2. REVIEW OF LITERATURE

2.1 Introduction

Researchers have made many studies on working capital management and effect of working capital component on profitability of firm with different views, with different perspectives under different environments. Some of them which are relevant to the present study are mentioned below:

2.2 Sugar industry and Working capital (1951-1985)

P. N. Devekar (1951)\textsuperscript{18}: The paper studied on the sugar industry in Bombay division explained development of sugar industries and their problems. The study points out the necessity and importance of sugar co-operative in the Indian economy.

Appavadhanulu (1971)\textsuperscript{8}: The paper identified that there is lack of attention being given to investment in working capital, analyzed working capital management by examining the impact of method of production on investment in working capital. Finally, it was found that there is no significant relationship between method of production and working capital.

Chakraborty (1973)\textsuperscript{12}: The study stated that working capital is the fund to pay all the operating expenses of a business, emphasized that return on capital employed, would be adversely affected by excessive working capital. It was found that required cash working capital by applying OC Concept and compared it with cash from balance sheet data to find out the adequacy of working capital in Union Carbide Ltd. and Madura Mills Co. Ltd., for 1970-71.

Misra (1975)\textsuperscript{51}: The paper deeply examined various problems involved in management of working capital and analyzed different financial ratios and responses to a questionnaire. The study found that there is overstocking of inventory, very week debtor’s receivables turnover and more cash than warranted by operational requirements and concluded that there is total mismanagement of working capital in public sector undertakings.

Lambrix and Singhvi (1979)\textsuperscript{47}: The paper applied the working capital cycle approach to the management of working capital, and advised that the investment in working capital could be optimized and cash flows could be increased by decreasing
the time period of the physical flow of cash from receipt of raw material to the recovery of fund of finished goods, i.e. inventory management, and by improving the terms on which firm sells goods as well as receipt of cash.

**Smith (1980)**: The paper emphasized on the implications of Working Capital Management on the value, risk, and profitability of firms. It was finally stated in the findings that operating cycle, leverage, return on assets, are important internal determinants which determines the working capital requirements significantly.

**RBI (1980)**: A Study Group studied the problems of sickness in sugar industry erosion of profit of sugar mills is mainly due to mechanical obsolescence has been concluded by various committee constituted after 1980 recommendation of these committee Modernization and rehabilitation are considered as the way to reconstruct the sugar industry.

**Shah and Shah (1980)**: The paper pointed out that the cost of production of sugar factory depends primarily on the raw materials, the sugar recovery percentage and the duration of crushing season. It was suggested that the cost of sugar production can be brought down by utilizing the processing unit for a maximum period, the proper checking of the machinery of its day to day work, the cost of extra fuel, lubricants, spare parts, consumption of chemicals, and sugar content in final molasses would be reduced, if the steam balance and machinery maintained, proper plans and proper watch in clarification and boiling house stations.

**Murali (1980)**: The paper suggested that break-even analysis is an important aspect for proper planning of sugar industry and controlling its profits. It helps in determining:

1. Minimum level of operation required to avoid losses,
2. Volume of sale to be undertaken to achieve a profit target,
3. The effect of change in price, change in fixed costs, change in variable cost and change in volume of sales on profit and
4. Assessment of the proportion and sales mix to maximize profits.

**Manohar Rao (1980)**: The paper had rightly pointed out that the current international prices of sugar and molasses, every sugar producing country has a strong reason to convert sugarcane into sugar and molasses to earn foreign exchange
required for keeping up the balance of trade. It may be even economical to import crude out of the foreign exchange earned by export of sugar and molasses. It was concluded that it was more economical to convert sugarcane into sugar and molasses and to use molasses as raw material for production of ethyl alcohol.

Singh (1980)\textsuperscript{71}: The paper reported that the by-products of sugar factories were neglected continuously and income from by-products was lost. It was suggested that if the by-products of sugar factories (i.e. biogases, molasses, filter mud, boiler ashes and sugarcane tops) were put to right use, they could generate a new hope for the employees.

Tube (1980)\textsuperscript{82}: The study on “Impact of Sugar Factories on the Rural Economy – A Case Study” has studied in detail the impact of Sanjivani Cooperative Sugar Factory in Ahmed Nagar district on agriculture, agriculturists, on the lives of agriculture labour, economic conditions of factory workers and spread effects of the sugar factory and overall economic change in rural area. It was concluded that sugarcane being the cash crop, area under sugarcane has increased, the area under irrigation has increased and likewise the change in the cropping pattern and methods of farming have changed.

