INTRODUCTION - OBJECTIVES AND METHODOLOGY
Materials account for a large chunk of the cost of production in any industry. A survey conducted by the Directorate of Industrial Statistics as early as 1954-57 showed that the average of materials cost was 64 per cent of the total cost.\(^1\) This huge percentage of materials elbows out its key place amongst the elements of cost in any manufacturing company. As such the investment in materials should be subjected to rigorous control to ensure that every rupee of investment in materials is productively utilised. It has been said that the greatest scope for cost reduction lies in efficiency of materials management for the reason that the outlay on materials account for a major share in the total cost of production. In the words of Dean Ammer 'efforts for saving a rupee in materials cost is almost equal to the efforts made for additional sale of Rs.10.'\(^2\) Thus materials management is an indispensable core activity of all types of organisations whether manufacturing, trading and even non-profit organisation. Thus management should devote pointed attention to materials function for reaping the full benefits.

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Materials management is a term to describe the grouping of management functions related to the complete cycle of material flow from the planning of materials requirements to the ultimate distribution of finished product. It differs from the materials control in that, latter term traditionally is limited to the internal control of production materials.

FOOD PROCESSING INDUSTRY:

The present study relates to one of the Food Processing Industries. The Indian Food Processing Industry includes basic food industry, processing of food grains, pulses, oil seeds, sugarcane and the processed food industries. The processed food industry plays an important role in augmenting and supplying protein rich food items at affordable prices for the masses. It includes biscuits, confectionary, bakery products, soft drinks, meat and fish processing, canning and processing of fruits and vegetables dairy products including baby foods, starch and malt products. According to the confederation of Indian Food Trade and Industry, the food processing industry is the largest determinant of G.N.P., accounting for 19 per cent of the total industrial production and employing around 18 percent
of the national labour force. This is against an investment of only 10 per cent of the total gross investment in the industrial sector. Thus the food processing industry has a high employment potential at lower level of investments. In the total Industrial production it ranks fifth.

Processed foods are fast emerging as one of the leading items of exports in India. The export performance of processed foods during the last decade has been consistent and remarkable. From a modest amount of Rs.24 crores in 1972-73 the exports have soared to Rs.260 crores in 1982-83 and to around Rs.300 crores in 1983-84. This indicates the emerging prospects for this industry.

Table 1.1 shows the estimated and future demand for processed foods.

In the year 1990 the confectionery production reached, 150,000 tonnes. Thus the confectionery industry grew very fast. The confectionery industry is part of the processed Food Industry.

Table 1.1  SUPPLY AND FUTURE DEMAND FOR PROCESSED FOODS

<table>
<thead>
<tr>
<th>Category</th>
<th>Production (in 1000 tonnes)</th>
<th>Requirement in 2000 A.D. (in 1000 tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biscuits</td>
<td>125</td>
<td>300</td>
</tr>
<tr>
<td>Bread</td>
<td>152</td>
<td>357</td>
</tr>
<tr>
<td>Confectionery</td>
<td>26</td>
<td>66</td>
</tr>
<tr>
<td>soft drinks (in bottles)</td>
<td>2400</td>
<td>4660</td>
</tr>
<tr>
<td>Starch</td>
<td>150</td>
<td>285</td>
</tr>
<tr>
<td>Fabricated gum</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td>Nutritions products</td>
<td>20</td>
<td>80</td>
</tr>
</tbody>
</table>

The present study relates to materials management in one of the processed food industry namely Nutrine Confectionery Company Ltd., a leading confectionery manufacturing company in India situated in Chittoor of Andhra Pradesh. Nutrine has become a household name in our country. In Literary sense confectionery means hard boiled sweets. The confectionery industry consists of three segments. They are 1. sugar 2. chocolates and 3. biscuits. Out of these three the biscuit segment is the biggest with an annual turnover of nearly Rs. 600 crores, followed by chocolates; the share of chocolates is over Rs. 100 crores. This industry can be broadly classified into two sectors viz., organised sector and unorganised sector.

