

## **CHAPTER – 6**

# **AN ANALYTICAL STUDY OF** **INVENTORY MANAGEMENT IN** **SIMBHAOLI SUGARS LTD.**

Just like Mawana Sugars Limited, at Simbhaoli Sugars Limited also, the inventories are classified into the following *four* main categories-

**1.STORES, SPARE PARTS, TOOLS & APPLIANCES**

**2.RAW MATERIALS**

**3.PROCESS STOCKS**

**4.FINISHED GOODS**

The details of which have already been discussed and described in the previous chapter no.05

### **6.1 Management of Inventory in**

#### **Simbhaoli Sugars Limited**

As stated earlier, the researcher was not able to get the desired & detailed information regarding the inventory

policy, techniques etc. from the management of both the sugar mills; as such the researcher has to rely on the secondary data / information available at the internet and websites of both these companies.

Even then the analysis was conducted and results were drawn and interpreted with the help of data available, as under-

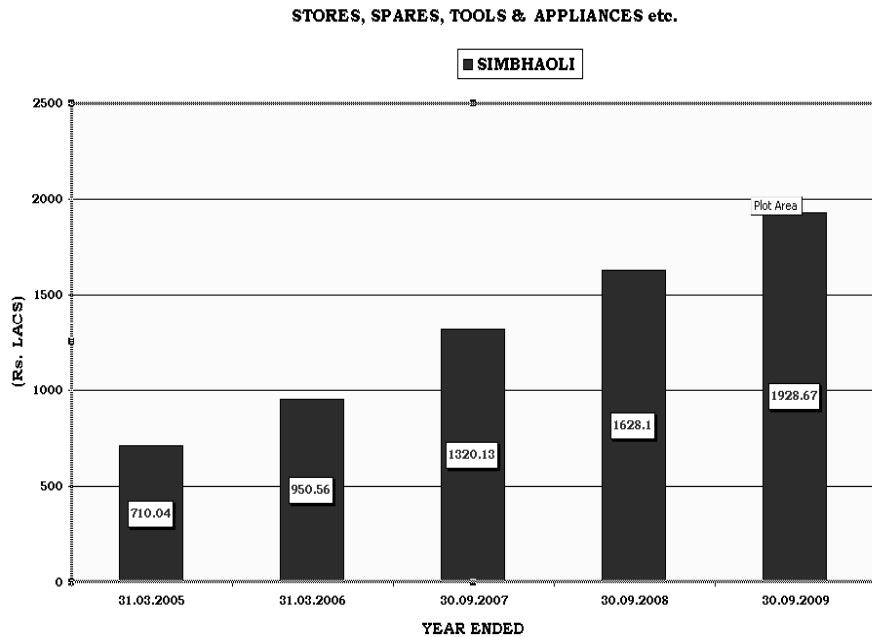
**6.1 (A) STORES & SPARES:** The absolute and relative changes (i.e. *changes in percentage*) that took place in the stock level of stores and spares can be enumerated with the help of following table –

**TABLE NO. 6.1**  
**SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE**  
**STOCK OF STORES & SPARES / TOOLS & APPLIANCES**

YEAR ENDED	STOCK –STORES & SPARES	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	710.04		
31.03.2006	950.56	240.52	34
30.09.2007	1320.13	369.57	39
30.09.2008	1628.10	307.97	23
30.09.2009	1928.67	300.57	18
<i>Source : Annual Reports of Simbhaoli Sugars Limited</i>			

It is clear from the above table that there is a rapid increase of around 40% in the level of stores & spares maintained by Simbhaoli Sugars Limited in the initial two

years of the study period. But it fell down sharply by more than 50% and came down to 18% in the last year. This whole situation can be reflected at a glance with the help of the following graph –



*As the Simbhaoli Sugars Limited (SSL) has changed its financial year from March end to September end in the financial year 2006-07, because of this its financial year 2006-07 comprises of 18 months instead of usual period of 12 months. Thus, in order to make available data comparable, the published data is proportionately changed & modified to 12 months period, which bring altogether different picture of its business operations. It has affected several items, viz., cost of goods sold, raw material consumed, inventory turnover ratio, inventory holding period etc., along with inventories at the end of not only*

this financial year but also the immediately following financial year 2007-08. The year of change and the corresponding modified data are shown in the following tables with yellow background and the affected succeeding & preceding years' data with green background, in order to make them easily identifiable.

Accordingly the results obtained can be described as under-

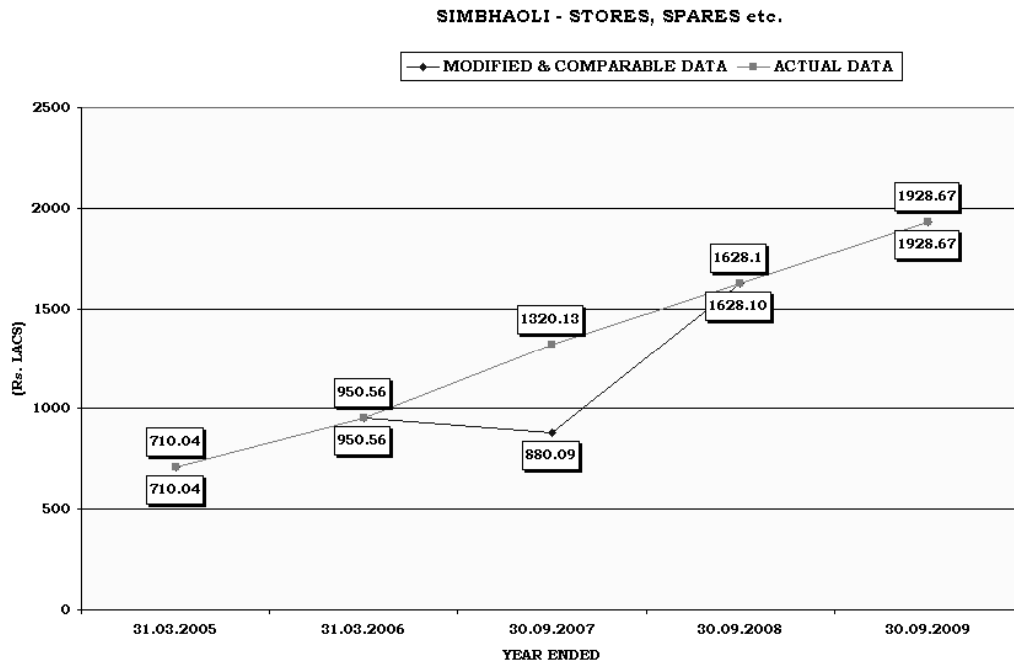
**TABLE NO. 6.2**

**SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE  
STOCK OF STORES & SPARES / TOOLS & APPLIANCES**

<b>STORES &amp; SPARES / TOOLS &amp; APPLIANCES (MODIFIED &amp; COMPARABLE)</b>			
<b>YEAR ENDED</b>	<b>STOCK</b>	<b>CHANGE</b>	
	(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	710.04		
31.03.2006	950.56	240.52	34
30.09.2007	880.09	-70.47	-7
30.09.2008	1628.10	748.01	85
30.09.2009	1928.67	300.57	18

This has resulted in changes in the absolute figure from a positive change of Rs. 369.57 lacs to a negative change (i.e. decrease) of Rs. 70.47 lacs resulting into 7% decrease in the figures of stores, spares etc., in place of 39% increase, as shown earlier. This has also affected the next year 2007-08 figures and has resulted in 85% increase instead of earlier recorded increase of 23% only. Thus, it

seems that the change of financial year from 12 months to 18 months has helped SSL to portray an altogether better picture of its financial results, which itself is evidenced from the changes noted above. This can be shown with the help of graph too -



**6.1 (B) RAW MATERIALS:** Similarly, the absolute changes and changes in percentage in the stock level of raw materials, components etc. can also be described with the help of following table -

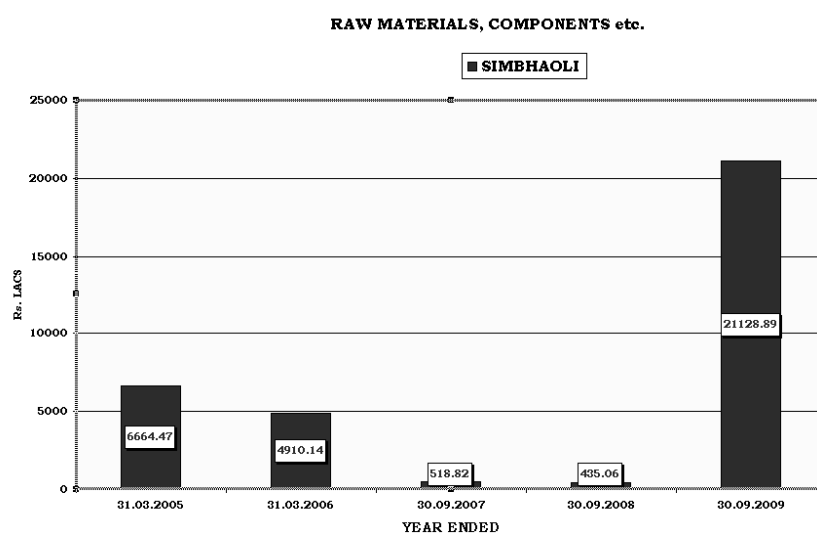
### TABLE NO. 6.3

#### SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE STOCK OF RAW MATERIAL

YEAR ENDED	STOCK - RAW MATERIAL	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	6664.47		
31.03.2006	4910.14	-1754.33	-26
30.09.2007	518.82	-4391.32	-89
30.09.2008	435.06	-83.76	-16
30.09.2009	21128.89	20693.83	4757

Source : Annual Reports of Simbhaoli Sugars Limited

It is quite clear from the above that there is a wide fluctuation in the level of raw materials too which remain negative in the first three years but rose to extraordinary heights (i.e. extreme positive) in the year 2008-2009. This situation can also be reflected with the help of the following graph -



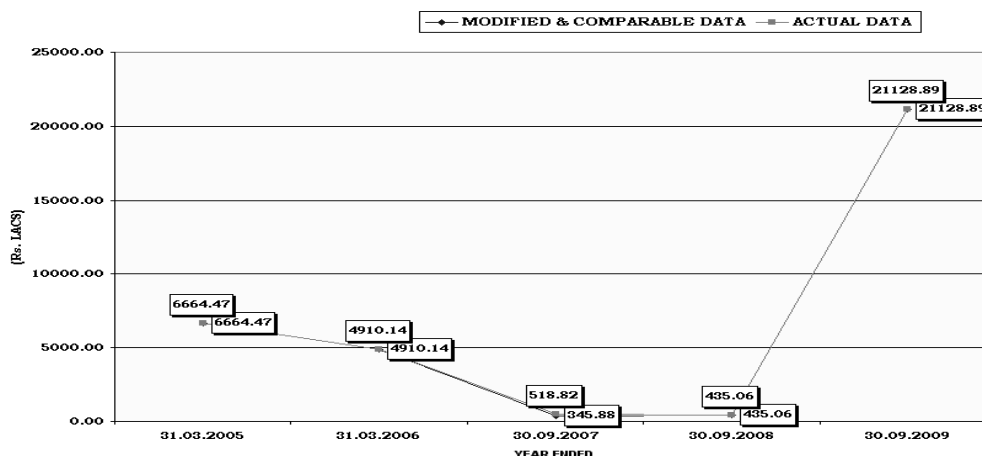
But, the picture portrayed by the **modified and comparable data** can be enumerated as under-

**TABLE NO. 6.4**  
**SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE**  
**STOCK OF RAW MATERIAL, COMPONENTS etc.**

<b>RAW MATERIALS, COMPONENTS etc.</b> <b>(<i>MODIFIED &amp; COMPARABLE</i>)</b>			
<b>YEAR ENDED</b>	<b>STOCK</b>	<b>CHANGE</b>	
	<b>(Rs.Lacs)</b>	<b>(Rs.Lacs)</b>	<b>(%)</b>
<b>31.03.2005</b>	<b>6664.47</b>		
<b>31.03.2006</b>	<b>4910.14</b>	<b>-1754.33</b>	<b>-26</b>
<b>30.09.2007</b>	<b>345.88</b>	<b>-4564.26</b>	<b>-93</b>
<b>30.09.2008</b>	<b>435.06</b>	<b>89.18</b>	<b>26</b>
<b>30.09.2009</b>	<b>21128.89</b>	<b>20693.83</b>	<b>4757</b>

It is quite clear that earlier the change that was recorded as (-) 89 % and (-) 16% during the years 2006-07 & 2007-08 respectively, now becomes (-) 93% and (+) 26%, showing a further decrease of 6% in 2006-07 on one hand and an increase of 42% in 2007-08, on the other. These oscillating changes can be easily portrayed with the help of graph, as under –

SIMBHAOLI - RAW MATERIALS , COMPONENTS etc.