Kasbekar (1981)\textsuperscript{40}: The paper observed that the sugar economy has been passing through phases of surplus and deficit in production and consumption leading wide fluctuations in the prices of sugar and that it has affected the major indicators of sugar industry and sugar prices.

Sharma (1981)\textsuperscript{67}: The paper stated that Co-operative sugar factories help farmers for getting more yields by following ways:

1. Distribution of good quality cane which is disease free and improved varieties for planting.
2. Land preparation to provide agricultural implements.
3. Irrigation facilities.
4. Technical knowledge of crop rotation, inter cropping by different trails and demonstration.

Hapse (1982)\textsuperscript{28}: The paper reported that the factors like inadequate supply of sugarcane due to lack of sugarcane development program, lack of irrigation facilities,
lack of regulation in sugarcane supply due to inadequate control leading to cane scramble, inadequate own funds, excess burden of interest on temporary or short loan, unrealistic sugar and sugarcane prices, lack of efficient management, lack of expertise in the board of directors, competitions of gur and khandsari units and lack of long-term sugar policy are the root causes for the sickness of the cooperative sugar factories in Maharashtra

Kohak (1983): The paper studied the socio-economic effects of a cooperative sugar factory on agriculture, cultivators and on agricultural laborers and the impact of sugar factory on the development of infrastructure, social services like education, medical facilities, capital formation, and employment generation in the area of operation of sugar factory. It was concluded that because of the establishment of the sugar factory, the tendency of depending solely on the cash crop like sugarcane has been increasing among the farmers, which may ultimately have adverse effect on other farmers.

Agarwal (1983): The study considered various techniques of ratio analysis, and studied working capital management by taking sample of 34 large manufacturing and trading public limited companies in ten industries in private sector. The study stated that upward trend in cash to current assets ratio.

Kasar and Tilekar’s (1984): The study indicated that the sugar industry has significant impact on the employment of seasonal migrants in Maharashtra. The share of sugar factory employment was to the extent of 45.51 and 75 percent in the total employment of an average male, female and bullock pair of the migrant household. As regards the income, it is noted that the sugar industry, on an average contributes 57 percent of the gross income of migrant household.

Shulman and Cox (1985): The study measured the Working Capital Management of a firm using different techniques of working capital requirements and concluded that debt ratio along with operating cash flow are significant determinants of working capital requirement, whereas company growth, company performance, firm size, business cycle seem inconsistent in determining Working Capital Management of Taiwanese firms.
2.3 Working capital aspects in different sectors (1986-1991)

Kamta Prasad Singh (1986): The paper identified and analyzed various aspects of working capital management in fertilizer industry in India during the period 1978-79 to 1882-83. Sample included public sector unit Fertilizer Corporation of India Ltd. (FCI) and its daughter units namely Hindustan Fertilizers Corporation Ltd., the National Fertilizer Ltd., Rashtriya Chemicals and Fertilizers Ltd., and comparing their working capital management.

Kharche (1987): The paper on Cooperative Sugar Factories in Marathwada discussed the licensing policy and of financial structure of cooperative sugar factories. Finally, the paper has analyzed the causes of sickness of sugar factories and has made some recommendations to overcome the problems of sickness.

Kuchhadiya and Shiyani and Parmer (1988): The paper observed an increasing trend in all the variables of sugarcane and sugar production in Gujarat and India as a whole. Furthermore, it was revealed that the variability of production was more than the variability in area and yield of sugarcane in Gujarat as well as in India and arrived at the conclusion that the cultivation of sugarcane crop in the Gujarat state was profitable to the farmers.

Hinge, Pawar and Narwadkar (1989): The paper showed that the installed capacity was over utilized in the healthy class while in the remaining classes, it was under utilized due to inadequate cane supply which in turn influenced per unit cost of production. The net loss of 100 tonnes of installed capacity was observed to be largely influenced by the magnitude of return from sugar production. In spite of the low per unit cost of production of sugar, the overhead costs, were relatively very high in the case of sick sugar factories.

Harbir Singh (1990): The study on Management of working capital of Modi Sugar Mills, has stated that the financial health of a company can be improved, if stringent control is excised on raw materials, stores and spares, and also by reducing the unprofitable investment blocked in current assets, the cash flow can be regulated, the companies prepare weekly cash flow statement and cash budget on a regular basis.

