

CHAPTER – 7

A COMPARATIVE STUDY BETWEEN **MAWANA SUGARS LIMITED AND** **SIMBHAOLI SUGARS LIMITED**

There are several sugar producing industries in Northern India with different working capitals, different amount of productions and different values of inventories. The large amount of success of a company depends on the inventory control management system. The two sugar mills viz. Mawana Sugars Ltd. and Simbhaoli Sugars Ltd. in India are two leading sugar manufacturing companies. These two companies are similar in some aspects whereas different in some other. The present chapter includes the comparative study between both the companies.

7.1 Comparative Analysis of Management of Inventory in Mawana Sugars Limited and Simbhaoli Sugars Limited

As stated earlier, the researcher was not able to get the required 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 websites of both the companies and elsewhere available on the internet.

In the process of comparison, the ***modified & comparable data*** of both the sugar mills have been taken, wherever it is required. As both these sugar mills have changed their financial years during the study period under consideration i.e. Mawana Sugars Limited has changed it w.e.f. 2007-08 and Simbhaoli Sugars Limited w.e.f. 2006-07, resulting into eighteen months data for these affected years, which made these years data ethically unsuitable for comparison purposes. Accordingly, these years' data have been proportionately converted into twelve months data in order to make it comparable with all the other years' data conveniently (Refer chapters no. 05 & 06) . This has brought altogether different pictures of business operations & trading results of both these companies, in comparison to that which these companies tried to show to their stakeholders and public at large.

The analysis conducted, results drawn and interpreted with the help of data available, are as under-

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

TABLE NO. 7.1

**SHOWING COMPARATIVE CHANGES IN THE STOCK OF STORES &
SPARES etc.**

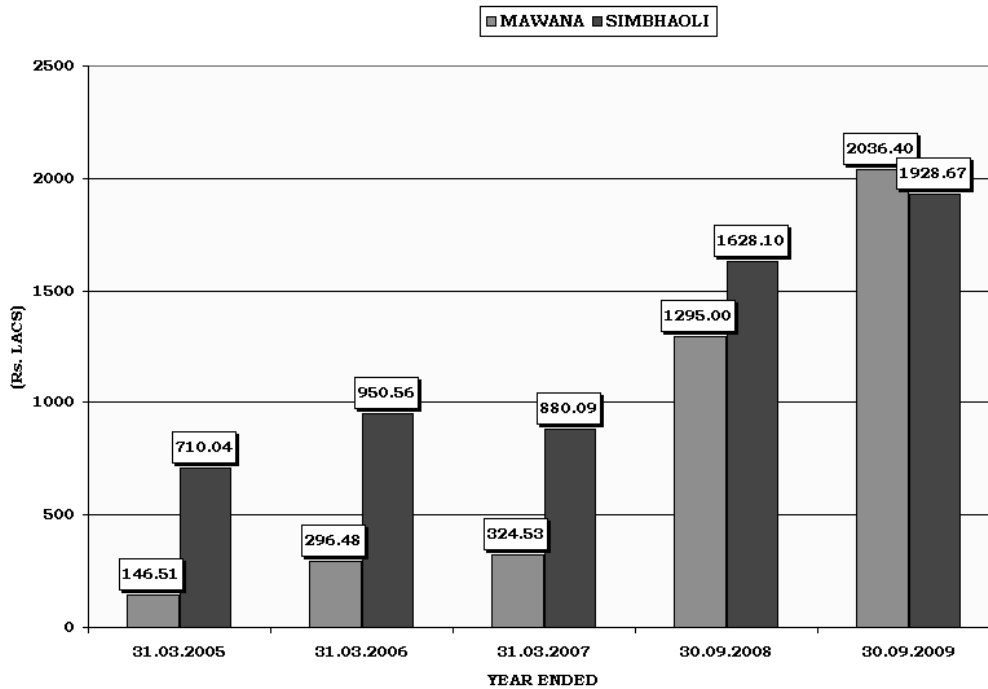
STORES & SPARES							
YEAR ENDED	MAWANA (MSL)			YEAR ENDED	SIMBHAOLI (SSL)		
	STOCK	CHANGE			STOCK	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)		(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	146.51			31.03.2005	710.04		
31.03.2006	296.48	149.97	102	31.03.2006	950.56	240.52	34
31.03.2007	324.53	28.05	9	30.09.2007	880.09	-70.47	-7
30.09.2008	1295.00	970.47	299	30.09.2008	1628.10	748.01	85
30.09.2009	2036.40	741.40	57	30.09.2009	1928.67	300.57	18
Source : <i>Annual Reports of Mawana Sugars Limited</i>				Source : <i>Annual Reports of Simbhaoli Sugars Limited</i>			