**6.1 (C) WORK IN PROGRESS:** Likewise, the absolute and relative changes in the stock level of work in progress can also be analysed with the help of following table-

**TABLE NO. 6.5**

**SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE STOCK OF WORK IN PROGRESS**

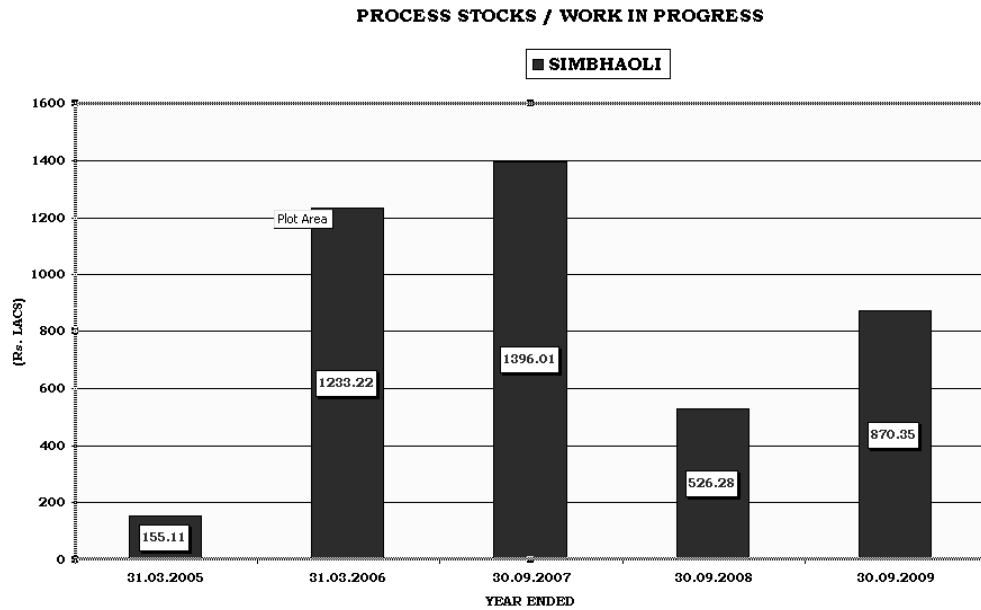
YEAR ENDED	STOCK - WORK IN PROGRESS	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	155.11		
31.03.2006	1233.22	1078.11	695
30.09.2007	1396.01	162.79	13
30.09.2008	526.28	-869.73	-62
30.09.2009	870.35	344.07	65

Source : Annual Reports of Simbhaoli Sugars Limited

It is evident from the above table that there is a sudden increase of 695% in the year 2005-2006, though followed by an increase but it is only 13% in the next financial year (2006-2007). This positive picture turned



negative in the year 2007-2008, followed by almost similar change but in the reverse direction. These ups and downs can be portrayed with the help of following graph –



But, the modified and comparable data can be shown with the help of following table –

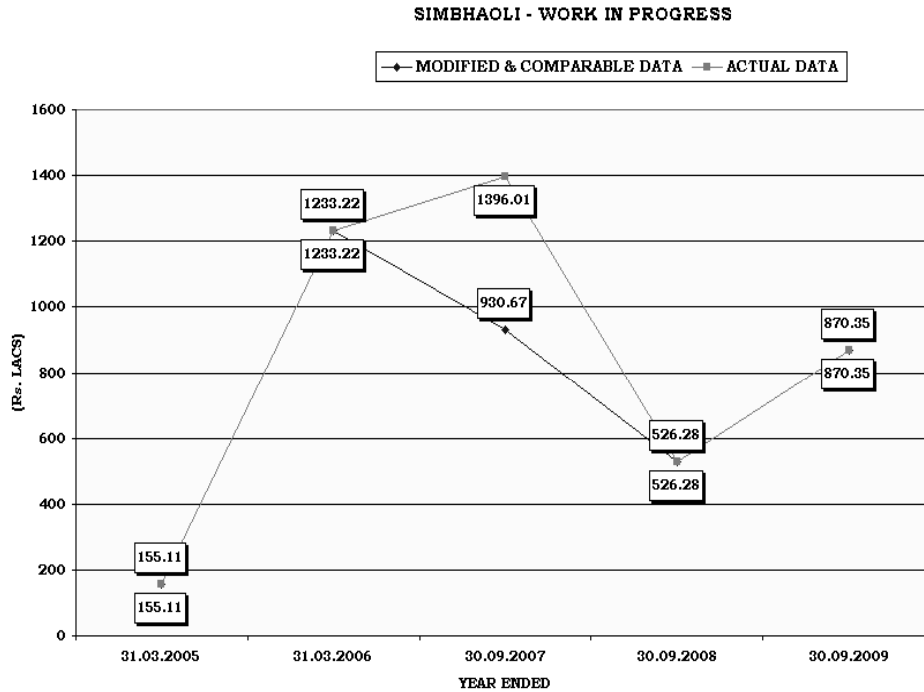
## TABLE NO. 6.6

### SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE

#### STOCK OF WORK IN PROGRESS

<b>PROCESS STOCKS / WORK IN PROGRESS (MODIFIED &amp; COMPARABLE)</b>			
<b>YEAR ENDED</b>	<b>STOCK</b>	<b>CHANGE</b>	
		<b>(Rs.Lacs)</b>	<b>(%)</b>
<b>31.03.2005</b>	<b>155.11</b>		
<b>31.03.2006</b>	<b>1233.22</b>	<b>1078.11</b>	<b>695</b>
<b>30.09.2007</b>	<b>930.67</b>	<b>-302.55</b>	<b>-25</b>
<b>30.09.2008</b>	<b>526.28</b>	<b>-404.39</b>	<b>-43</b>
<b>30.09.2009</b>	<b>870.35</b>	<b>344.07</b>	<b>65</b>

This also brings an altogether different picture of changes in the figures of 2006-07 & 2007-08. Earlier, in 2006-07, there was an increase of 13% (i.e. Rs.162.79 lacs) in comparison to the figures of 2005-06, which now reduces to (-) 25% (i.e. Rs.302.55 lacs) .The next year 2007-08, also witnessed the changes and the reduction of 62% (i.e. Rs.869.73 lacs) changed to a reduction of 43% (Rs. 404.39 lacs). A graphical presentation of the above can help in easily understanding this situation, as under-



**6.1 (D) FINISHED GOODS:** The absolute and relative changes in the finished goods stock can also be analysed with the help of following table-

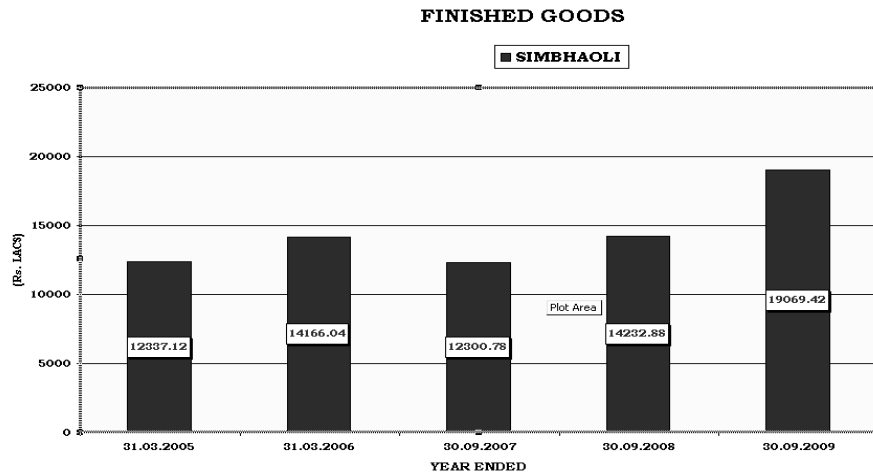
**TABLE NO. 6.7**

**SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE STOCK OF FINISHED GOODS**

YEAR ENDED	STOCK - FINISHED GOODS	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	12337.12		
31.03.2006	14166.04	1828.92	15
30.09.2007	12300.78	-1865.26	-13
30.09.2008	14232.88	1932.10	16
30.09.2009	19069.42	4836.54	34

*Source : Annual Reports of Simbhaoli Sugars Limited*

It is clear from the above table that after positive and negative fluctuations in the first two years (i.e. 2005-2006 and 2006-2007), the finished goods stock position improved and stabilized to a certain extent but again in the year 2008-2009 it became more than two times of the change noticed in the year 2007-2008. This situation can also be easily reflected with the help of the following graph –



Here also, the changes due to modified and comparable data, can be seen quite prominently –

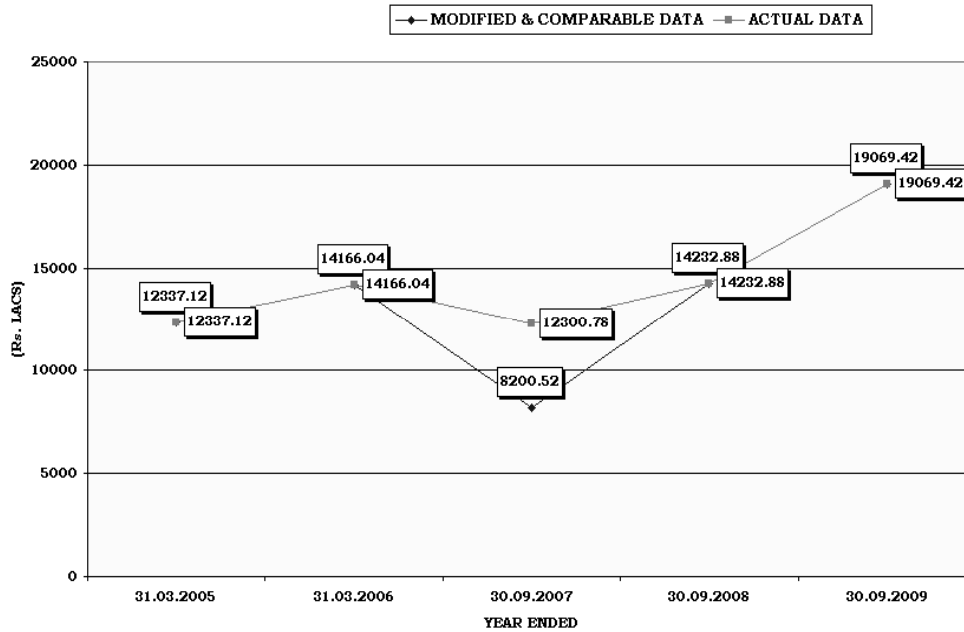
## TABLE NO. 6.8

### SHOWING ABSOLUTE AND RELATIVE CHANGES IN THE STOCK OF FINISHED GOODS

<b>FINISHED GOODS</b> <b>(MODIFIED &amp; COMPARABLE)</b>			
<b>YEAR ENDED</b>	<b>STOCK</b>	<b>CHANGE</b>	
	<b>(Rs.Lacs)</b>	<b>(Rs.Lacs)</b>	<b>(%)</b>
31.03.2005	12337.12		
31.03.2006	14166.04	1828.92	15
30.09.2007	8200.52	-5965.52	-42
30.09.2008	14232.88	6032.36	74
30.09.2009	19069.42	4836.54	34

Thus the earlier change of Rs.1,865.26 [i.e.(-) 13%] of 2006-07 increases to Rs.5,965.52 lacs [i.e. (-)42%]. And the earlier increase of 16% (pertaining to the financial year 2007-08) increased to the level of 74%, recording an absolute change of Rs.6,032.36 lacs from the earlier level of Rs.1,932.10 lacs. The following graph would clear these changes quite easily –

**SIMBHAOLI - FINISHED GOODS**



These changes are sufficient enough to prove that what sort of picture Simbhaoli Sugars Limited has tried to portray in front of the public at large, especially its stakeholders, and how things are tried to be concealed and manipulated in order to give better picture of its operating results.