In the sugar confectionery industry the organised sector comprises five major producers. They are 1. Nutrine Confectionery Company Ltd., Chittoor 2. Parrys Confectionery Ltd., Nellikuppam, Madras 3. Parle Products, Bombay, 4. Ravalgon Confectionery, Bombay and Morton Confectionery, Bihar. The annual production of these five companies is

7. Loc. sit
approximately 40,000 tonnes of related products. The share of the other 15 medium sized companies in the organised sector account for another 10,000 tonnes. The production of the organised sector increased over the years and stood at 50,000 tonnes in 1990. The share of the Nutrine Confectionery Company is about 24.95 per cent of total production of the organised sector. Thus Nutrine Confectionery produces one fourth of the total production of organised sector in India. In the unorganised sector there are over 4000 small scale and cottage units manufacturing sugar confectionery contributing another one lakh tonnes a year. The total sugar confectionery market is about 1.5 lakh tonnes a year. While confectionery industry's annual growth rate is around three per cent, the organised sector has been growing at a rate of five to six per cent.

BEGINNING OF NUTRINE CONFECTIONERY COMPANY LIMITED:

Nutrine Confectionery Company was formed as a private limited company and incorporated in the year 1952 under the name "Nutrine Confectionery Company Private Ltd." which commenced its business of manufacture of confectionery

8. Loc. Sit
9. Loc. Sit
in the year 1952. The company derived its name from the "Nutrine Cadby Company" of Chicago, United States of America.

The company set up its factory and administrative office at Chittoor town in the state of Andhra Pradesh then belonging to the Presidency of Madras. The Registered office was also situated in the same place. When the state of Andhra Pradesh was formed in the year 1956 Chittoor came under Andhra Pradesh State. The registered office of the company continues to be in Chittoor. At present the company is a deemed public company under Section 43-A of the Companies Act 1956. The registered office of the company was shifted from Chittoor to Bangalore.

When the company started its operations in 1952, it used to cater only to the local town market and adjoining villages. At present its operations are spread over throughout India, with its depots located in all the important cities. It has turned out to be a leading confectionery manufacturer in India and has the distinction of offering the widest range of toffees and confectionery items to the consumers.

The company introduced various novel and tastier varieties of confectionery items in the market over the
years keeping with customer tastes and changing trends.
With increasing globalisation of operations in the Indian economy the company has entered into export market also.

During the last six years some new companies belonging to the same group were also formed. These are 1. Nutrine Chewing gum private limited, which manufacturers chewing gum products 2. Nutrine biscuits Private Limited, which manufacturers biscuits 3. B.V.R. Confectionery Private Limited, which manufacturers confectionery products 4. Nutrine sweet Private Ltd., 5. Nutrine Chocolates Private Ltd.

GROWTH AND DEVELOPMENT OF NUTRINE CONFECTIONERY COMPANY LTD.

In 1964 Nutrine Confectionery turnover was just around 5 lakh rupees. Its gross sales crossed rupees one crore in 1966-67 and climbed to Rs.10 crores in 1981-82. Sales in 1989-90 touched the figure of Rs.30 crores. Table 1.2 gives an overview of the growth and development of Nutrine Confectionery Company Ltd. during the study period 1983-84 to 1989-90.

It is clear from the table 1.2 that the fixed assets turnover ratio and total assets turnover ratio indicate decreased efficiency in assets utilisation. This is
Table 1.2  AN OVERVIEW OF THE GROWTH AND PERFORMANCE OF NUTRIN CONFECTIONERY COMPANY LIMITED DURING THE PERIOD FROM 1983-84 TO 1989-90