The above table clearly shows that the stores & spares etc. maintained by Mawana Sugars Limited (MSL) has more variation in comparison to that maintained by Simbhaoli Sugars Limited (SSL). Mawana Sugars Ltd. stock position of stores, spares etc. varied from a minimum 9% to the maximum 299% during the study period. Though on the other hand, Simbhaoli Sugars Ltd. stores, spares etc. show less fluctuations yet it ranged between negative and positive figures i.e. from minimum (-)7% to maximum (+) 85% during the study period. In the year 2005-06, Mawana Sugars Ltd. stock shows an increase of 102% in comparison to previous year 2004-05 figures. But during the same period, the Simbhaoli Sugars Ltd. showed only 34% increase. In the next year 2006-07, Mawana Sugars Ltd. registered an increase of

9% only but SSL recorded a decrease of 7%. The year 2007-08, recorded an extraordinary increase of 299% in the stock level of MSL though SSL recorded 85% increase. In the last year 2008-09, MSL registered 57% growth in comparison to previous year 2007-08, but SSL had an increase of only 18% in this year. In absolute terms, MSL was lagging behind SSL till 2005-06, so far as the yearly absolute changes are concerned, but the scene changed from the next year 2006-07 and MSL superseded SSL and maintained this lead up to the end of last financial year 2008-09.

Thus, the decisions to invest in stores, spares etc. by Simbhaoli Sugars Limited seems to be better than that of Mawana Sugars Limited as from the very beginning of study period, it has deployed more funds for procuring stores, spare parts etc. This shows its concern about ensuring the smooth running of production process. However, in the last year of study period, Mawana Sugars Limited also awaked and increased the level of its stores, spares etc. by 57% and superceded Simbhaoli Sugars Limited by Rs. 107.73 lacs. This whole situation can be reflected at a glance with the help of the following graph –

STORES, SPARES, TOOLS & APPLIANCES



7.1 (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. 7.2

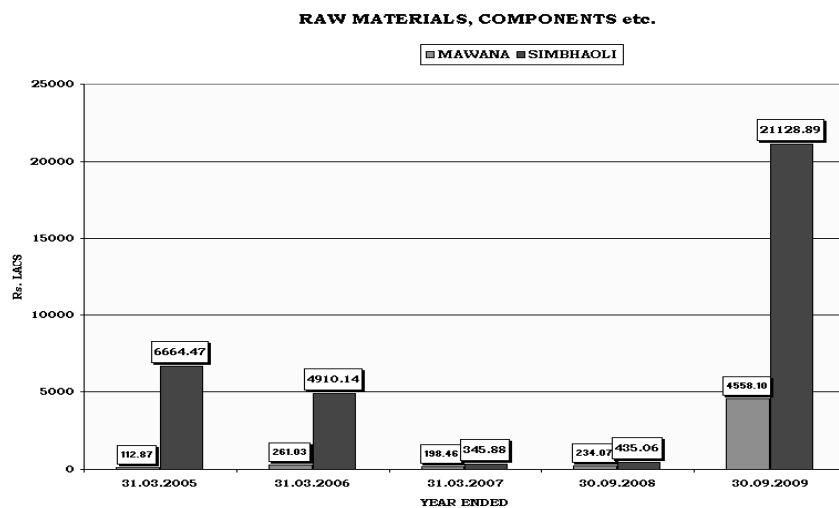
**SHOWING COMPARATIVE CHANGES IN THE STOCK OF RAW
MATERIALS, COMPONENTS etc.**

RAW MATERIALS, COMPONENTS etc.							
YEAR ENDED	MAWANA (MSL)			YEAR ENDED	SIMBHAOLI (SSL)		
	STOCK	CHANGE			STOCK	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)		(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	112.87			31.03.2005	6664.47		
31.03.2006	261.03	148.16	131	31.03.2006	4910.14	-1754.33	-26
31.03.2007	198.46	-62.57	-24	30.09.2007	345.88	-4564.26	-93
30.09.2008	234.07	35.61	18	30.09.2008	435.06	89.18	26
30.09.2009	4558.10	4324.03	1847	30.09.2009	21128.89	20693.83	4757
Source : Annual Reports of Mawana Sugars Limited				Source : Annual Reports of Simbhaoli Sugars Limited			