## 6.2 Inventory Turnover Ratios of Simbhaoli Sugars Limited

**INVENTORY TURNOVER RATIO:** *As already mentioned, the inventory turnover is an equation that measures the number of times inventory is sold or used over in a period such as a year. Inventory turnover is also known as inventory turns, stock turn, stock turns, turns, and stock turnover. Thus, various turnover ratios of Simbhaoli Sugars Limited are discussed, one-by-one, as under -*

### 6.2 (A) **RAW MATERIAL TURNOVER RATIO:**

The Raw Material Turnover ratio of the period under study can be described with the help of following table -

**TABLE NO. 6.9**

**SHOWING THE FIGURES OF RAW MATERIAL TURNOVER RATIO**

RAW MATERIAL TURNOVER RATIO	
YEAR ENDED	TIMES
31.03.2006	5.21
30.09.2007	14.47
30.09.2008	55.35
30.09.2009	4.66
<i>Source : Annual Reports of Simbhaoli Sugars Limited</i>	

It is clear from the above table that there is a wide fluctuation in the level of raw materials turnover ratio during the study period as it was 5.21 times in the year 2005-2006 which increased to nearly three times in the next

year 2006-2007. Furthermore, it rose to 55.35 times in the subsequent year (i.e. 2007-2008). But it dipped sharply in the last year 2008-2009 and touched the minimum level of the study period i.e. 4.66 times.

But, the modified & comparable data has affected it also, as is evident from the following table–

**TABLE NO. 6.10**  
**SHOWING THE FIGURES OF RAW MATERIAL TURNOVER RATIO**

<b>RAW MATERIAL TURNOVER RATIO (MODIFIED &amp; COMPARABLE)</b>	
<b>YEAR ENDED</b>	<b>TIMES</b>
<b>31.03.2006</b>	<b>5.21</b>
<b>30.09.2007</b>	<b>9.97</b>
<b>30.09.2008</b>	<b>67.60</b>
<b>30.09.2009</b>	<b>4.66</b>

Here, the raw material turnover ratio of 2006-07 dipped to 9.97 times from an earlier ratio of 14.47 times. But, in the next year 2007-08 this ratio increased from the level of 55.35 to 67.60 times.

**6.2 (B) WORK IN PROGRESS TURNOVER RATIO:** The Work in Progress Turnover ratio of the study period can be described with the help of following table –



**TABLE NO. 6.11**

**SHOWING THE FIGURES OF WORK IN PROGRESS TURNOVER RATIO**

WORK IN PROGRESS TURNOVER RATIO	
YEAR ENDED	TIMES
31.03.2006	53.32
30.09.2007	50.99
30.09.2008	41.37
30.09.2009	90.17

**Source : Annual Reports of Simbhaoli Sugars Limited**

It is clear from the above table that the work-in-progress turnover ratio registered a downfall in the first three years of study period (i.e. from 2005-2006 to 2007-2008) and dipped to the lowest level of the study period in the year 2007-2008 (i.e. 41.37 times) but in the immediately next following year 2008-2009 it touched the highest level of the study period i.e. 90.17 times.

The effect of *modified & comparable* data can be reproduced as under –

**TABLE NO. 6.12**

**SHOWING THE FIGURES OF WORK IN PROGRESS TURNOVER RATIO**

<b>WORK IN PROGRESS TURNOVER RATIO</b>	
<b>(MODIFIED &amp; COMPARABLE)</b>	
<b>YEAR ENDED</b>	<b>TIMES</b>
<b>31.03.2006</b>	53.32
<b>30.09.2007</b>	41.31
<b>30.09.2008</b>	54.58
<b>30.09.2009</b>	90.17

As can be seen from the above, 2006-07 work in progress turnover ratio dipped to 41.31 times in comparison to the earlier calculated figure of 50.99 times. And next year's ratio (i.e. 2007-08) has shown changes in opposite direction and increased to 54.58 times in comparison to 41.37 times, calculated earlier.

**6.2 (C) FINISHED GOODS TURNOVER RATIO:** The Finished Goods Turnover ratio of the study period can be analyzed with the help of following table -

**TABLE NO. 6.13**

**SHOWING THE FIGURES OF FINISHED GOODS TURNOVER RATIO**

<b>FINISHED GOODS TURNOVER RATIO</b>	
<b>YEAR ENDED</b>	<b>TIMES</b>
<b>31.03.2006</b>	<b>2.79</b>
<b>30.09.2007</b>	<b>5.07</b>
<b>30.09.2008</b>	<b>3.00</b>
<b>30.09.2009</b>	<b>3.78</b>
<b>Source : Annual Reports of Simbhaoli Sugars Limited</b>	

This ratio clearly shows oscillating changes throughout the years under study, which started with the lowest level of study period in the year 2005-2006 (i.e. 2.79 times) then reached the highest level in the subsequent year 2006-2007 (i.e.5.07 times) followed by a downfall in the next year 2007-2008 and then rose to 3.78 times in the last year 2008-2009.

But, if we took the modified data, the table emerges somewhat like as under –

**TABLE NO. 6.14**

**SHOWING THE FIGURES OF FINISHED GOODS TURNOVER RATIO**

FINISHED GOODS TURNOVER RATIO <i>(MODIFIED &amp; COMPARABLE)</i>	
YEAR ENDED	TIMES
31.03.2006	2.79
30.09.2007	4.00
30.09.2008	3.54
30.09.2009	3.78

In the year of change (i.e. 2006-07), the finished goods turnover ratio changed from 5.07 times and stands reduced to 4.00 times. The next year 2007-08 also got affected by this change and it increased to 3.54 times instead of 3.00 times, calculated earlier.

### 6.3 Inventory Holding Period of Simbhaoli Sugars Limited

As already discussed in the chapter no.05, the average inventory period is also known as **Days Inventory** and **Inventory Holding Period**, which calculates the average time for which inventory is normally held.

The inventory holding period of various inventory items of Simbhaoli Sugars Limited is calculated & discussed as under-

### **6.3 (A) RAW MATERIAL INVENTORY HOLDING PERIOD:**

The Raw Material Inventory Holding Period of the study period can be analyzed with the help of following table –

**TABLE NO. 6.15**

**SHOWING THE FIGURES OF RAW MATERIAL INVENTORY HOLDING PERIOD**

<b>INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS)</b>	
<b>YEAR ENDED</b>	<b>MONTHS</b>
<b>31.03.2006</b>	<b>2.30</b>
<b>30.09.2007</b>	<b>1.24</b>
<b>30.09.2008</b>	<b>0.22</b>
<b>30.09.2009</b>	<b>2.57</b>
<b>Source: Annual Reports of Simbhaoli Sugars Limited</b>	

The above table shows that initially in the year 2005-2006 raw material holding period was 2.30 months which subsequently decreased to 1.24 in the next year and this reduction continued in the subsequent year 2007-2008 also

where it touched the lowest level of study period (i.e. 0.22 months) but suddenly jumped to 2.57 months in the last year 2008-2009.

But incorporation of modified & comparable data, brings the following picture of raw material inventory holding period –

**TABLE NO. 6.16**

**SHOWING THE FIGURES OF RAW MATERIAL INVENTORY HOLDING PERIOD**

<b>RAW MATERIAL INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS) (MODIFIED &amp; COMPARABLE)</b>	
<b>YEAR ENDED</b>	<b>MONTHS</b>
<b>31.03.2006</b>	<b>2.30</b>
<b>30.09.2007</b>	<b>1.20</b>
<b>30.09.2008</b>	<b>0.18</b>
<b>30.09.2009</b>	<b>2.57</b>

A change is noted, as 2006-07 figures stand reduced to 1.20 months instead of 1.24 months (calculated earlier) though next year (i.e. 2007-08) showed more changes as it reduced to 0.18 months from earlier calculated 0.22 months.

**6.3 (B) WORK IN PROGRESS INVENTORY HOLDING PERIOD:**

The Work in Progress Inventory Holding Period of Simbhaoli Sugars Limited for the study period can also be analyzed with the help of following table –

**TABLE NO. 6.17**

**SHOWING THE FIGURES OF WORK IN PROGRESS INVENTORY  
HOLDING PERIOD**

INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS)	
YEAR ENDED	MONTHS
31.03.2006	0.23
30.09.2007	0.35
30.09.2008	0.29
30.09.2009	0.13
<i>Source: Annual Reports of Simbhaoli Sugars Limited</i>	

The average inventory holding period of work in progress registered an increase in the first two years 2005-2006 and 2006-2007 but then started decreasing in the next year 2007-2008. This downfall continued in the last year 2008-2009 too wherein it touched the lowest level of study period (i.e. 0.13 months).

But, recalculation of this ratio with the help of modified data, brings following changes to the figures calculated earlier –

**TABLE NO. 6.18**

**SHOWING THE FIGURES OF WORK IN PROGRESS INVENTORY**  
**HOLDING PERIOD**

WORK IN PROGRESS INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS) (MODIFIED & COMPARABLE)	
YEAR ENDED	MONTHS
31.03.2006	0.23
30.09.2007	0.29
30.09.2008	0.22
30.09.2009	0.13

Both the years, have shown a decreasing trend. Year 2006-07 figures reduced to 0.29 months from 0.35 months and year 2007-08 inventory holding period reduced to 0.22 months from 0.29 months.

**6.3 (C) FINISHED GOODS INVENTORY HOLDING PERIOD:**

The Finished Goods Inventory Holding Period for the study period can be tabulated as under –

**TABLE NO. 6.19**

**SHOWING THE FIGURES OF FINISHED GOODS INVENTORY**  
**HOLDING PERIOD**



INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS)	
YEAR ENDED	MONTHS
31.03.2006	4.30
30.09.2007	3.55
30.09.2008	4.00
30.09.2009	3.17
Source: <i>Annual Reports of Simbhaoli Sugars Limited</i>	

The above table also shows the oscillating changes during the study period. Initially it registered the highest of study period figure of 4.30 months but then reduced to 3.55 months in the immediately following year 2006-2007. But in the subsequent year 2007-2008 it again rose to 4.00 months which is followed by a lesser figure of 3.17 months (*which is the lowest level of the study period under consideration*) in the last financial year 2008-2009.

But, the incorporation of modified & comparable data, have shown its effect on this ratio too, which can be evidenced from the following table –

**TABLE NO. 6.20**  
**SHOWING THE FIGURES OF FINISHED GOODS INVENTORY**  
**HOLDING PERIOD**

<b>FINISHED GOODS INVENTORY HOLDING PERIOD</b> i.e. AVERAGE AGE OF INVENTORY (IN MONTHS) <b>(MODIFIED &amp; COMPARABLE)</b>	
YEAR ENDED	MONTHS
31.03.2006	4.30
30.09.2007	3.00
30.09.2008	3.39
30.09.2009	3.17

There is a change in the inventory holding period of finished goods. In the year 2006-07, this figure reduced to 3.00 months from 3.55 months, calculated earlier and in the next year (i.e. 2007-08) it dipped to 3.39 months from the earlier calculated figure of 4.00 months.