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales (Rs.)</th>
<th>% Increase over previous year</th>
<th>Sales (Rs.)</th>
<th>% Increase over previous year</th>
<th>Assets (Rs.)</th>
<th>% Increase over previous year</th>
<th>Net Profits (Rs.)</th>
<th>% Increase over previous year</th>
<th>Fixed assets turnover ratio</th>
<th>Net assets turnover ratio</th>
<th>Profit on assets margin ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984-85</td>
<td>1814.74</td>
<td>43.5</td>
<td>40.5</td>
<td>571.97</td>
<td>40.7</td>
<td>40.7</td>
<td>141.37</td>
<td>280.7</td>
<td>280.7</td>
<td>12.93</td>
<td>3.17</td>
</tr>
<tr>
<td>1985-86</td>
<td>2655.05</td>
<td>46.3</td>
<td>105.6</td>
<td>900.00</td>
<td>57.3</td>
<td>121.3</td>
<td>111.55</td>
<td>(-)</td>
<td>21.1</td>
<td>200.4</td>
<td>13.67</td>
</tr>
<tr>
<td>1986-87</td>
<td>2389.00</td>
<td>(-)</td>
<td>10.0</td>
<td>84.9</td>
<td>977.34</td>
<td>7.9</td>
<td>138.9</td>
<td>19.37</td>
<td>(-)</td>
<td>82.6</td>
<td>(-)</td>
</tr>
<tr>
<td>1987-88</td>
<td>2222.40</td>
<td>(-)</td>
<td>7.0</td>
<td>72.1</td>
<td>1213.17</td>
<td>24.9</td>
<td>198.4</td>
<td>111.24</td>
<td>471.3</td>
<td>196.8</td>
<td>7.66</td>
</tr>
<tr>
<td>1988-89</td>
<td>1905.83</td>
<td>(-)</td>
<td>14.2</td>
<td>47.5</td>
<td>1507.34</td>
<td>24.2</td>
<td>270.8</td>
<td>19.09</td>
<td>(-)</td>
<td>82.8</td>
<td>(-)</td>
</tr>
<tr>
<td>1989-90</td>
<td>3046.10</td>
<td>59.93</td>
<td>135.8</td>
<td>1659.41</td>
<td>10.1</td>
<td>308.2</td>
<td>78.28</td>
<td>110.1</td>
<td>110.3</td>
<td>7.02</td>
<td>1.84</td>
</tr>
</tbody>
</table>

Source: Nutrine Confectionery Company Annual Reports from 1983-84 to 1989-90.
also supported by the net profit margin which decreased from 2.87% in 1983-84 to 2.57% in 1989-90 and return on assets ratio (ROA) which decreased from 9.13 percent in 1983-84 to 4.72% in 1989-90 (Table 1.2). Table 1.2 reveals that during the period 1983-84 to 1989-90 sales increased by 135.8%, whereas the increase in profit was only 110.9%.

ORGANISATIONAL STRUCTURE:

The organisational set up is one of the significant factors which influence the effectiveness of the organisation. The Nutrine Confectionery Company Ltd. is managed by a Board of Directors consisting of four members, a Chairman, a Managing Director and two Directors. The organisation has been divided into three main departments. They are

1. Finance
2. Operations
3. Personnel

Stores Department comes under Finance and purchase department under operations, which clearly indicates the absence of an integrated materials management system. Stores department is managed by a Stores Officer, who is assisted by an Assistant Stores Officer and ten clerks.

Purchase Department consists three Deputy Managers and one Assistant Manager. One Deputy Manager deals with raw materials purchases, second one deals with
wrapper, materials purchases, third one deals with packing materials and one Assistant Manager deals with maintenance and purchase of stationery etc. Chart 1.1 shows the overall picture of the organisation structure.

NEED FOR PRESENT STUDY:

The company's net profit fluctuated between Rs.19.09 lakhs to Rs.141.37 lakhs during the study period from 1983-84 to 1989-90, while the sales increased by 135% i.e. from Rs.1291.58 lakhs in 1983-84 to Rs.3046.10 lakhs in 1989-90, the net profit ratio decreased during the same period.

As the sales consist of total cost (FC + VC) plus profit, the decreasing profit margin indicates high growth rate of cost of operations. Here an attempt is made to analyse the total cost in Nutrine Confectionery Company so as to identify broadly controllable and non-controllable costs. Table 1.3 shows the break-up of the total cost.

An analysis of the cost structure of Nutrine Confectionery Company shows that the company is essentially raw materials intensive as the material cost alone accounts for 43% of the total revenue. Hence the company's fortunes are linked to efficiency of Materials Management. Thus any attempt to reduce cost must be focussed first on this vital
Table 1.3  
BREAK UP OF TOTAL COST IN NUTRINE CONFECTIONERY COMPANY LIMITED

(Rupees in lakhs)