Chandrakant Janardhana Joshi (1991): The paper analyzed the financial performance of sugar Factories in Kolhapur District of Maharashtra. The objectives
were to measure the liquidity, solvency, efficiency, working capacity, profitability and socio-economic developments. The study revealed that the financial performance depends on internal and external factors; The study concluded with remarks that the units should enhance their equity capital; introduce cane development program, man power planning and plant modernization.

2.4 Financial performance of sugar mills and sugar industry(2007-2010)

Singh (2007): The study made an attempt to assess the performance of the sugar mills of Uttar Pradesh. The study found that during the period, the average overall technical efficiency (OTE) in the sugar mills of the state had been 93 per cent. This implied that an average mill can make radial reduction in all its cost by seven per cent without detriment to its output levels. It had also been observed that the mills with bigger plant size attained relatively higher efficiency scores.

Andrew Higgins, Peter Thorburn, Ainsley Archer, Emma Jakku(2007): The paper highlighted the future opportunities in value chain research to achieve more profitable and sustainable sugar industries in different countries by:

a) Conducting an extensive review of value chain research in sugar;

b) Assessing the change resulting from chain research using case studies in the Australian and South African sugar industries; highlighting challenges to value chain research; and

c) Considering opportunities and methodologies used in other industries.

The paper shows that value chain opportunities require more than just a technical solution, and need collective participation from across the chain, and usually evolutionary change management.

Petersen, Bogetoft, Boye, and Nielsen (2007): The paper examined whether the Danish sugar industry can maintain production and profit levels by reallocating production from less to more efficient farmers. The analysis shows that the present allocation is far from efficient.

Thiyagu (2008): The study on “Determinants the Profitability Analysis of Private Sector Sugar Industries in India”. The main objectives are determining the profitability of selected industry and analysis the financial performance and suggested
that the companies shall resort to borrowings that total borrowings always less than that of the share capital and reserves and surplus.

Tamizhselvan (2008): The paper studied the Profitability Analysis of South Indian Private Sector Sugar Industries” where the main objective of the study is, to analyse the quantum of profit among Industries and trend analysis of profitability, effective utilization of fixed assets and current assets.

David Kelch, Johannes Umstaetter and Aziz Elbehri (2008): The study on The European Union's sugar policy, in place since 1968, underwent its first major reform in 2005 in response to mounting and unsustainable imbalances in supply and demand. A model based analysis suggests that the reforms by themselves are unlikely to induce price adjustments sufficient to reduce overproduction unless quotas and/or high tariffs are reduced.

Siddique et al. (2009): The paper focused on the India two sugar mills which were in the custody of Pakistan. The papers used the liquidity as an independent variable and check its impact on profitability in sugar sector of Pakistan.

Anuradha Rajendran (2009): The study on “Performance Appraisal of Private Sector Sugar Companies in Tamil Nadu” have the objectives like to access the production and sales performance, to analyze the financial performance and profitability analysis of select sugar mills. The correlation analysis revealed a positive correlation between return on total assets and inventory turnover ratio during the study period.

Dheenadhayalan and Devianbarasi (2009): The study on “Issues relating Financial Performance of NPKRR Cooperative Sugar Mill Ltd” where the prime objective is to identify the relationship between liquidity and profitability of sugar mills. A moderate lengthy period was deemed necessary to arrive at meaningful and purposeful inferences.

Navneetha Kannan (2009): The study on “Issues relating to the Financial Performance of MRK Cooperative Sugar Mill Ltd”, Sethiyathope, Cuddalore District where the prime objective of study is to identify and measure financial status of selected sugar mill. The paper analyzed the financial performance using ratio analysis and Altman’s Z score.
Jayantilal B. Patel (2009): The study focused on sugarcane price, sugar price, cane development activities, co-product development, decontrol of the sugar Industry, Co-operative sector of sugar Industry, National Federation of Sugar Factories and suggested that recommendations of expert group on sugar industry.

Lakshmipathi Raju.M and Suryanarayana Raju (2010): The paper studied the sugar production and consumption in leading countries in the world, sugar cane production, sugar production, the number of sugar mills operating in cooperative sector and private sector, sugar recovery in India. The study highlights the reasons for high ups and downs in cane production, sugar production, the number of sugar mills that carried sugar production and made suggestions for stability in production of cane and sugar.