## 6.4 Trend Analysis of Inventory

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## Limited

As stated earlier, due to unavailability of relevant and up-to-date data and other related information pertaining to the various inventory items of Simbhaoli Sugars Limited (*as mentioned in the tables & graphs above*), the researcher opines that it is difficult to judge and form any opinion about the actual trends of various inventory items. But on the other hand, it altogether seems necessary to analyse the long-term movements of all the inventory items. For this, the researcher has used the ***least square method*** in order to portray a better picture of various inventory items of Simbhaoli Sugars Limited.

### **INVENTORY ANALYSIS USING TREND**

As discussed in the previous chapter no.05, trend analysis is often used to analyze inventory figures to identify significant changes in the company's operations. Inventory analysis using trend analysis over a period of time provides information that is useful in evaluating operating performance and assessing the current year's expected condition of a company's inventory. This can be done either over a two year or five year period, depending on the extent of information required for the analysis.

Here, the researcher has spread the inventory analysis over a time-period of *five years* using trend analysis in order to get proper picture of company's future inventory position.

**6.4 (A) STORES, SPARES etc.:** The trend analysis of stores, spares etc. of Simbhaoli Sugars Limited can be tabulated as under -

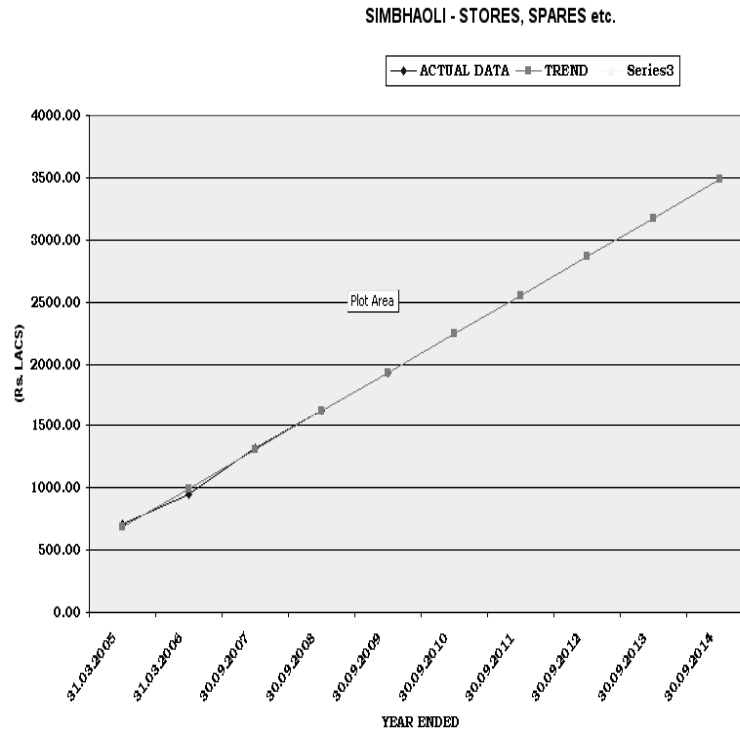
**TABLE NO. 6.21**

**SHOWING TREND VALUES OF STORES, SPARES etc.**

YEAR ENDED	STORES, SPARES etc. (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 1,307.50 + 311.48 x$
31.03.2005	710.04	684.54
31.03.2006	950.56	996.02
30.09.2007	1320.13	1307.50
30.09.2008	1628.10	1618.98
30.09.2009	1928.67	1930.46
30.09.2010	-----	2241.94
30.09.2011	-----	2553.42
30.09.2012	-----	2864.90
30.09.2013	-----	3176.38
30.09.2014	-----	3487.86

The above table shows that there is an increasing trend of Rs. 311.48 lacs per year in the closing stock of stores, spares etc. which itself is subject to change in the prices of stores & spares items concerned due to fluctuations in the purchasing power of rupee in the future and also further imposition or withdrawal of tax, levy, cess etc. pertaining to these items.

The same can also be shown with the help of graph, as under-



But the *modified and comparable data* brings altogether somewhat different picture of trend values of stores, spares etc., as shown in the table 6.22 –

**TABLE NO. 6.22**

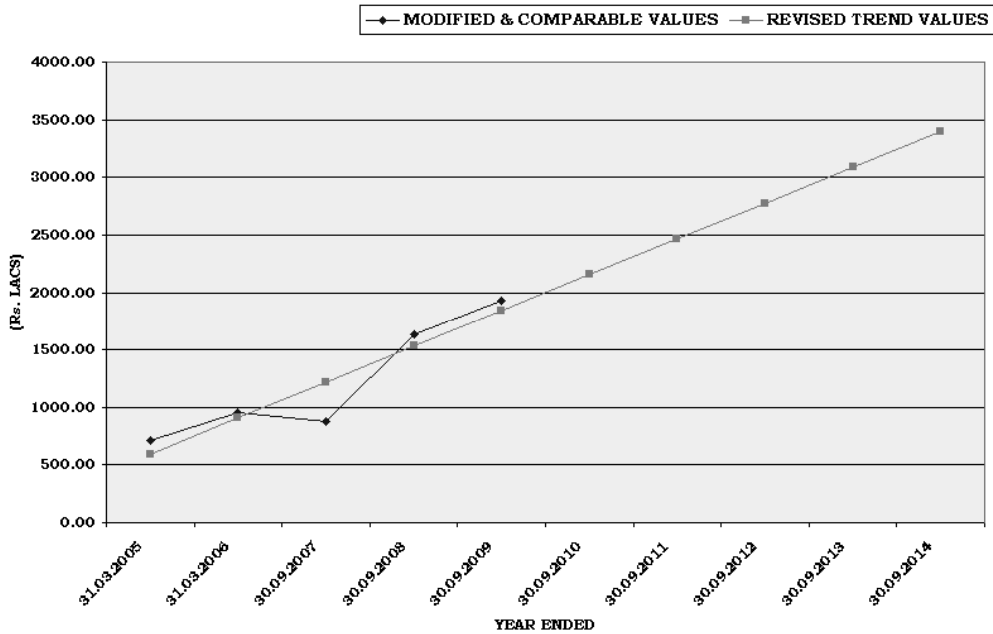
**SHOWING REVISED TREND VALUES OF STORES, SPARES etc.**

***MODIFIED & COMPARABLE DATA***

YEAR ENDED	STORES, SPARES etc. (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 1219.49 + 311.48x$
31.03.2005	710.04	596.53
31.03.2006	950.56	908.01
30.09.2007	880.09	1219.49
30.09.2008	1628.10	1530.97
30.09.2009	1928.67	1842.45
30.09.2010	-----	2153.93
30.09.2011	-----	2465.41
30.09.2012	-----	2776.89
30.09.2013	-----	3088.37
30.09.2014	-----	3399.85

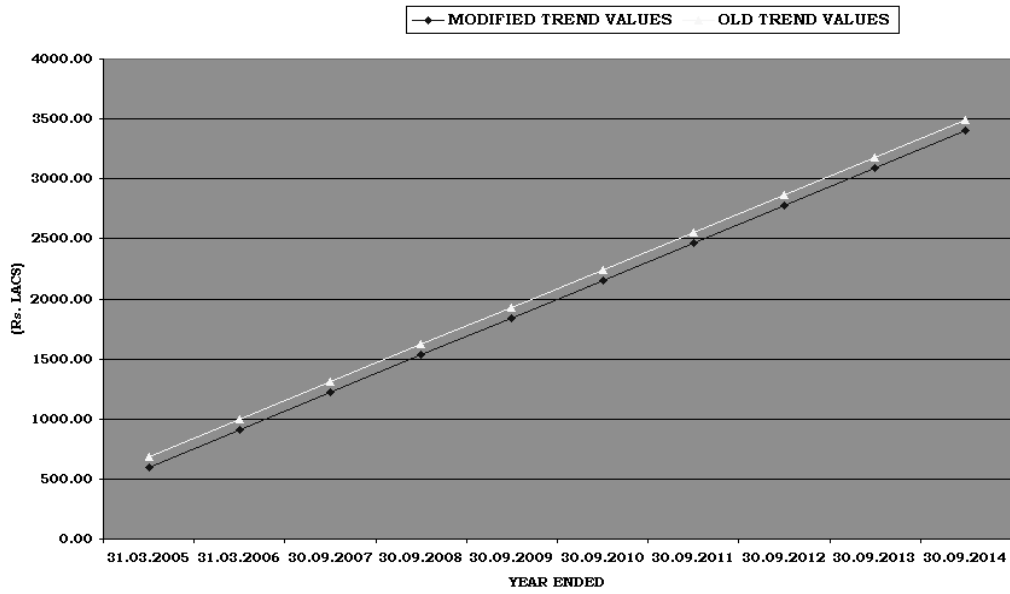
There is no change in the value of **b** (i.e. yearly increase) of Rs.311.48 lacs, calculated earlier because of the reason that the year 2006-07, wherein proportionate changes are made, falls exactly in the mid of five years, the data of which are used originally in order to calculate trend values up to 2013-14. But the value of **a** in the equation stands change and it has become now Rs. 1219.49 in place of earlier calculated figure of Rs. 1,307.50 lacs. This has altogether affected the trend values of all the years under consideration i.e. from 2004-05 to 2013-14. The comparative analysis of these two data, recorded earlier with the help of actual data and now re-calculated with the help of modified & comparable data, can be easily portrayed with the help of a graph as under –

**SIMBHAOLI - STORES, SPARES etc. TREND VALUES**



And when we compare these two trend values (based upon *actual data & modified data*) simultaneously with each other, the picture which comes in front of us, is somewhat like as under –

SIMBHAOLI - COMPARATIVE TREND VALUES OF STORES, SPARES etc.



**6.4 (B) RAW MATERIALS, COMPONENTS etc.:** The trend analyses of Raw Materials, Components etc. of Simbhaoli Sugars Limited can easily be assessed from the following table no. 6.23 -



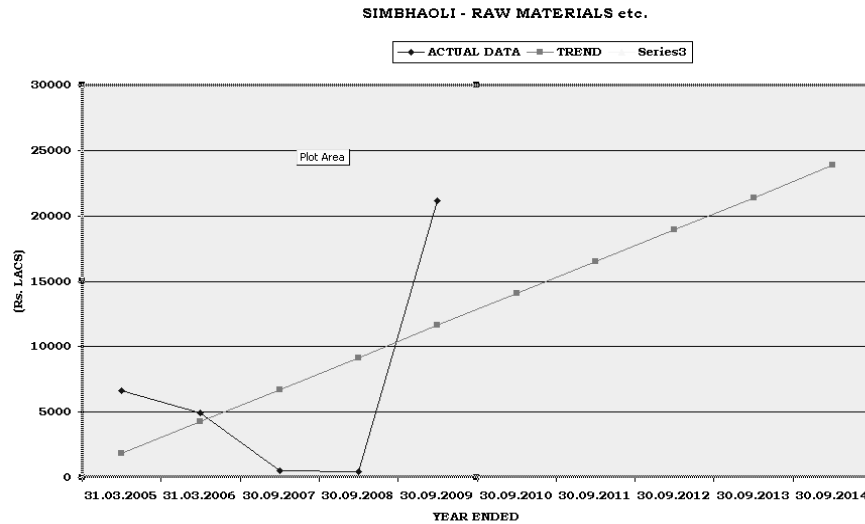
**TABLE NO. 6.23**

**SHOWING TREND VALUES OF RAW MATERIAL, COMPONENTS etc.**

YEAR ENDED	RAW MATERIAL, COMPONENTS etc. (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 6,731.48 + 2,445.38 x$
31.03.2005	6664.47	1840.72
31.03.2006	4910.14	4286.10
30.09.2007	518.82	6731.48
30.09.2008	435.06	9176.85
30.09.2009	21128.89	11622.23
30.09.2010	-----	14067.60
30.09.2011	-----	16512.98
30.09.2012	-----	18958.36
30.09.2013	-----	21403.73
30.09.2014	-----	23849.11

The above table shows that there is an increasing trend of Rs. 2445.38 lacs per year in the closing stock of raw materials, components etc. which is also subject to change in their prices due to fluctuations in the value of rupee in times to come and also imposition or withdrawal of tax, levy, cess etc. pertaining to these items.

