3. RESEARCH METHODOLOGY

3.1 NEED FOR THE STUDY

The sugar industry is experiencing the low profitability and lower rate of return on capital employed due to non-professionalized working capital management.\(^{(91)}\) This has affected the sector inability to raise the required funds to meet the immediate needs as well as future requirements for modernization of the industry and future expansion. One of the main reasons for poor performance is failure in maintenance of liquidity leading to low profitability.

3.2 RESEARCH GAP

The financial manager must be in a position to know which working capital components affect the profitability of the sugar unit? How working capital components are affecting the profitability? How profitability of the firm can be enhanced? These questions call for a scientific examination in select sugar units in Andhra Pradesh and Telangana states.

The purpose of the study is to find a deep insight into the impact of working capital on profitability of private sugar industry in Andhra Pradesh and Telangana. There are several studies available on the working capital management of sugar industry and a few research studies have been undertaken on impact of working capital management on profitability in general. However, specific research studies exclusively on impact of working capital components on profitability are ‘scanty’. Therefore, an attempt has been made in this research work to study the impact of working capital components on profitability of select private sugar factories in Andhra Pradesh and Telangana. This study would be useful to analyze the impact of working capital components on profitability of select private sugar companies in Andhra Pradesh and Telangana. To suggest suitable measures for effective and efficient working capital management and to improve corporate profitability.

3.3 OBJECTIVES OF THE STUDY

1. To examine the nature and efficiency of working capital components of select sugar units in the states of Andhra Pradesh and Telangana.

2. To study the impact of working capital management on profitability.
a) To determine the relationship between Inventory in days and Return on Total
   Assets of select units.

b) To determine the relationship between the accounts receivables period and
   Return on Total Assets of select sugar units.

c) To determine the relationship between the average payment period and Return
   on Total Assets of select units.

d) To determine the relationship between the cash conversion cycle and Return
   on Total Assets of select units.

3. To analyze and find out that there is any impact of difference in working capital
   components in Andhra Pradesh and Telangana.

3.4 HYPOTHESES OF THE STUDY:

The study envisaged the following hypotheses.

SECTION-1: Computation and comparison of Financial Ratios.

SECTION-2: significant difference in level of various working capital component
among the selected sugar industries between Andhra Pradesh and Telangana

1. \( H_01: \) There is no significant difference in the level of Current ratio among the
   selected sugar industries between the states of Andhra Pradesh and Telangana.

2. \( H_02: \) There is no significant difference in level of Quick asset ratio among the
   selected sugar industries between the states of Andhra Pradesh and Telangana.

3. \( H_03: \) There is no significant difference in the level of gearing ratio among the
   selected sugar industries and between the states of Andhra Pradesh and Telangana.

4. \( H_04: \) There is no significant difference in the level of Trade debtors to current
   asset ratio among the selected sugar industries and between states of Andhra
   Pradesh and Telangana.

5. \( H_05: \) There is no significant difference in the level of Stock to current assets ratio
   among the selected sugar industries and between the states of Andhra Pradesh and
   Telangana.

6. \( H_06: \) There is no significant difference in the level of current assets to total ratio
   among the selected sugar industries and between the states of Andhra Pradesh and
   Telangana.
7. **H₀₇**: There is no significant difference in the level of current liabilities to total asset ratio among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

8. **H₀₈**: There is no significant difference in the level of current assets turnover ratio among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

9. **H₀₉**: There is no significant difference in the level of firm size among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

10. **H₀₁₀**: There is no significant difference in the level of Inventory in days among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

11. **H₀₁₁**: There is no significant difference in the level Accounts receivables in days among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

12. **H₀₁₂**: There is no significant difference in the level of Accounts payable in days among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

13. **H₀₁₃**: There is no significant difference in the level of cash conversion cycle days among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

14. **H₀₁₄**: There is no significant difference in the level of operating profit margin among the selected sugar industries and between the states of Andhra Pradesh and Telangana.

**SECTION-3: Correlation between Working Capital components with Return On Total Assets**

15. **H₀₁₅**: There is no relationship of working capital components with the ROTA of selected sugar units of Andhra Pradesh.

16. **H₀₁₆**: There is no relationship of working capital components with the ROTA of selected sugar units of Telangana state.
SECTION-4: Impact of Working Capital Components on Return On Total Assets

17. $H_0^{17}$: There is no impact of working capital components on Return on total assets of sugar manufacturing units of Andhra Pradesh state.