The year 2005-06 shows an increase of 131% in the raw material, components etc. stock level of MSL but SSL recorded a decrease of 26% in the same year. However, in the next year 2006-07, MSL too had a reduction of 24% in its stock level in comparison to its previous year's figures but SSL had more downfalls and its inventory level reduced by 93%. Amount wise, SSL had much higher figures of Rs.6,664.47 lacs in the year 2004-05 though MSL had only Rs.112.87 lacs at the end of same year. SSL started decreasing its stock levels from the next year which came down to Rs.4910.14 lacs though MSL increased its stock level by Rs.148.16 lacs and reached a level of Rs.261.03 at the end of 2005-06. In 2006-07, SSL reduced drastically its raw materials level by Rs. 4564.26 lacs and brought it to a

level of Rs.345.88 lacs. MSL reduced it further and reached a level of Rs.198.46 lacs at the end of 2006-07. In the next year 2007-08 MSL raised its stock level again by 18% though SSL also raised its level further by 26%. But the last year of the study period (i.e. 2008-09) witnessed an extraordinary change in the raw material stock levels of both the companies. MSL registered a growth of 1847% though SSL had a growth of 4757% at the end of same financial year. It is claimed, that in order to overcome the problem of declining or stagnant cane yields and poor sugar recoveries, SSL has introduced new cane varieties, resulting into tremendous growth in the stock of raw material at the end of year 2008-09.

On the whole, SSL maintained a higher level of raw materials stock in comparison to MSL through out the study period. This whole situation can be portrayed with the help of following graph –



Thus, the inventory management of raw materials, components etc. of both the sugar mills show that Simbhaoli Sugars Limited has unnecessarily blocked its valuable funds in procuring raw materials etc. which could have been otherwise utilized for more beneficial & fruitful purposes. Rather, in the last year of study period (i.e. 2008-09) Simbhaoli Sugars Limited's stock is approximately five times higher than that maintained by Mawana Sugars Limited.

7.1 (C) WORK IN PROGRESS: Similarly, 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. 7.3

SHOWING COMPARATIVE CHANGES IN THE STOCK OF WORK IN PROGRESS

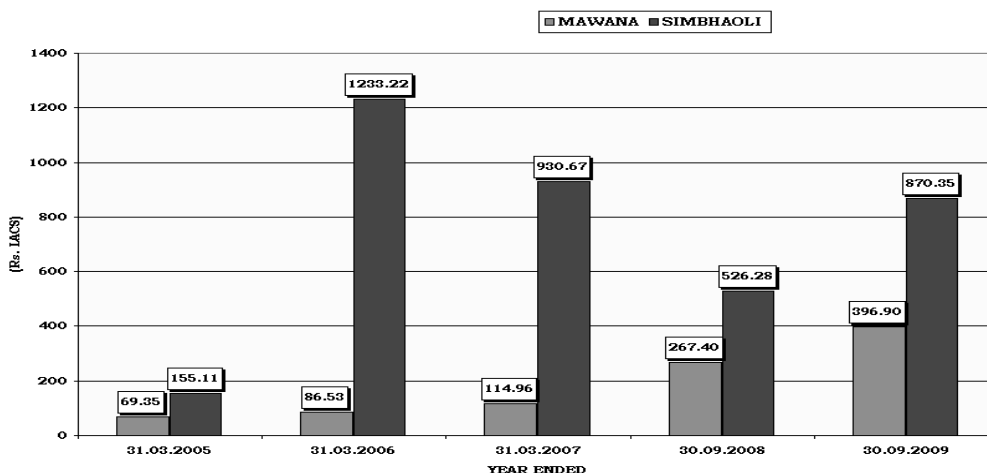
PROCESS STOCKS / WORK IN PROGRESS							
YEAR ENDED	MAWANA (MSL)			YEAR ENDED	SIMBHAOLI (SSL)		
	STOCK	CHANGE			STOCK	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)		(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	69.35			31.03.2005	155.11		
31.03.2006	86.53	17.18	25	31.03.2006	1233.22	1078.11	695
31.03.2007	114.96	28.43	33	30.09.2007	930.67	-302.55	-25
30.09.2008	267.40	152.44	133	30.09.2008	526.28	-404.39	-43
30.09.2009	396.90	129.50	48	30.09.2009	870.35	344.07	65
Source : Annual Reports of Mawana Sugars Limited				Source : Annual Reports of Simbhaoli Sugars Limited			

MSL showed constant increase in the figures of absolute changes in the first three years and reached its maximum in the third year (i.e. 2007-08) of study period but in the last year of study period though it registered an increase but is lesser than the increase recorded in the immediately preceding previous year 2007-08. On the other hand, SSL started with an extraordinary increase of 695% but then it suddenly turned into different direction and decreased to 25% and 43% in the next two financial years 2006-07 & 2007-08 respectively. However, the last year 2008-09, witnessed an increase of 65% and was more than the increase recorded by MSL in that year, both in absolute & relative terms.