Navneetha Kannan and Sakthivel Murugan (2010): The paper studied the main objectives are to analyze Indian sugar industries from a global perspective and to evaluate future dimension of Indian sugar industry. It can be observed that there is a growth trend in the sugar production. During the period 2010, it can be seen that per capital consumption has gone up to 20 kgs. India’s total sugar exports also gone up (3.298 million tons) and this is a healthy condition for the country.

Thirupathy (2010): The main objectives of the study are, to examine long-term and short-term financial solvency, profitability and growth performance, to measure the impact of utilization of assets on the profitability of sugar Industry in Tamil Nadu. The study concludes that low sugar recovery percentage was most serious problem faced by sugar industries.

2.5 liquidity, financial viability, working capital and long term solvency in sugar sector(2010-2015)

Amit Kumar Dwivedi (2010): The study found that the manufacturers are producing majorly for distilleries and local liquor producers, not for the food plate or common man’s consumption. The study examines the cost-return analysis, profitability and operational efficiency of Gur manufacturing units in study area. The study revealed that units of medium and large sizes were able to cover their operating expenses with significant level of profit but small size units were earning a marginal profit.
Haq et al. (2011)\textsuperscript{29}: The paper defined the liquidity, cash, net working to improve profitability in the sugar sector. Networking capital shows the strength of the business and its liquidity position. It means if more the working capital more the liquidity of the firm.

Ali Muhammed Khusik (2011)\textsuperscript{3}: The study was conducted at technology transfer Institute, Tandojam, Pakistan to analyze sugar industry competitiveness in Pakistan. The results show that in sindh, 50 percent sugar industry falls in large size group. In Punjab a major portion of sugar industry (70\%) also falls in large size group, while sugar industry of NWFP falls in small size group. In Punjab and NWFP, 76 and 70 percent small size growers having less than 6 hectares, Whereas, in Sindh 49 percent are small growers.

Amarender Reddy (2011)\textsuperscript{4}: The paper studied Sugar and cane prices in India which are highly regulated, as a result free market prices showing rising trend with high volatility. A formula based Fair and Remunerative Price (FRP) is suggested for cane to take into account both cost of production and international price realities along with complete freeing of sugar prices.

Martina, Noronha and Dilipsinh Thakor (2012)\textsuperscript{50}: The study on The Indian Sugar Industry is marked by co-existence of different ownership and management structures. This study attempts to find the financial viability of sugar factories located in South Gujarat in India.

Yashwant and Neeraj Kumar (2012)\textsuperscript{92}: The paper made an attempt to study the degree of financial health of the selected units with the help of Edward Altman’s Z-score model and the comparison of wealth and health among the selected units with the help of statistical tools i.e. Mean, Standard Deviation and Coefficient of Variation.

Uma Maheswari and Ramachanadra Reddy (2012)\textsuperscript{84}: The paper on “Working Capital Management in Sri Venkateswara Co-operative Sugar Factory Limited and Sagar Sugars & Allied Products Limited in Chittoor district of Andhra Pradesh. The study found the industry has failed to retain more profits, consequently been forced to define more on external sources.
Vijaya B, Sangashetty Kanteppa Shetkar(2013): The basic objective of the paper is to know what is the best way the cost of sugar production per unit can be controlled and reduced. To find out present cost management loop holes in sugar industry and give suitable suggestion to overcome those hurdles.

N.N. Nadoni1, G.S. Ananth, P.S. Dhananjaya Swamyand Manjunath S. Kerur(2013): The paper was aimed at studying the relative economics of private and cooperative sugar factories in Belgaum district of Karnataka State. The results revealed that the cooperative sugar factory performed better than private sugar factory based on the overall averages such as solvency ratios, turnover ratios and financial strength ratios. Whereas the overall averages of liquidity ratios viz. current ratio, acid ratio and liquid assets to total assets ratio except inventory ratio showed that Private sugar factory performed better than Cooperative sugar factory.

Devdatta Tare, Fakhruddin Sunelwala, Akash Agrawal (2014): The paper made an attempt to study Indian sugar industry and to analyze Profitability of Selected Sugar Companies Based on Their Margin on Sales.

Subramanian. G, Visvanathan. K (2014): The study analyzed the performance of sugar industry in Tamil Nadu through financial analysis techniques like ratio analysis. The study was concluded that the financial performance of the sugar industry had been moderate.