18. $H_0^{18}$: There is no impact of working capital components on Return on total assets of sugar manufacturing units of Telangana State.

SECTION -5: Means of key working capital components are significantly different among the select units

19. $H_0^{19}$: There is significant difference in Inventory in days among the selected sugar industries in the Andhra Pradesh state.

20. $H_0^{20}$: There is significant difference in Accounts Receivables among the selected sugar industries in the Andhra Pradesh state.

21. $H_0^{21}$: There is significant difference in Accounts Payables among the selected sugar industries in the Andhra Pradesh state.

22. $H_0^{22}$: There is significant difference in Inventory in days among the selected sugar industries in the Telangana state.

23. $H_0^{23}$: There is significant difference in Accounts Receivables among the selected sugar industries in the Telangana state.

24. $H_0^{24}$: There is significant difference in Accounts Payables among the selected sugar industries in the Telangana state.

3.5 DATA COLLECTION AND ANALYSIS

Basically, the study is based on the secondary data. The data for the study have been obtained from various sources like Annual reports of the sample sugar companies, Sugar Statistics, Indian Sugar Mills Association, Books, Journals, Magazines and related Websites etc.

The study is undertaken on the basis of secondary data. The information is collected from the firms audited financial statements of select sugar companies from 2006 to 2015.
Impact of working capital management on profitability of sugar industry: A comparative study of units in Andhra Pradesh and Telangana has been divided into three sections

Firstly, Analysis of working capital components and profitability measures of select sample units of Andhra Pradesh and Telangana has been analysed through Financial Ratios.

Secondly, impact of working capital components on profitability has been examined.

Thirdly, Analysis of impact difference of working capital on profitability of sugar industry in Andhra Pradesh and Telangana.

3.6 TOOLS AND TECHNIQUES OF ANALYSIS

According to the objectives and need of the study, various financial and statistical tools and techniques which applied are mentioned under:

Financial Ratios:

- Working capital variables (Independent Variables)
- Profitability Measures (Dependent Variables)

Statistical Tools:

- Correlation Analysis
- Regression Analysis
- Analysis of Variance
- Tables are presented to illustrate the facts and figures wherever necessary
Table 3.6.1: Table of Variables used in the study

**INDEPENDENT VARIABLES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Formula/Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio</td>
<td>Current Assets/ Current Liabilities</td>
</tr>
<tr>
<td>Quick Ratio</td>
<td>Quick Assets/Current Liabilities</td>
</tr>
<tr>
<td>Gearing Ratio</td>
<td>Total Debt Divided By Total Equity</td>
</tr>
<tr>
<td>Trade Debtors To Current Assets Ratio</td>
<td>Debtors Divided By Current Assets</td>
</tr>
<tr>
<td>Current Assets To Total Assets</td>
<td>Current Assets Divided By Total Assets</td>
</tr>
<tr>
<td>Current Liabilities To Total Assets</td>
<td>Current Liabilities Divided By Total Assets</td>
</tr>
<tr>
<td>Current Assets Turnover</td>
<td>Current Assets Divided By Net Sales</td>
</tr>
<tr>
<td>Firm Size(control variable)</td>
<td>Natural Logarithm Of Firm’s Sales During Study Period</td>
</tr>
<tr>
<td>Total Assets Turnover</td>
<td>Total Assets Divided By Net Sales</td>
</tr>
<tr>
<td>Inventory conversion days</td>
<td>Inventory Divided By Cost Of Goods Sold And Multiplied By 365 Days</td>
</tr>
<tr>
<td>Accounts Receivables in Days</td>
<td>Accounts Receivables Divided By Sales And Multiplied By 365 Days</td>
</tr>
<tr>
<td>Accounts Payables In Days</td>
<td>Accounts Payables Divided By Cost Of Goods Sold And Multiplied By 365 Days</td>
</tr>
<tr>
<td>Cash Conversion Cycle</td>
<td>Inventory Conversion In Days + Accounts Receivables In Days-Accounts Payables In Days</td>
</tr>
</tbody>
</table>