Here, amount blocked in Work-in-Progress by Simbhaoli Sugars Limited is much more than that invested by Mawana Sugars Limited. The gap between the stock levels of both these sugar mills was highest in the year 2005-06. In the last year of study period too, Simbhaoli Sugars Limited's stock was more than twice of that maintained by Mawana Sugars Limited. Thus, MSL has blocked lesser amount in the stock of its work in progress throughout the study period.

These ups and downs in the stock levels of both the companies can easily be shown with the help of following graph-

PROCESS STOCKS / WORK IN PROGRESS



7.1 (D) FINISHED GOODS: And ultimately the absolute and relative changes in the finished goods stock can also be compared and analysed with the help of following table-

TABLE NO. 7.4

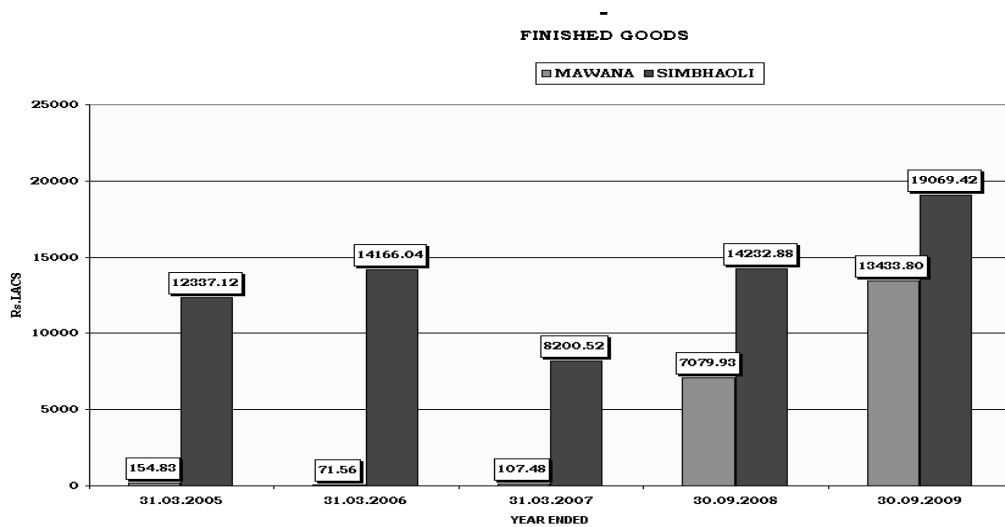
SHOWING COMPARATIVE CHANGES IN THE STOCK OF FINISHED GOODS

FINISHED GOODS							
YEAR ENDED	MAWANA (MSL)			YEAR ENDED	SIMBHAOLI (SSL)		
	STOCK	CHANGE			STOCK	CHANGE	
	(Rs.Lacs)	(Rs.Lacs)	(%)		(Rs.Lacs)	(Rs.Lacs)	(%)
31.03.2005	154.83			31.03.2005	12337.12		
31.03.2006	71.56	-83.27	-54	31.03.2006	14166.04	1828.92	15
31.03.2007	107.48	35.92	50	30.09.2007	8200.52	-5965.52	-42
30.09.2008	7079.93	6972.45	6487	30.09.2008	14232.88	6032.36	74
30.09.2009	13433.80	6353.87	90	30.09.2009	19069.42	4836.54	34
Source : Annual Reports of Mawana Sugars Limited				Source : Annual Reports of Simbhaoli Sugars Limited			

Two years (i.e. 2006-07 & 2007-08) depicted two different pictures of finished goods stock held by these two companies. In 2005-06, MSL had a decrease of 54% whereas SSL registered an increase of 15%. Next year 2006-07 had 50% of increase in the stock levels of MSL whereas SSL's stock reduced by 42%. In 2007-08, finished goods stock of MSL rose to Rs.7,079.93 lacs, registering an increase of 6,487%. The figures for the current period (i.e. 2007-08) are inclusive of erstwhile Mawana Sugars Limited, amalgamated with the Company with effect from October 1, 2006, the appointed date. The accounts for the period ended September 30, 2008 have been prepared after considering sugar cane purchase price @ Rs. 110 per quintal as an interim measure for paying the price of sugar cane to sugar cane grower in accordance with the order of hon'ble Supreme Court dated September 8, 2008 in case No. 18681 of 2008 for sugar season 2007-08 filed by the MSL. In the next year, things seem to have started approaching towards normal circumstances. On one hand, MSL showed an increase of 90% and on the other hand SSL showed an increase of 34%. Throughout the study period, SSL had an edge over MSL, so far absolute figures of finished goods stock are concerned.