The same can also be shown with the help of graph, as under-



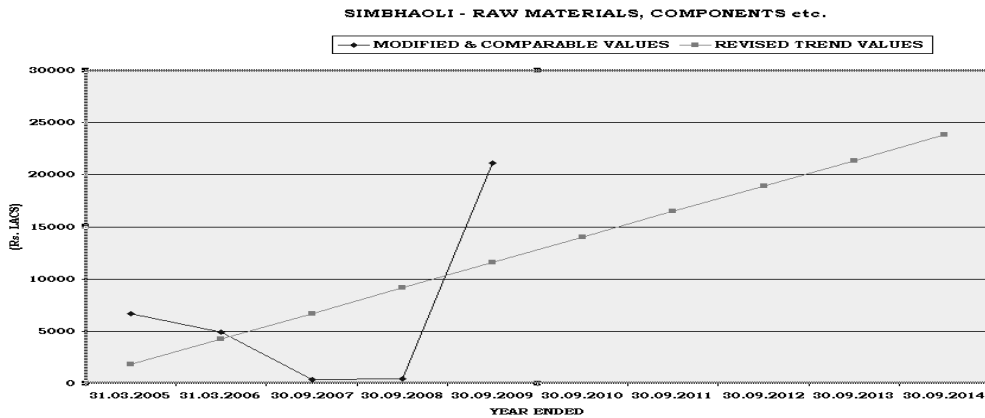
On the other hand, when we take into account the *modified & comparable data*, the following picture emerges –

**TABLE NO. 6.24**

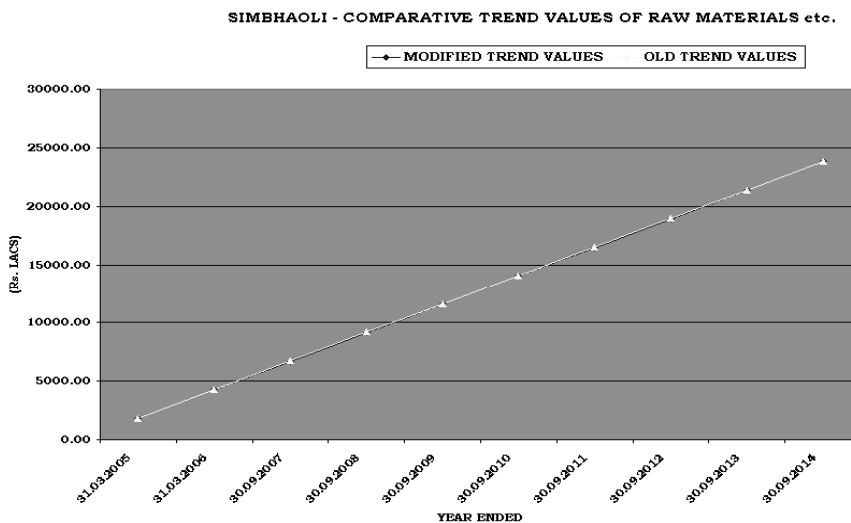
**SHOWING REVISED TREND VALUES OF RAW MATERIAL COMPONENTS etc.**

<b>MODIFIED &amp; COMPARABLE DATA</b>		
YEAR ENDED	RAW MATERIAL, COMPONENTS etc. (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 6696.89 + 2445.38x$
31.03.2005	6664.47	1806.14
31.03.2006	4910.14	4251.51
30.09.2007	345.88	6696.89
30.09.2008	435.06	9142.26
30.09.2009	21128.90	11587.64
30.09.2010	-----	14033.02
30.09.2011	-----	16478.39
30.09.2012	-----	18923.77
30.09.2013	-----	21369.14
30.09.2014	-----	23814.52

The revised data brings a complete change in the trend values of all the ten years under consideration; though yearly remain same because of the reason stated earlier. This change can easily be understood with the help of following graph –



The two trend values (*based on modified & actual data*) when compared with each other, brings the following picture –



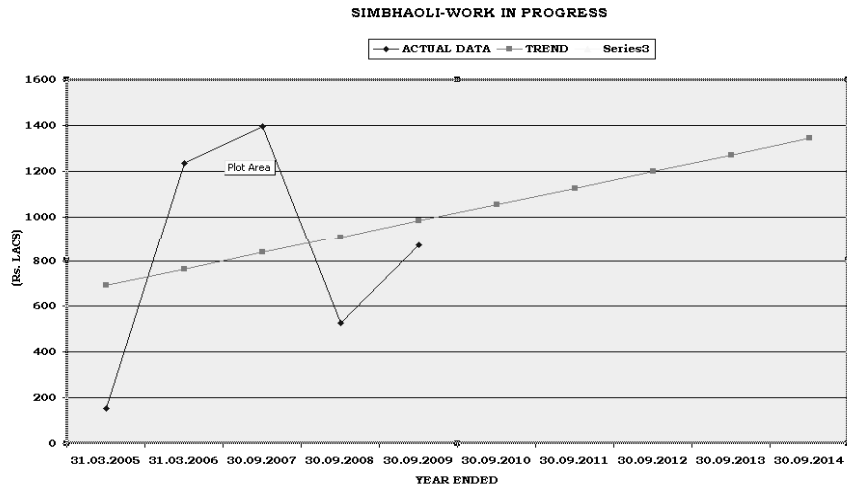
**6.4 (C) WORK IN PROGRESS:** The trend analyses of work in progress of Simbhaoli Sugars Limited can be judged from the following table-

**TABLE NO. 6.25**

**SHOWING TREND VALUES OF WORK IN PROGRESS etc.**

YEAR ENDED	WORK IN PROGRESS (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 836.19 + 72.35 x$
31.03.2005	155.11	691.49
31.03.2006	1233.22	763.84
30.09.2007	1396.01	836.19
30.09.2008	526.28	908.55
30.09.2009	870.35	980.90
30.09.2010	-----	1053.26
30.09.2011	-----	1125.61
30.09.2012	-----	1197.96
30.09.2013	-----	1270.32
30.09.2014	-----	1342.67

The above table shows that there is an increasing trend of Rs. 72.35 lacs per year in the closing stock of work in progress which is also subject to changes in the prices of various items of work in progress (viz., raw material, labour, overheads etc.) because of future fluctuations in the value of rupee and also due to increase / fresh imposition of tax, levy, cess etc. pertaining to these items or withdrawal thereof. The same can also be shown with the help of graph, as under-



The *modified* data brings into limelight the following changes in the trend values -

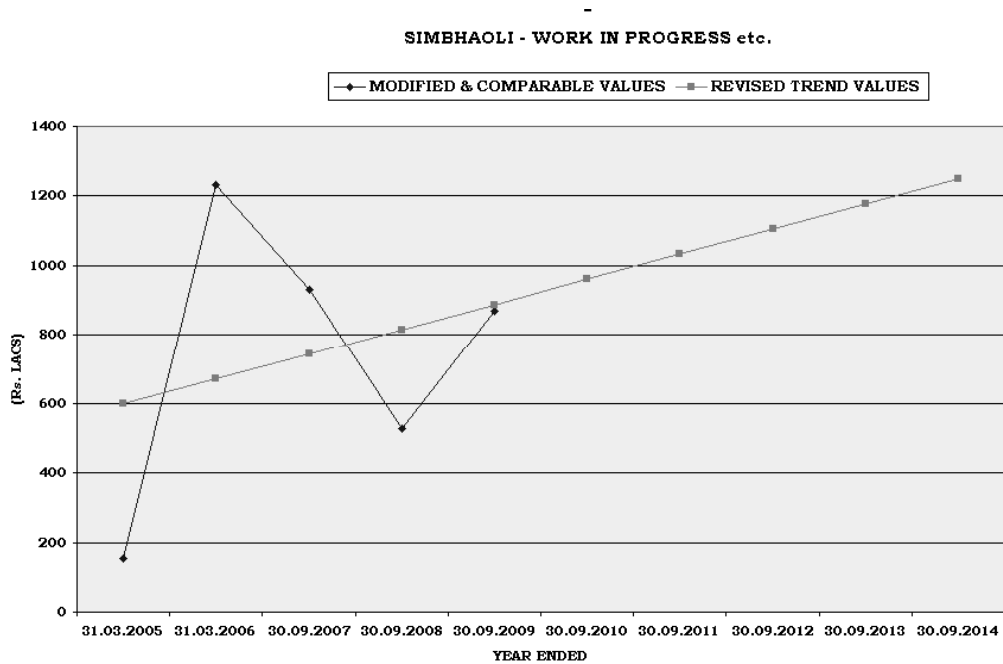
**TABLE NO. 6.26**

**SHOWING REVISED TREND VALUES OF WORK IN PROGRESS etc.**

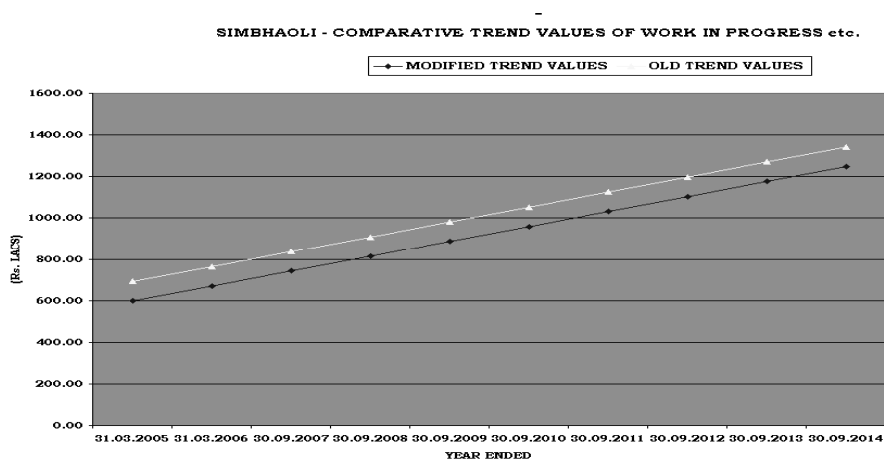
***MODIFIED & COMPARABLE DATA***

YEAR ENDED	WORK IN PROGRESS (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 743.13 + 72.35x$
31.03.2005	155.11	598.42
31.03.2006	1233.22	670.77
30.09.2007	930.67	743.13
30.09.2008	526.28	815.48
30.09.2009	870.35	887.83
30.09.2010	-----	960.19
30.09.2011	-----	1032.54
30.09.2012	-----	1104.90
30.09.2013	-----	1177.25
30.09.2014	-----	1249.60

Here too, the modified & comparable data for the year 2006-07 has brought complete change in the trend values of all the years concerned. This revised data and its impact can be observed with the help of following graph also-



A comparison of the trend values (*based on actual data & modified data*) brings to surface the following picture –