**DEPENDENT VARIABLES**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Formula/Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return On Total Assets(ROTA)</td>
<td>Earnings Before Interest and Taxes/Total Assets</td>
</tr>
<tr>
<td>Operating Profit Margin</td>
<td>Operating Profit /Net Sales.</td>
</tr>
</tbody>
</table>
3.7 SAMPLE SELECTION AND PERIOD OF THE STUDY

The selection of undertaking is confined to the sugar companies established as public limited companies in private sector carrying their operations in the states of Andhra Pradesh and Telangana. As on 31-03-2014, there are 36 listed companies in the states of Andhra Pradesh and Telangana (18 listed sugar companies in the state of Andhra Pradesh state and 18 listed sugar companies in Telangana state). By adopting stratified random sampling with proportional allocation technique both in AP and Telangana state, 18 sugar companies (50 percent) have been selected for the study through random sampling. The stratification was made state-wise (Andhra Pradesh and Telangana). Thus, the present study is confined to nine sugar units in the state of Andhra Pradesh and nine sugar units in Telangana state. The study period covers ten years of select sugar companies in the states of Andhra Pradesh and Telangana i.e. from 2006 to 2015.

Table 3.7.1

Sample Design of Sugar Companies in Andhra Pradesh and Telangana

<table>
<thead>
<tr>
<th>S.No</th>
<th>State</th>
<th>Total listed sugar units</th>
<th>Sample Sugar Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>Telangana</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>36</td>
<td>18</td>
</tr>
</tbody>
</table>
### Table 3.7.2

List of Select sample sugar companies for the study

<table>
<thead>
<tr>
<th>S.NO</th>
<th>NAME OF THE SUGAR INDUSTRY</th>
<th>STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>The Andhra Sugars Limited</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>2.</td>
<td>PARRYS Sugars Ltd</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>3.</td>
<td>KCP Sugars Limited</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>4.</td>
<td>Empee Sugars And Chemicals Ltd.</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>5.</td>
<td>The Jeypore Sugar Co Ltd.,</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>6.</td>
<td>Nava Bharat Ventures Limited</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>7.</td>
<td>Sagar Sugars limited</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>8.</td>
<td>Prudential Tirumala Sugars Limited</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>9.</td>
<td>Suddalagunta Sugars Limited</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>10.</td>
<td>Madhucon Sugar And Power Industries Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>11.</td>
<td>Kakatiya Cement Sugar And Industries Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>12.</td>
<td>Gayatri Sugars Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>13.</td>
<td>Delta Sugars Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>14.</td>
<td>G M R Vasavi Industries Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>15.</td>
<td>Shiva Shakti Sugar Mill India Private Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>16.</td>
<td>Nizam Decca Sugars Limited</td>
<td>Telangana</td>
</tr>
<tr>
<td>17.</td>
<td>Trident Sugars Ltd</td>
<td>Telangana</td>
</tr>
<tr>
<td>18.</td>
<td>NSL Krishnaveni Sugars Limited</td>
<td>Telangana</td>
</tr>
</tbody>
</table>
3.8 SCOPE OF THE STUDY

The study is confined to the sample private sugar units which are engaged in sugar production in Andhra Pradesh and Telangana states. The study intends to analyse the impact of working capital components on profitability of select Private sugar companies in the states of Andhra Pradesh and Telangana.

3.9 LIMITATIONS OF THE STUDY

1. The study is derived and evaluated from the audited financial statements provided by the select sugar companies and as such the findings depend on the accuracy of the data provided.
2. The study considers only monetary aspects but ignores nonmonetary aspects such as management of labour relation, customer’s satisfaction, management skills which are equally important for the financial decision making of a company.
3. The study depends totally on the interim reports involves the issuance of three quarterly financial statements each year.
4. Financial statements prepared based on the historical data that may not be effective in corporate planning.
5. The fluctuation of inflation has not been considered in the study.

3.10 PLAN OF THE THESES:

Chapter–1 Contains introduction to working capital and overview of sugar industry.
Chapter –2 Deals with review of literature.
Chapter –3 Deals with Research Methodology.
Chapter– 4 Contains Data Analysis and interpretation

Section -I: Comparison and computation of Financial Ratios
Section -2: Testing of Hypothesis
Section-3: Correlation between working capital components with return on total assets
Section-4: Impact of working capital components on ROTA
Section-5: analyze the means of key working capital components are significantly different among the select units

Chapter–5 Deals with Summary of findings, suggestions and conclusions.

References

Annexure

Index

Publications