<table>
<thead>
<tr>
<th>Year</th>
<th>Materials cost (%)</th>
<th>Other cost (Manufacturing expenses)</th>
<th>Total cost (Rs.)</th>
<th>Total Revenue (Sales) (Rs.)</th>
<th>% of Total cost to Total Revenue</th>
<th>% of Materials cost to Total Revenue</th>
<th>% of Other cost to Total Revenue</th>
<th>% of the material cost to total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983-84</td>
<td>563.31</td>
<td>645.14</td>
<td>1213.45</td>
<td>1291.58</td>
<td>93.95</td>
<td>44.00</td>
<td>49.95</td>
<td>46.83</td>
</tr>
<tr>
<td>1984-85</td>
<td>808.43</td>
<td>848.93</td>
<td>1657.36</td>
<td>1814.74</td>
<td>91.33</td>
<td>44.55</td>
<td>46.78</td>
<td>48.78</td>
</tr>
<tr>
<td>1985-86</td>
<td>1181.47</td>
<td>1319.49</td>
<td>2500.96</td>
<td>2655.05</td>
<td>94.20</td>
<td>44.50</td>
<td>49.70</td>
<td>47.24</td>
</tr>
<tr>
<td>1986-87</td>
<td>947.11</td>
<td>1203.08</td>
<td>2150.19</td>
<td>2389.00</td>
<td>90.00</td>
<td>39.54</td>
<td>50.36</td>
<td>44.05</td>
</tr>
<tr>
<td>1987-88</td>
<td>834.41</td>
<td>1098.82</td>
<td>1933.23</td>
<td>2222.40</td>
<td>49.24</td>
<td>39.80</td>
<td>49.44</td>
<td>44.59</td>
</tr>
<tr>
<td>1988-89</td>
<td>803.06</td>
<td>960.37</td>
<td>1763.43</td>
<td>1905.82</td>
<td>92.79</td>
<td>42.40</td>
<td>50.39</td>
<td>45.69</td>
</tr>
<tr>
<td>1989-90</td>
<td>1348.63</td>
<td>1483.51</td>
<td>2832.14</td>
<td>3045.10</td>
<td>92.97</td>
<td>44.27</td>
<td>48.70</td>
<td>47.62</td>
</tr>
</tbody>
</table>

Total: 5546.42  
Average: 935.20

Source: Nutrine Confectionery Company Annual reports 1983-84 to 1989-90
area. Next to materials cost, cost of personnel is the major cost. Personnel cost is not shown separately due to non-availability of data. It is included in other costs.

However the scope for reducing the cost of personnel in Nutrine Confectionery Company is rather limited, thanks to militant trade union and external factors like increasing cost of living and to lack of trained and skilled staff. Any proposal to rationalise the staffing pattern and norms of work is likely to be met with stiff resistance. Besides this, the trade union continuously clamour for higher wages, bonus and better working conditions for the employees. All these make it absolutely impossible to reduce the cost of personnel.

Control of materials cost on the other hand is easier to undertake and offers greater opportunities for profit improvements. In the words of Anil Dey, "it is rather easier to achieve better productivity, through managing materials than managing personnel because unlike labor force materials neither complain, nor resort to strike, nor go slow and the expenditure involved in managing materials in comparatively low."

The major raw materials used by the sugar confectionery industry are sugar, glucose, milk and its derivatives vanaspati, butter and packaging materials such as paper, cellophone and Bopp. In the words of V. Sundaresan essentially raw materials intensive, the material cost in sugar confectionery accounts for nearly 55 per cent of the sales value. Hence, the industry's fortunes are linked to prices and availability of raw materials mainly sugar and glucose. The Confectionery industry has not made a breakthrough due to the high cost of raw materials and outdated processing and wrapping machinery.

Out of these materials Nutrine Confectionery Company has been incurring increasing expenditure on the materials like sugar, glucose and L.C. milk. The sugar consumption per Kg of production registered a growth rate of 66.15 per cent during the study period from 1983-84 to 1989-90 and glucose consumption per Kg of production registered a growth of 17.7 per cent during the same period. In the consumption of other materials also a similar increase was noticed. The company struggled hard to absorb these increased cost by ensuring optimum utilisation of available resources. Thus

it was hoped that efforts towards controlling cost of materials could substantially contribute to the economy of the company. Hence it is viewed that the study of materials management function assumes greater significance under the existing conditions in Nutrine Confectionery Company.