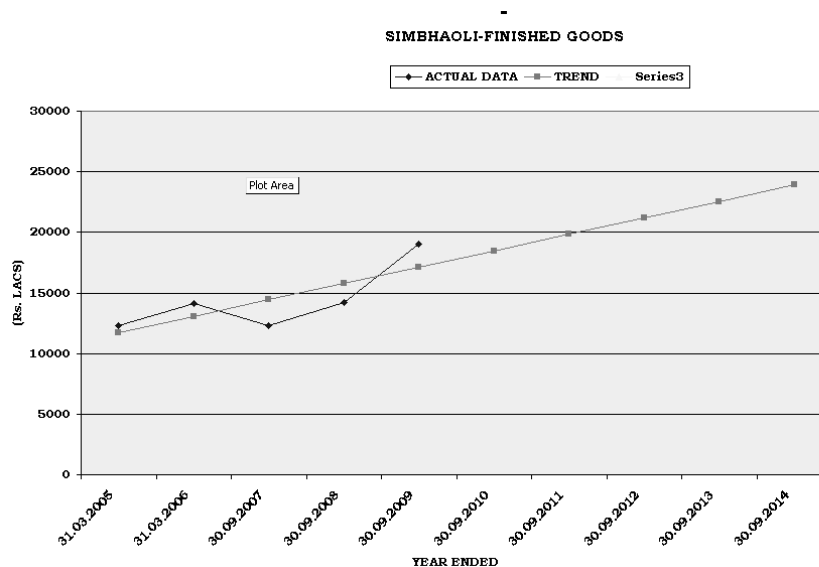
**6.4 (D) FINISHED GOODS:** The trend analyses of finished goods of Simbhaoli Sugars Limited can be tabulated as under:

**TABLE NO. 6.27**

**SHOWING TREND VALUES OF FINISHED GOODS etc.**

YEAR ENDED	FINISHED GOODS (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 14,421.25 + 1,353.14 x$
31.03.2005	12337.12	11714.96
31.03.2006	14166.04	13068.10
30.09.2007	12300.78	14421.25
30.09.2008	14232.88	15774.39
30.09.2009	19069.42	17127.54
30.09.2010	-----	18480.68
30.09.2011	-----	19833.82
30.09.2012	-----	21186.97
30.09.2013	-----	22540.11
30.09.2014	-----	23893.26

The above table shows that there is an increasing trend of Rs. 1353.14 lacs per year in the closing stock of finished goods which is also subject to change in the prices of various items of raw materials, work in progress etc. due to fluctuations in future in the rupee-value and also further changes i.e. increase / fresh imposition of tax, levy, cess etc. pertaining to these items or withdrawal thereof by the government. The same can also be shown with the help of graph, as under-



The modified & comparable figures of finished goods have brought following changes to the trend values –

**TABLE NO. 6.28**

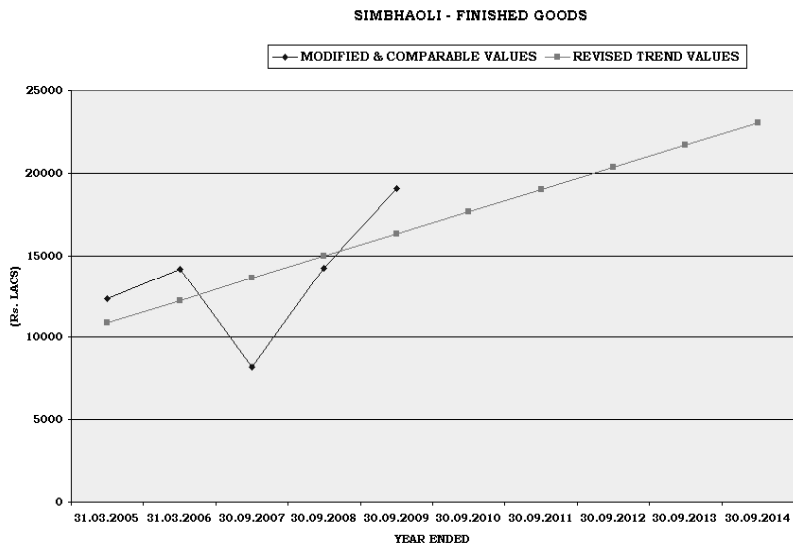
**SHOWING REVISED TREND VALUES OF FINISHED GOODS etc.**

***MODIFIED & COMPARABLE DATA***

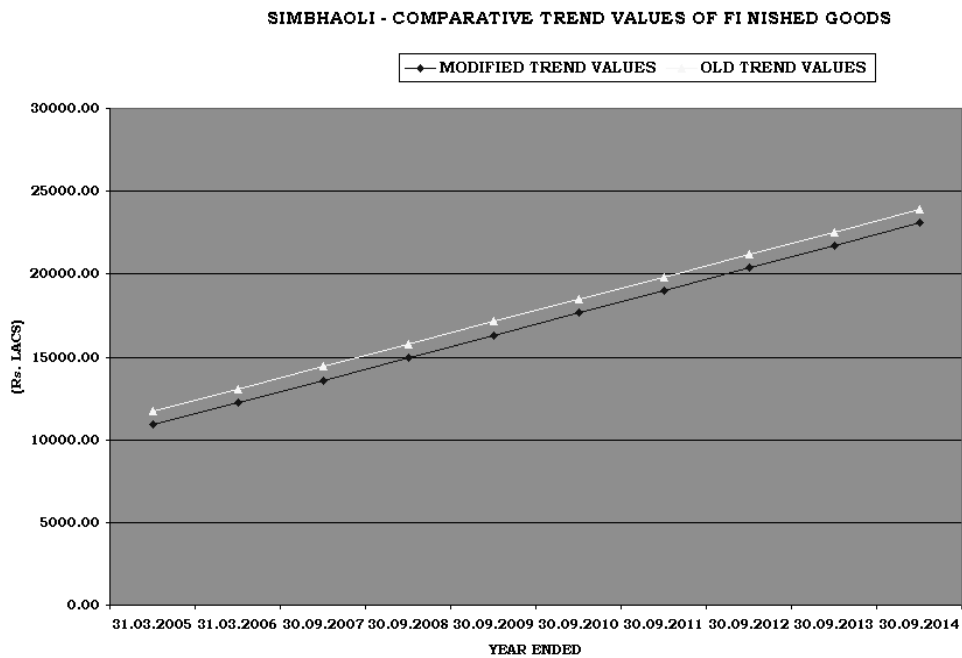
YEAR ENDED	FINISHED GOODS (Rs. LACS)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 13601.20 + 1353.14x$
31.03.2005	12337.10	10894.91
31.03.2006	14166.00	12248.05
30.09.2007	8200.52	13601.20
30.09.2008	14232.90	14954.34
30.09.2009	19069.40	16307.48
30.09.2010	-----	17660.63
30.09.2011	-----	19013.77
30.09.2012	-----	20366.92
30.09.2013	-----	21720.06
30.09.2014	-----	23073.20



Here also, the changes occurred can be observed with the help of following graph –



A comparative analysis of trend values (*modified & old*) can be observed with the help of following graph also –



## 6.5 Quantitative Trend Value Analysis

As discussed in the previous chapter no.05, in addition to above, it seems necessary for the researcher to touch those items also which directly or indirectly usually affects inventory levels. This includes chiefly quantitative details pertaining to production, sales, and raw material consumed along with, of course, the closing figures of inventories. The purchasing power of rupee is also affected by fluctuations in the exchange rates; it becomes necessary to conduct a quantitative analysis of trend values.

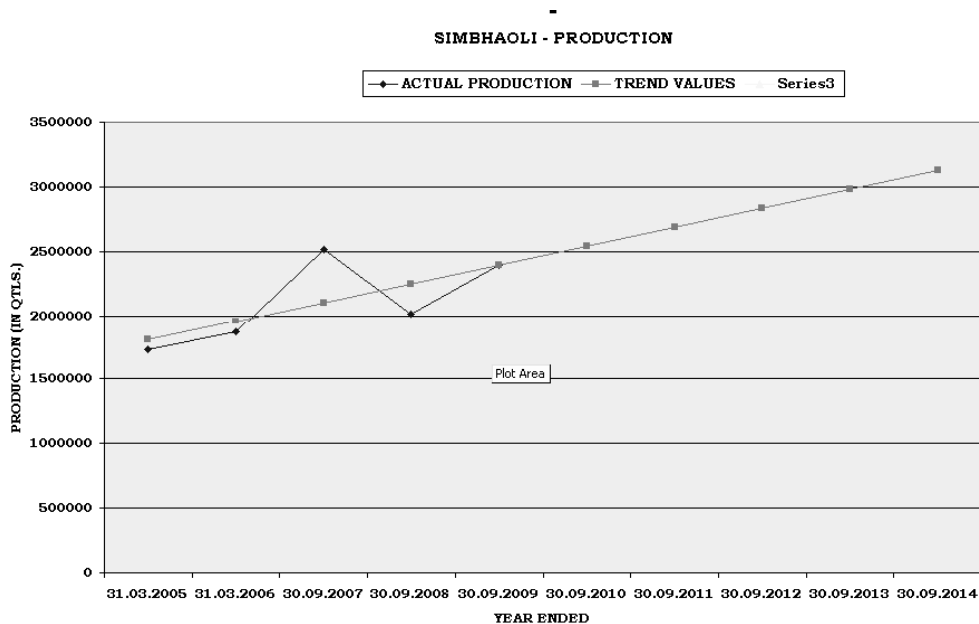
**6.5 (A) PRODUCTION:** The production data available for the study period helped researcher to get an insight of trend values for years to come, which is tabulated as under -

**TABLE NO. 6.29**

**SHOWING TREND VALUES OF PRODUCTION**

YEAR ENDED	PRODUCTION (QTLS.)	TREND VALUES
	(Y)	$Y_c = a + bx$
		$Y_c = 2,102,137 + 146,036 x$
31.03.2005	1731590	1810065
31.03.2006	1866440	1956101
30.09.2007	2512497	2102137
30.09.2008	2010336	2248174
30.09.2009	2389824	2394210
30.09.2010	-----	2540247
30.09.2011	-----	2686283
30.09.2012	-----	2832319
30.09.2013	-----	2978356
30.09.2014	-----	3124392

The above table shows an increase of 146,036 quintals per year which has a possibility of reaching new heights further due to adoption of advanced techniques of productions, use of more sophisticated equipments, more efficient management of wastages, changes in production schedules, increase in the demand of finished goods, timely arrival of monsoon & sufficient rainy season etc. which could swing the other way also. The same can also be shown with the help of graph, as under-



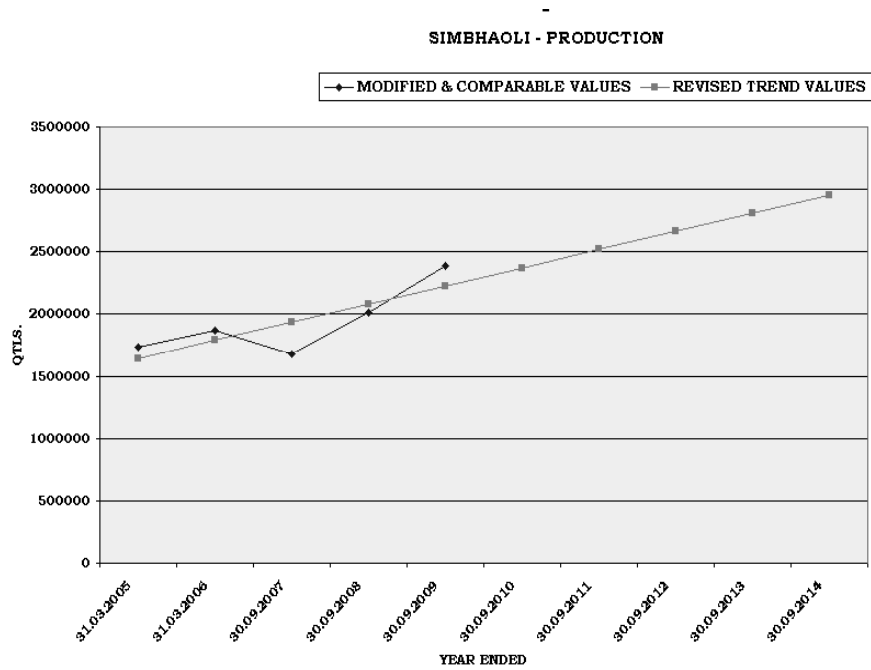
But, the modified & comparative data reflects a different picture, when eighteen months data of financial year 2007-08 is proportionately reduced to twelve months figures, as per the details given hereunder –