Ashok Kumar M(2015): The study is done in order to assess the financial stability, profitability, long term solvency, efficiency in asset utilization of the five major sugar companies operating in the state of Tamil Nadu. the study has made an attempt to find that whether these white elephants are healthy and financially strong enough to run on its own leg, the researcher had made an attempt to critically analyze the financial strengths. It is found that on an average all the units considered for the study are at average to the industry standards and to the rule of thumb.

2.6 Literature review on relationship of working capital with profitability and sugar sector (1995-2015)

Vijayakumar and Venkatachalam (1995): The study was carried on Working Capital and Profitability taking thirteen firms from sugar industry. The study showed that inventory turnover and receivable turnover had positive correlation with the
profitability and liquid ratio where as cash turnover had negative correlation with the profitability.

**Lamberson (1995)**: The paper examined variety of aspects like current assets to total assets ratio, inventory to total assets ratio, current ratios for measuring working capital requirement and analyzed different aspects of managing the working capital, analyzed how small firms will react to changes in economic activities by changing their working capital requirements and level of current assets and liabilities. Inversely to the expectations, the study concluded that there is a very least significant relationship between change in working capital and changes in economic conditions.

**Jose (1996)**: The study concluded that there is significant negative relationship between profitability and Cash Conversion Cycle by examining the relationship between aggressive working capital management and profitability of the US firms using Cash Conversion Cycle (CCC) as a measure of working capital management, where a shorter CCC represents the aggressiveness of working capital management and also indicating that more aggressive working capital management is associated with higher profitability.

**Vijayakumar (1996)**: The paper revealed that the growth rate of sales, leverage, current ratio, operating expenses to sales and vertical integration are the important variables which determine the profitability of companies in the sugar industry.

**Mahadev Powar (1997)**: The paper analyzed the raising and utilization of finance of five co-operative sugar factories at the micro and the macro level. The findings of the research were, the use of chemical fertilizer made much harm to the soil; there was a need of innovation of modern technology and plant modernization; and there was a need of man power policy, accounting producers and inventory control.

**Weinraub and Visscher (1998)**: The study considered some important issues like aggressive and conservative working capital management policies and implemented on quarterly data from 1984-93 of the US firms and stated that there is significant, distinctive and different working capital management policies. The study demonstrated that there is high and significant negative correlation between industry assets and liability policies and noted that when relatively aggressive working capital
asset policies are followed, they are balanced by relatively conservative working capital financial policies.

**Shin and Soenen (1998)**⁶⁸: The paper highlighted that efficient working capital management was very important for creating the value for shareholders. The relationship between the length of Net Trading Cycle, Corporate profitability and risk adjusted stock return was examined using correlation and regression analysis, by industry and capital intensity and found a strong negative relationship between the length of the firm’s net trading cycle and its profitability.

**Chandrasekaran (1999)**¹⁴: The study was carried out Financial Performance of Indian Sugar Industry in which various ratios like profitability ratios, liquidity ratios, leverage ratios and turn over ratios were calculated. It was found that financial performance of the sugar industry had been moderate to poor except during 1993-94. The study concluded that tough cycle of low production, high price realization followed by higher production and low price realization leading to delay in payments would affect the company’s performance.

**Srinivasan (2001)**⁷⁵: The study suggested that the opportunity for using by-product molasses, which will be available in increasing quantities, for producing industrial and potable alcohol, alcohol-based chemicals and ethanol should be fully utilized. Any surplus power can be sold to Tamil Nadu Electricity Board Grids at price advantages to both parties. These measures can help in reducing all manufacturing costs noticeably.

**Jadhav (2001)**³⁵: It has been found from the study that the cost reduction is a continuous process of follow up. It needs evaluation, redesigning and reevaluation. To achieve cost reduction, it is necessary to follow the below mentioned steps:

1. Establishing our own standards
2. Measuring performance against these standards and
3. Correcting deviation from standards.

**Pokharkar, Kasar and Shinde (2001)**⁶¹: The basic objective of the study has been to examine low productivity of sugarcane and profitability for different planting types in different recovery zones in Maharashtra. It has been concluded that there is a need to popularize the improved crop production technology among the sugarcane growers. It
will ensure reduction in a cost of cultivation on one hand and maintain the productivity of sugarcane.

