated value of Chi-Square for Selling Expenses Ratio = 3.0. Calculated value is less than critical Value at 5% level of Significance i.e., 3.0<16.919, Hence, H₁ is Accepted.

Financial Expenses Ratio

Financial Expenses Ratio has varied between 1.5 and 5.5 during the period of study. A low Financial Expenses Ratio is indicating that management is making good efforts in reducing financial expenses. It is found in the significance test that Financial Expenses Ratio is uniform during the period of study.

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<tr>
<td>Sales</td>
<td>51.8</td>
<td>54.4</td>
<td>132.2</td>
<td>164.4</td>
<td>175.0</td>
<td>142.5</td>
<td>143.2</td>
<td>105.6</td>
<td>124.0</td>
<td>127.6</td>
</tr>
<tr>
<td>Ratio</td>
<td>1.5</td>
<td>1.7</td>
<td>2.5</td>
<td>1.9</td>
<td>2.1</td>
<td>3.2</td>
<td>3.2</td>
<td>5.2</td>
<td>5.5</td>
<td>4.4</td>
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</tbody>
</table>

Source: Annual Reports of Power Plant Engineering Works from 2006-07 to 2015-2016.
Calculated value of Chi-Square for Financial Expenses Ratio = 8.8. Calculated value is less than critical Value at 5% level of Significance i.e., 8.8<16.919, Hence, H₁₁ is Accepted.

IX. Conclusion

Operating Profit Margin, Net Profit Margin, Return on Assets Ratio, Return on Capital Employed Ratio, Cost of Goods sold Ratio, Selling Expenses Ratio and Financial Expenses are uniform during the period of study. Gross Profit Margin, Return on Share holder’s Equity Ratio, Operational Expenses Ratio and Administrative Expenses Ratio are not uniform during the period of study. Gross Profit Margin is low during the first seven years of the study period. A good sign is that it has increased during the last three years. Management should continue same efforts to reduce cost of production. Operating Profit Margin and Net Profit Margin are low during the study period indicating that there is a necessity for better profitability management in the enterprise. Return on Assets Ratio and Return on Capital Employed is low during the entire period, which indicates that there is need for better profitability management in the enterprise. Return on Shareholders’ Equity is more than 10 during five years of the study which is good for owners. The management should make efforts to reduce its Administrative expenses. Low Selling Expenses
Ratio and low Financial Expenses Ratio are indicating that management is making good efforts in reducing selling expenses and Financial Expenses.

References