**TABLE NO. 6.30**

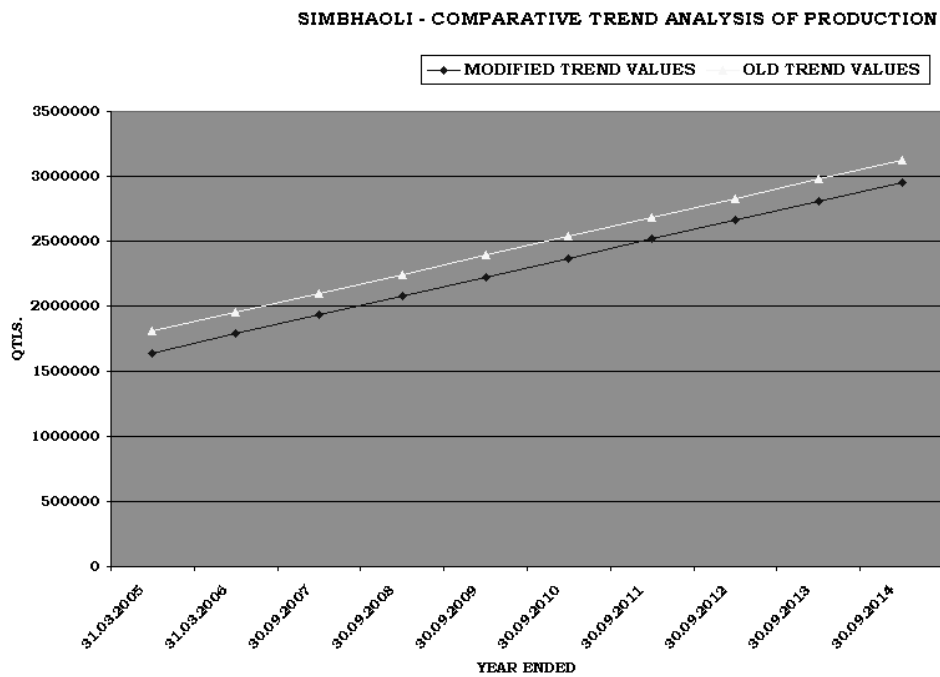
**SHOWING REVISED TREND VALUES OF PRODUCTION**

<b><i>MODIFIED &amp; COMPARABLE DATA</i></b>		
<b>YEAR ENDED</b>	<b>PRODUCTION (QTLS.)</b>	<b>TREND VALUES</b> $Y_c = a + bx$
	(Y)	$Y_c = 1,934,638 + 146,036x$
31.03.2005	1731590	1642565
31.03.2006	1866440	1788601
30.09.2007	1674998	1934638
30.09.2008	2010336	2080674
30.09.2009	2389824	2226710
30.09.2010	-----	2372747
30.09.2011	-----	2518783
30.09.2012	-----	2664820
30.09.2013	-----	2810856
30.09.2014	-----	2956892

Though the modified & comparative data has brought no change in the yearly increase (i.e. value of **b**) but it has affected the values of **a** in the above equation which has resulted in the complete changes in the trend values of all these years under consideration. This change can be easily viewed with the help of following graph also –



A comparative analysis of trend values (*modified & old*) can also be observed clearly with the help of following graph-



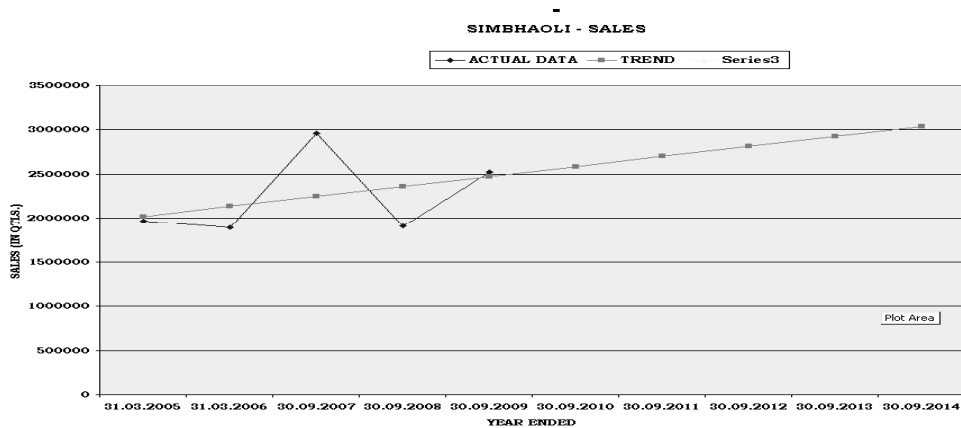
**6.5 (B) SALES:** Similarly, the sales data is also used to get a much clear picture of future trend values, which is tabulated as under -

**TABLE NO. 6.31**

**SHOWING TREND VALUES OF SALES**

YEAR ENDED	SALES (QTLS.)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 2,248,638 + 113,023 x$
31.03.2005	1966029	2022592
31.03.2006	1888506	2135615
30.09.2007	2960335	2248638
30.09.2008	1905843	2361661
30.09.2009	2522475	2474683
30.09.2010	-----	2587706
30.09.2011	-----	2700729
30.09.2012	-----	2813752
30.09.2013	-----	2926775
30.09.2014	-----	3039798

The above table shows an increase of 1,13,023 quintals per year which can also be portrayed with the help of graph as under -



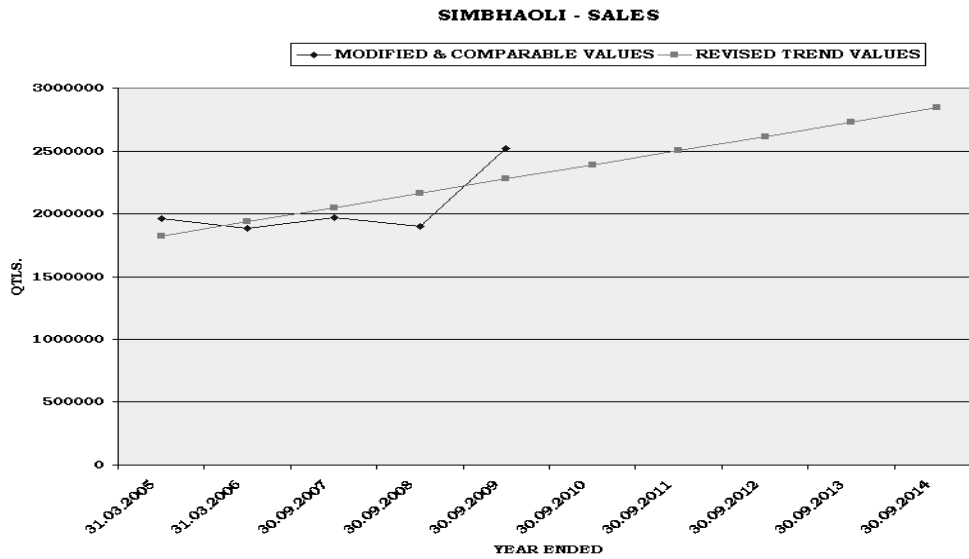
The *modified & comparable* data, when incorporated, brought a different picture of trend values of sales –

**TABLE NO. 6.32**

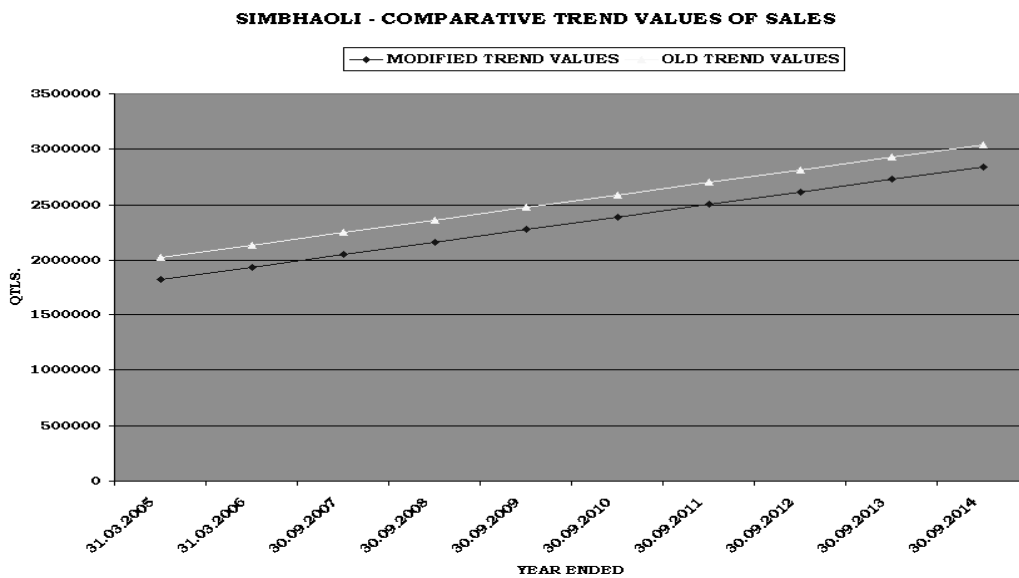
**SHOWING REVISED TREND VALUES OF SALES**

<b><i>MODIFIED &amp; COMPARABLE DATA</i></b>		
<b>YEAR ENDED</b>	<b>SALES (QTLs.)</b>	<b>TREND VALUES</b>
	<b>(Y)</b>	<b><math>Y_c = a + bx</math></b>
		<b><math>Y_c = 2051282 + 113023x</math></b>
31.03.2005	1966029	1825236
31.03.2006	1888506	1938259
30.09.2007	1973557	2051282
30.09.2008	1905843	2164305
30.09.2009	2522475	2277328
30.09.2010	-----	2390351
30.09.2011	-----	2503374
30.09.2012	-----	2616396
30.09.2013	-----	2729419
30.09.2014	-----	2842442

The change, because of *modified & comparable* data, can be easily viewed with the help of following graph also –



A comparative analysis of trend values of production (*modified & old*) can be seen with the help of following graph-



**6.5 (C) CLOSING STOCK:** Likewise, closing stock data of study period is being used to assess the future position of ending inventories, which can be tabulated as under -

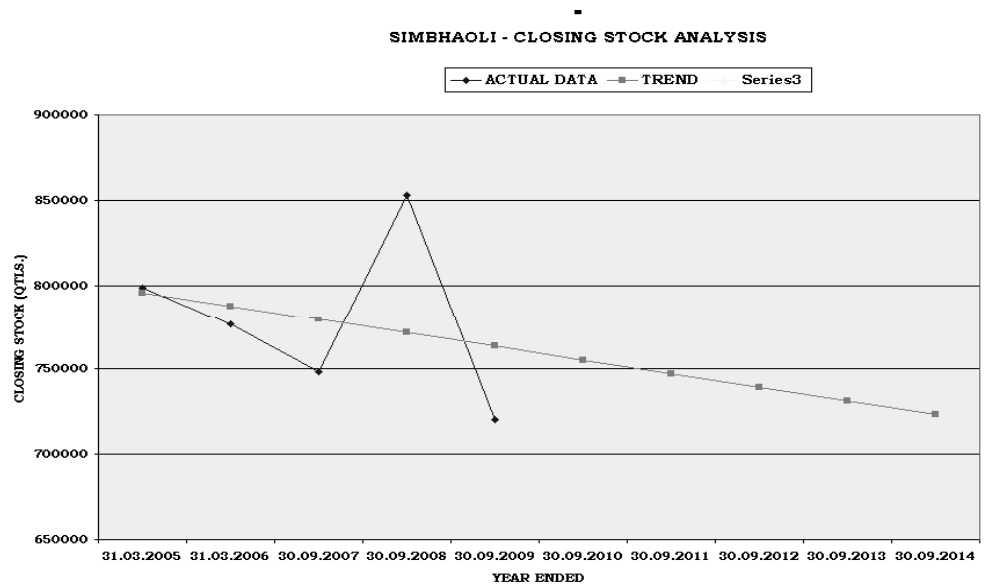


**TABLE NO. 6.33**

**SHOWING TREND VALUES OF CLOSING STOCK**

YEAR ENDED	CLOSING STOCK (QTLS.)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 779,449 - 8006 x$
31.03.2005	798696	795461
31.03.2006	776530	787455
30.09.2007	748562	779449
30.09.2008	853055	771444
30.09.2009	720404	763438
30.09.2010	-----	755432
30.09.2011	-----	747426
30.09.2012	-----	739420
30.09.2013	-----	731414
30.09.2014	-----	723408