The study therefore is a humble attempt to enquire into the materials management of the Nutrine Confectionery Company. It is appropriate that review of literature available on the subject in general and Nutrine Confectionery Company in particular is presented before outlining the scope and method of this study. Though this review is not comprehensive, it indicates the amount of interest the subject has evoked among the scholars.

MATERIALS MANAGEMENT: A REVIEW OF CURRENT LITERATURE:

Materials Management has been considered as a separate field of managerial discipline only in recent years. Eventhough the concept got wide popularity and recognition in all advanced countries, in India, it is yet an enigma to many.

Because of this recent origin, unfortunately research in the area of materials management both at the unit level and
industry level was conspicuously absent. However in recent years, on account of the growing awareness about the importance of Materials Management a few studies were conducted which focussed to some extent on the policies and problems of the industrial concerns in the field of materials management. These include books like 1. Materials Management and inventory control: principles and practice\textsuperscript{12}, 2. Integrated Materials Management: Concepts and cases\textsuperscript{13}, 3. Materials Management and Purchasing\textsuperscript{14}, 4. Materials Management an Integrated approach\textsuperscript{15}. However these books are not research oriented but only textual in nature which reflects only the professional experience of the authors in the field.

\begin{itemize}
\item \textsuperscript{12} A.K. Datta, "Materials Management and Inventory Control" Jaico Publishing House, Bombay, 1988, 273pp.
\item \textsuperscript{15} P. Gopalakrishnan and M. Sundaresen, "Materials Management - An Integrated Approach" - Prentice Hall of India Private Ltd., New Delhi, 1984, 268pp.
\end{itemize}
There are a few Doctoral dissertations in the area of Materials Management. These include Dr. B. Ramarkrishna Rao's "Materials Management in Heavy Engineering Industry" - A Case Study of Bharat Heavy Plates and Vessels Limited, Visakhapatnam, in which Dr. Rao has examined the structure and performance of materials management function in B.H.P.V. A comparative study of materials management practices in B.H.P.V. with other public sector heavy engineering units was also made. Finally the author has identified some of the major problems in B.H.P.V. pertaining to materials management activity.

Doctoral dissertations in Materials management in the service sector include Dr. B. Paniswara Raju's Materials management in A.P.S.R.T.C. In this Dr. Raju has clearly examined the Materials Management practices in A.P.S.R.T.C. The author has also compared Materials Management practices in A.P.S.R.T.C. with other Major Road Transport Corporations in other parts of the country.

There are a number of Doctoral dissertations in the

area of working capital management, which include Dr. R.K. Mishra's "Problems of Working Capital" with special reference to selected public undertakings in India,\textsuperscript{18} Dr. Viyanna Rao's "Management of working capital with special reference to selected A.P. Public Enterprises",\textsuperscript{19} R.K. Jain's "Working Capital management of state enterprises in India",\textsuperscript{20} H.L. Verma's "Management of working capital".\textsuperscript{21} In all these works the authors have included a chapter on Inventory management in which they have discussed the existing practices and problems of inventory management in their respective selected undertaking.

There are also a number of reports submitted by various committees set up by the government from time to time.

\begin{itemize}
\item \textsuperscript{19} Dr. K. Viyyanna Rao, "Management of working capital" with special reference to selected A.P. Public Enterprises, Department of Commerce, Najarjuna University, Guntur.
\end{itemize}
For example, the committee on public sector undertaking in its 40th report\textsuperscript{22}, has mentioned vividly some of the defects in the area of Materials Management of the Public Sector undertakings.

REVIEW OF LITERATURE - NUTRINE CONFECTIONERY COMPANY Ltd.

In spite of the key role of Materials Management in Nutrine Confectionery Company so far no research work either leading to M.Phil/Ph.D or major project work has been undertaken by any University or Institution. Thus the present study, entitled 'Materials Management in Nutrine Confectionery Company Limited' becomes necessary which help in reducing materials costs and improving profit and ensuring free flow of materials to the production without stock-outs.

OBJECTIVES OF THE STUDY:

The broad objective of this study is to examine the existing materials management system in Nutrine Confectionery Company Ltd., critically evaluate it and suggest methods for improving it so as to achieve better results. This broad objective is crystalized into the following sub-objectives.