**Samar K. Datta (2002)**: The paper computed and presented the growth rates of production and yield of sugarcane in his study, based on the source from Ministry of Agriculture, Government of India: Agriculture statistics at a glance, 2001. It has been found that the compound growth rate of production of sugarcane was only 2.70 and yield of sugarcane was only 0.82 during 1991-92 to 2000-01

**Bhattachrayya (2002)**: The study discussed the negative export growth of sugar and molasses during 1995-96 to 1999-2000. It showed that it was 151.62 in 1995-96, 303.89 in 1996-97, 68.68 in 1997-98, 5.81 in 1998-99 and 8.74 in 1999-2000. However, during 1999-2000, more than 70 percent of India’s agricultural exports have shown positive growth trend, while only 27 percent of agro exports (including sugar and molasses), have shown a negative trend.

**Rajesh Kumar and Misra (2002)**: The study made an effort to delineate sugar recovery zones in the country for the efficiency planning and development of Sugar Industry. The objectives made attempt to identify the different sugar recovery zones into emphasis that the crop area, quality and quantity of water, infrastructure, cane processing technology, sugarcane supply management, etc., are quite different in different areas of the country and require appropriate approaches.

**Vijayakumar (2002)**: The paper was developed into the various determinants of profitability viz., growth rate of sales, vertical integration and leverage. It was noted that efficiency in inventory management and current assets are important to improve the profitability.

**Anupam Sharma (2002)**: The paper studied the assessment of corporate liquidity-a Discriminate Analysis Approach of 28 firms in the sugar industry operating in Tamil Nadu. The study concluded that the cooperative sector classified as poor risk in all the selected years. The study revealed that the overall liquidity position of the industry was satisfactory.

**Sirohi (2003)**: The paper suggested that the sugar mills and their associations with the assistance of the Ministry of Consumer Affairs, Public Distribution System and
the Sugar Directorate, should take a long term approach to overcome the negative financial scenario of the sugar mills. The suggested approaches are:

1. Maintenance of 3-4 months sugar consumption as carry over for next season,
2. Reduction in cost of production,
3. Production of better quality of sugar,
4. Maximum saving of fuel,
5. Assessment of benefits of producing rich sugar molasses considering mandatory mixing of 5 percent anhydrous alcohol in petrol and
6. Production of value added products.

Dangat Nilesu (2003)\(^{16}\): The paper on “Co-operative Sugar Factories in Maharashtra” analyzed functioning of sugar industry in the state. The soil and climate conditions of Maharashtra are favorable for the cultivation of sugar cane. A sugar factory with a daily crushing capacity of 2500 tonnes provide permanent employment to 416 persons and seasonal employment to 653 persons.

Deloof (2003)\(^{18}\): The paper suggested that the Belgian firms through decreasing their number of days of account receivables and reducing the days of inventory outstanding can increase their profitability by analyzing a sample of large Belgian firms for the period 1992-1996.

Ghosh and Maji (2004)\(^{25}\): The paper analyzed the efficiency of managing the working capital of the Indian cement companies. They have determined utilization index, three index values-performance index, and overall efficiency index in order to measure the efficiency of managing working capital instead of using some common working capital management ratios.

Eljellyi(2004)\(^{22}\): The study identified that there is significant negative relationship between the profitability of firm and its level of liquidity as measured by current ratio. This relationship is highly applicable for the firms with high current ratios and long cash conversion cycles.

Aarathi Kirshnan (2004)\(^{1}\): The paper pointed out that the anticipated tightening of supplies has already set-off an upward spiral in sugar prices, which have firmed up by about 20 percent over the past year. In the festival demand for sugar, which peaks in
the September, January period, could keep prices high, especially as supplies from the next crushing season will trickle in only from November/December.

**Mohan (2004)**: The study on “Profitability of Sugar Industry” has made an evaluation of the profitability of the sugar mills in the Thanjavur district. The study analysed the operational of the sugar mills, through operating ratios there by judging the effectiveness in using the pool of funds. The study identified the long term funds entrusted to a concern by companies and owners through return on capital employed. On concluding the study indicated that the private mill was moderate where as the public and co-operative mills did not achieve the expected performance.

**Falope and Ajilore (2005)**: The paper considered the sample of 50 Nigerian quoted non-financial firms by using the data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. It was concluded that there is a significant negative relationship between the average collection period, average payment period, inventory turnover period, cash conversion cycle with that of net operating profitability.

**Basavraj and Benni (2005)**: The paper studied the physical and financial performance of twelve co-operative sugar factories with the help of ratio Analysis and Multivariate econometric technique method. The study revealed that these performance indicators influenced the total performance of sugar co-operative factories and concluded with a remark that in the total sugar production cost, cane conversion cost was greater than the cane cost.