The above table shows a decrease of 8,006 quintals per year which can also be portrayed with the help of graph as under –



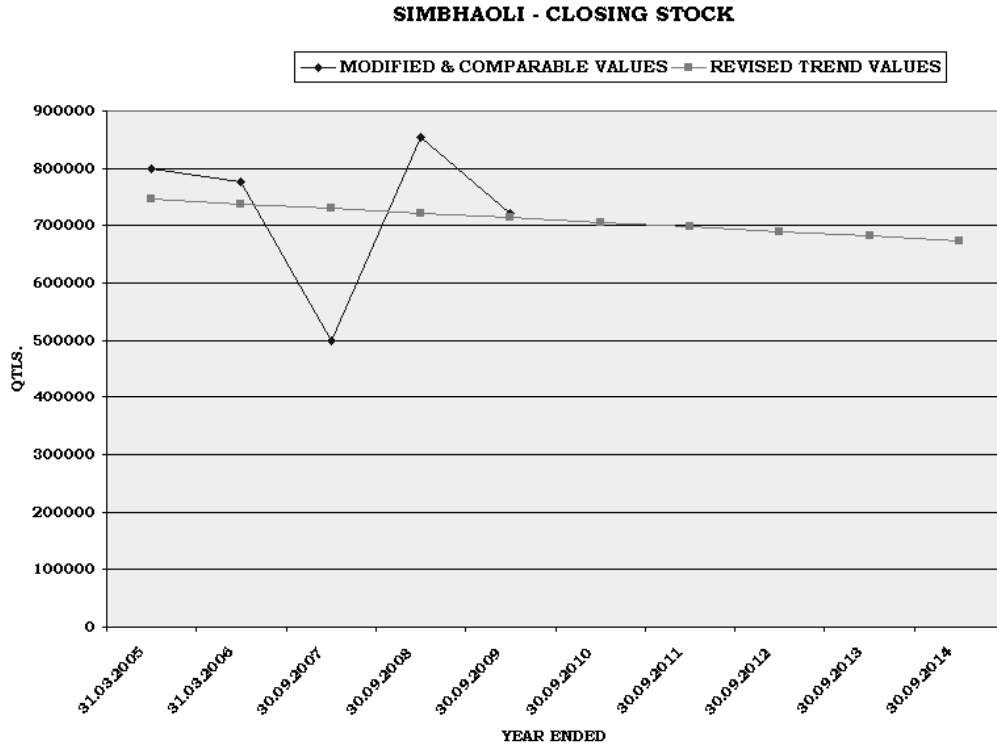
The modified & comparative data, when incorporated, brought a different picture of closing stock –

**TABLE NO. 6.34**

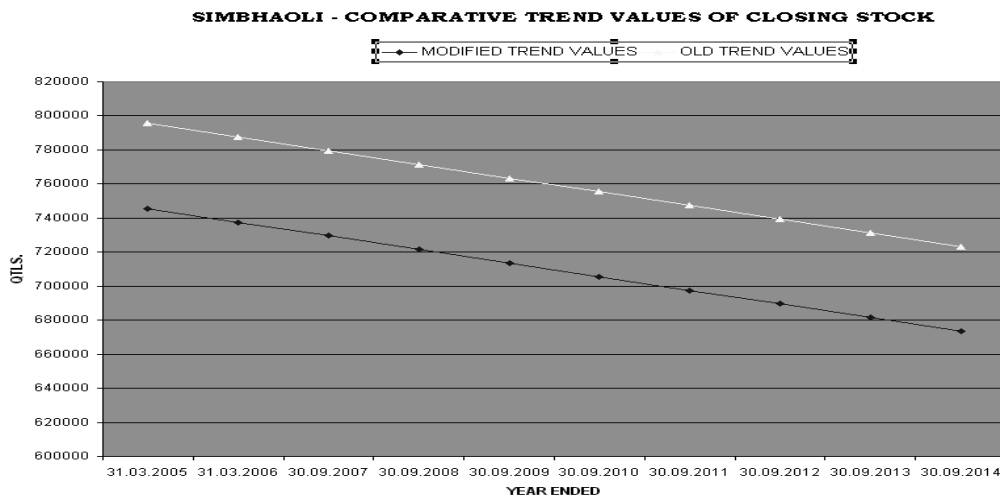
**SHOWING REVISED TREND VALUES OF CLOSING STOCK**

<b>MODIFIED &amp; COMPARABLE DATA</b>		
<b>YEAR ENDED</b>	<b>CLOSING STOCK (QTLS.)</b>	<b>TREND VALUES <math>Y_c = a + bx</math></b>
	<b>(Y)</b>	<b><math>Y_c = 729545 - 8006x</math></b>
31.03.2005	798696	745557
31.03.2006	776530	737551
30.09.2007	499041	729545
30.09.2008	853055	721539
30.09.2009	720404	713533
30.09.2010	-----	705528
30.09.2011	-----	697522
30.09.2012	-----	689516
30.09.2013	-----	681510
30.09.2014	-----	673504

Though, the incorporation of modified & comparable data has not brought any change in the yearly decrease (i.e. value of ***b*** ) but as the value of ***a*** stands changed, this in turn has changed all the trend values of the period under consideration. The change can be easily viewed with the help of following graph also –



A comparative analysis of trend values of closing stock (*modified & old*) can be easily observed with the help of following graph –



**6.5 (D) RAW MATERIAL CONSUMED:** Raw material consumption figures of study period is being used to assess

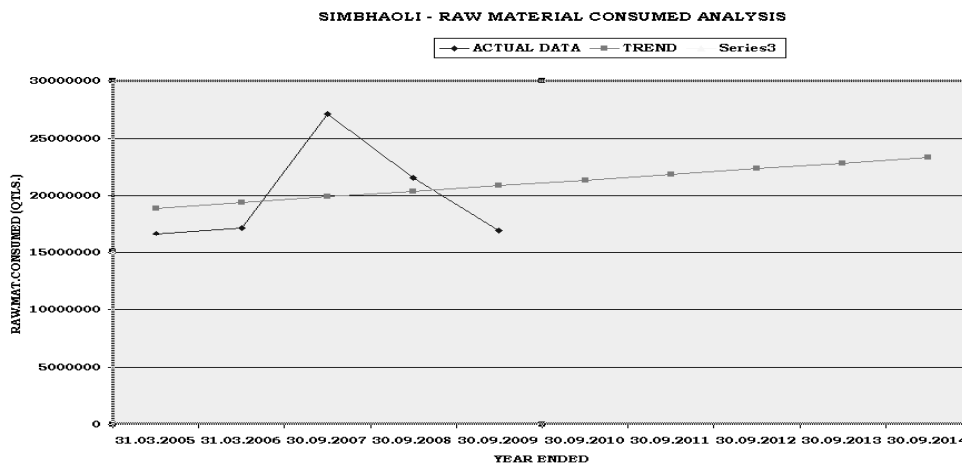
the future level of raw material consumption, which can be tabulated as under -

**TABLE NO. 6.35**

**SHOWING TREND VALUES OF RAW MATERIAL CONSUMED**

YEAR ENDED	RAW MATERIAL CONSUMED (QTLS.)	TREND VALUES $Y_c = a + bx$
	(Y)	$Y_c = 198,92,433 + 4,90,546 x$
31.03.2005	16648561	18911342
31.03.2006	17207961	19401887
30.09.2007	27136319	19892433
30.09.2008	21528109	20382979
30.09.2009	16941216	20873525
30.09.2010	-----	21364071
30.09.2011	-----	21854616
30.09.2012	-----	22345162
30.09.2013	-----	22835708
30.09.2014	-----	23326254

The above table shows an increase of 4,90,546 quintals in raw material consumption per year which can easily be seen with the help of graph as under -



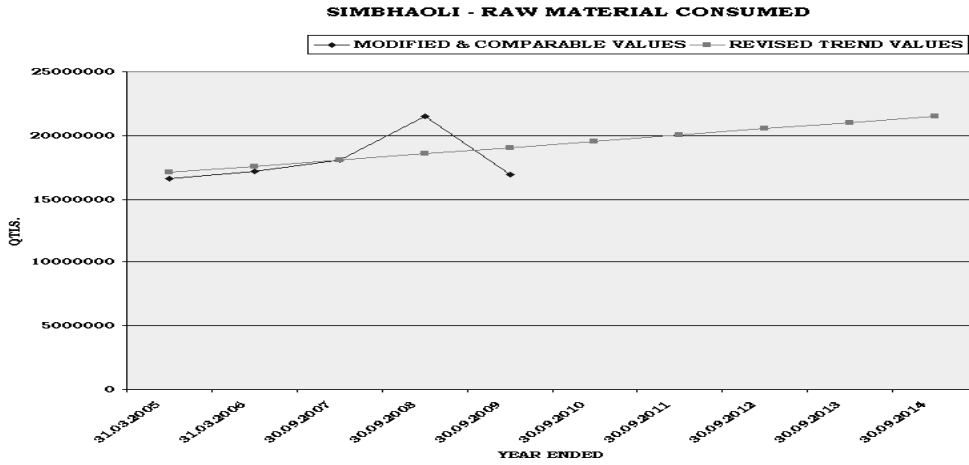
The modified & comparative data, when incorporated, brought the following picture of raw material consumed –

**TABLE NO. 6.36**

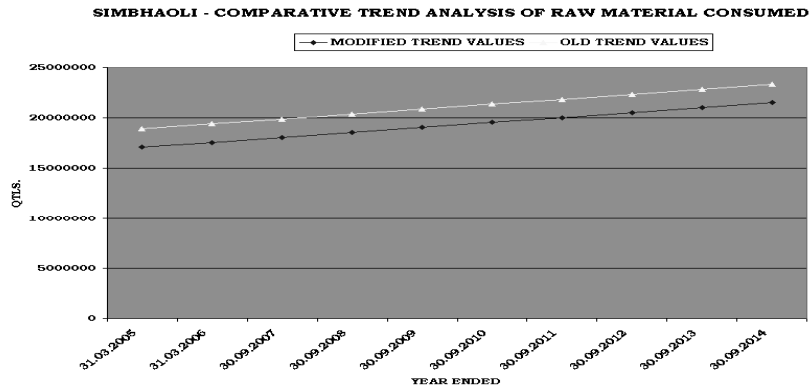
**SHOWING REVISED TREND VALUES OF RAW MATERIAL CONSUMED**

<b>MODIFIED &amp; COMPARABLE DATA</b>		
<b>YEAR ENDED</b>	<b>RAW MATERIAL CONSUMED (QTLS.)</b>	<b>TREND VALUES <math>Y_c = a + bx</math></b>
	<b>(Y)</b>	<b><math>Y_c = 18083345 + 490546x</math></b>
31.03.2005	16648561	17102254
31.03.2006	17207961	17592799
30.09.2007	18090879	18083345
30.09.2008	21528109	18573891
30.09.2009	16941216	19064437
30.09.2010	-----	19554983
30.09.2011	-----	20045528
30.09.2012	-----	20536074
30.09.2013	-----	21026620
30.09.2014	-----	21517166

Thus, due to incorporation of modified & comparable data the changes occurred in trend values, can be easily viewed with the help of following graph also –



A comparative analysis of trend values of raw material consumed (*modified & old*) can be seen with the help of following graph –



\*\*\*\*\*