\textsuperscript{22} 40th Report on "Materials Management Committee on Public Sector Undertakings", Third Lok Sabha, Delhi, 1967, p.7.
1. To examine the materials management performance in Nutrine Confectionery Company Ltd. on the basis of various parameters.

2. To study the purchasing management and stores management systems and practices in Nutrine Confectionery Company Ltd.

3. To critically analyze the inventory management system in Nutrine Confectionery Company Ltd. and

4. To make appropriate suggestions for improving the materials management system in Nutrine Confectionery Company Ltd.

METHODOLOGY:

The study is primarily based on secondary data culled out and collected from 1. published annual reports of Nutrine Confectionery Company Limited. 2. The stores records and purchasing order files of Nutrine Confectionery Company Limited at Chittoor. Besides material was gathered from interviews with various department officials - financial, purchasing, technical and stores to get clarification on the various aspects of statistical data and insight into the materials management function of the company.
SCOPE OF THE STUDY:

Materials Management is essentially an organisational concept that brings together under one organisational component, the materials managers responsibility for planning, purchasing, transporting, storekeeping and controlling materials. He is on the same level as the production manager or undertaking manager and reports to the chief executive. This integration of materials functions under a single professional manager allows the company to take advantage of cost and inventory reduction and performance improvement opportunities which are not available if these functions are scattered among different departments.

The four major functions namely materials planning, purchasing, storage and inventory control constitute the scope of materials management. A brief description of these functions is given below.

1. Materials Planning:

This function involves forecasting material requirements, prices and rates and levels of inventory, preparing materials budgets, scheduling the orders and monitoring the performance in relation to production and sales.

2. Purchasing:

This function involves selection of sources of supply, finalisation of purchase terms, placement of purchase orders, follow-up, approval of payment to suppliers, evaluating the performance of suppliers and developing new sources of supply.

3. Storage:

This function includes stocking and physical control of materials, receiving and issue of materials, stock verification, maintenance of stock records, codification, disposal of scrap and surplus materials.

4. Inventory Control:

This function involves determining order quantities, setting inventory levels, safety stock levels, designing and installing inventory control systems, selective control of inventories and analysis and control of lead time.

In addition to the specific functions mentioned above, other functions like transportation, quality control of incoming materials, materials handling, etc. are also considered as falling under the purview of materials management. There is, however, no common agreement between practitioners
and academicians regarding what functions should be included under unified direction of materials manager. The precise area and control of materials management in an organisation is determined by various factors like nature of the business, the variety of products manufactured, etc. However, purchasing, storage and inventory control are integrated in most of the organisations.

The scope of the present study entitled "Materials Management in Nutrine Confectionery Company Limited" is limited to the analysis of the specific aspects of purchasing management, stores management, inventory management. Before analysing these aspects in detail a study of performance of Materials Management in Nutrine Confectionery Company during the period 1983-84 to 1989-90 is made.

STATISTICAL TOOLS EMPLOYED:

Simple statistical tools like percentages, averages, correlation have been used to interpret the data. Further, ratios and trend analysis have also been used. Bar diagrams are used in second chapter.
CHAPTERISATION:

The study is presented in five chapters. Chapter one is introductory in nature and deals with the significance of the Materials Management in general and the significance of Materials Management in Food Processing industry, and in Nutrine Confectionery Company in particular, the growth and development of the Nutrine Confectionery Company, the significance of the study taken up, objectives set up, methodology adopted and scope and limitations of the study. Thus this chapter forms the foundation on which the present study is conducted. Chapter two examines the materials management performance in Nutrine Confectionery Company. Chapter three deals with purchase management and stores management systems and practices in Nutrine Confectionery Company. In chapter four a critical evaluation of the inventory management systems in Nutrine Confectionery Company is present. And chapter five concludes the thesis and presents a summary of findings and recommendations.

LIMITATIONS OF THE STUDY:

The major constraint that this study has to encounter is the non-availability of data in respect of certain areas
like purchasing, stores, etc. Inspite of willing, helpful and ungrudging co-operation from various officials, collection of data has been a serious problem. This is mostly because of the lack of proper information system. The records room maintenance was not good. So availability of past data was very difficult. Even the annual reports which are the main sources of data in this study were not handed over for xerox purpose.

... ...