**Kim (2005)**: The paper stated that firms with lower liquidity refer to negative profitability in this way the importance of liquidity in profitability in sugar sector is most important because good liquidity leads to better profit are higher profit in sugar sector industries show the good performance of these industries.

**Farooqi et al. (2010)**: The paper analyzed the relationship between liquidity and profitability and that it is necessary to investigate for every organization even they perform their daily operations. The result shows that there is significant impact of liquid ratio on profitability.

**Gopinathan Radhika, Ramachandran Azhagaiah(2012)**: In this paper, authors made attempt to examine the impact of working capital management on profitability
by using the liquidity ratios, and turnover ratios. They have applied Correlation and regression models determine the relationship and estimate the association between the selected variables. The regression model shows that the ratios like Current Ratio and Inventory Turnover Ratio have highly significant positive coefficient with profitability while Quick Ratio has significant negative coefficient with profitability.

Chatterjee(2012)\textsuperscript{15} This research has analysed the impact of working capital on the profitability for a sample of 100 Indian companies listed in the Bombay Stock Exchange for a period of 2 years from 2010-2011. The various components for measuring the working capital management include the Receivable days, Inventory turnover days, Payable days, Cash conversion cycle, Current ratio and Quick ratio on the Net operating profitability of the Indian companies. The controlled variables like; Fixed assets on total assets, the Debt ratio and the size of the firm (measured in terms of natural logarithm of sales) have also been used for measuring of the working capital management. Descriptive Statistics, Pearson’s Correlation, Regression Analysis are used for analyzing this research. All these tests are used so as to correlate the theories contributed by the literature by several authors with the statistical results.

Umarani R. , Nithya G(2013)\textsuperscript{23} The objective of the study is to analyze whether the overall profitability of the selected companies in the Sugar industry depends on their age, size, and region to which the company belongs based on their margin on sales. From the analysis, it was found that the southern region companies had a higher profitability than the northern region companies. It is suggested that to increase their profitability, the companies need to effectively monitor and control their expenses and effectively use their by-products.

Habiba (2013)\textsuperscript{27} The paper analyzed the liquidity impact on the profitability of sugar industry in Pakistan by using the account receivable, cash as a liquidity variable and sees the impact on sugar industry profitability.

Senthilmani Thuvarakan(2013) The dependent variable, profitability is measured using gross operating income. The independent variables are receivable days, Payable days, inventory days, cash conversion cycle, debt, and size of the firm. Pearson’s correlation and regression analysis to explore the relationship between the profitability and the working capital components. The results show that there is no significant relationship between the working capital components and profitability.
There is a negative relationship between gearing and profitability in manufacturing firms.

Mohanasundaram P(2014): The paper has made an attempt to analyze the profitability of the five sugar companies based on total assets among 24 listed sugar companies in NSE Listings. The results of analysis revealed that the overall profitability of Shree Renuka Sugars Ltd, Balrampur Chini Mills Ltd and Bannari Amman Sugars Ltd is satisfactory and the overall profitability of Sakthi Sugars Ltd and Dhampur Sugars Ltd is not satisfactory during the study period.

Chemis Kiptoo Philip(2015): The purpose of the study is to examine the effect of working capital management variables including the Average collection period, Inventory turnover in days, Average payment period, Cash conversion cycle and Current ratio on the Net operating profitability of Sugar Manufacturing firms in Kenya. It was found that there is a significant negative relationship between variables of the working capital management and profitability. The study suggests that managers can create value for their shareholders by increasing their inventories to reasonable levels and also reducing accounts receivable period.

Shaheen Akhtar, Muhammad Ibrahim1 Muhammad Riaz, Mudasar Abbas, Muhammad Asif(2015): The main purpose of the study is to analyze the impact of liquidity on the profitability in sugar sector of Pakistan. Correlation results show that there is strong positive relationship between all variables. So, the results show that firms must utilize its liquidity in best way in order to improve the profitability.
2.7 CONCLUSION

Prior research has found that sugar companies, operating in India are severely affected by the acute problems like ‘shortage of working capital’, ‘poor liquidity’ and ‘poor profitability’. Profitability is positively related with liquidity, efficiency of management and financial structure of the company. Some studies have emerged focusing on and examining the impact of working capital management on profitability in the sugar industries. Some of the studies covered leverage, liquidity, solvency, profitability of sugar industry individually. 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.