Thus, in case of investment in inventory of finished goods too, Simbhaoli Sugars Limited has maintained higher levels. It has invested more funds in comparison to Mawana Sugars Limited. The gap between the funds invested by both

these companies was at its maximum in 2005-06. Therefore, SSL must review its policy of maintaining such a high level of finished goods because sugar industry is gradually changing its face and pace and is transforming into regular industry from seasonal industry. The reason behind this is the relaxation provided by the government to the millers to import duty-free raw sugar till December 2010 without export obligations. Therefore, it looks undesirable & unnecessary to invest heavy amount in inventory items. This position can very well be portrayed with the help of following graph –



7.2 Comparative Analysis of Inventory Turnover Ratios of Mawana Sugars Limited and Simbhaoli Sugars Limited

INVENTORY TURNOVER RATIO: *As already stated, 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 Mawana Sugars Limited and Simbhaoli Sugars Limited are discussed, one-by-one, as under -

7.2 (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. 7.5

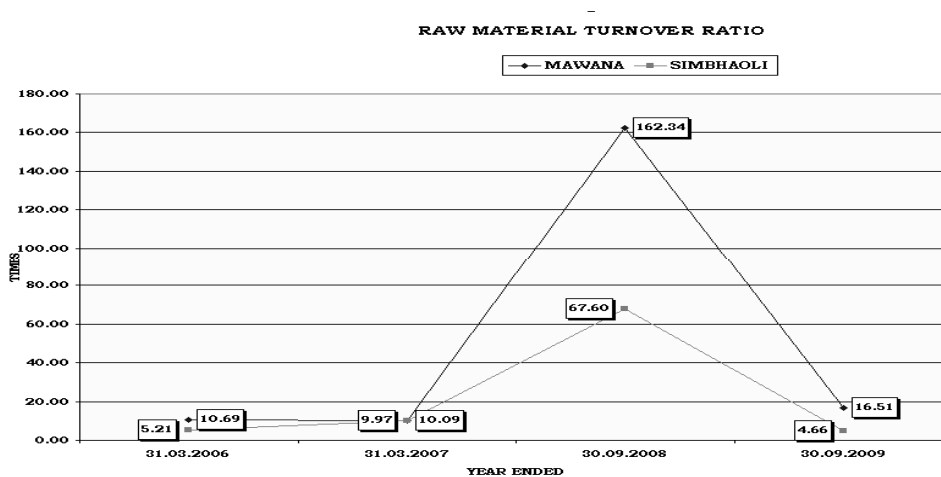
SHOWING COMPARATIVE FIGURES OF RAW MATERIAL TURNOVER RATIO

RAW MATERIAL TURNOVER RATIO			
(NUMBER OF TIMES)			
YEAR ENDED	MAWANA (MSL)	YEAR ENDED	SIMBHAOLI (SSL)
31.03.2006	10.69	31.03.2006	5.21
31.03.2007	10.09	30.09.2007	9.97
30.09.2008	162.34	30.09.2008	67.60
30.09.2009	16.51	30.09.2009	4.66

It is clear from the above table that during the study period there is a wide fluctuation in the level of raw materials turnover ratio of both the companies but it was more in case of MSL as compared to that of SSL. In 2005-06, MSL had 10.69 times of turnover ratio whereas it was less than half of it in case of SSL (i.e. 5.21times). In the next year 2006-07, MSL kept more or less same figure (i.e. 10.09) as it had in the preceding year but SSL also tried and was able to reach closer to the double digits. As stated earlier, the current period figures are inclusive of erstwhile Mawana Sugars Limited, amalgamated with the Company with effect from October 1, 2006, the appointed date. Because of this, raw material turnover ratio of MSL touched an excessive level of 162.34 times in 2007-08, though SSL also improved significantly and touched the highest level of 67.60 times of

study period, during the same year. But the last year 2008-2009 witnessed a sharp decrease in both these companies' ratio. In case of MSL, it came down to 16.51 times whereas in case of SSL it touched the minimum level of the study period i.e. 4.66 times. Thus, the raw material inventory management of Mawana Sugars Limited has clearly an edge over its counterpart and its stock rotation policy seems to be better than that of Simbhaoli Sugars Limited as throughout the study period MSL has maintained higher raw material turnover ratio.

These changes can also be shown with the help of following graph –



7.2 (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. 7.6

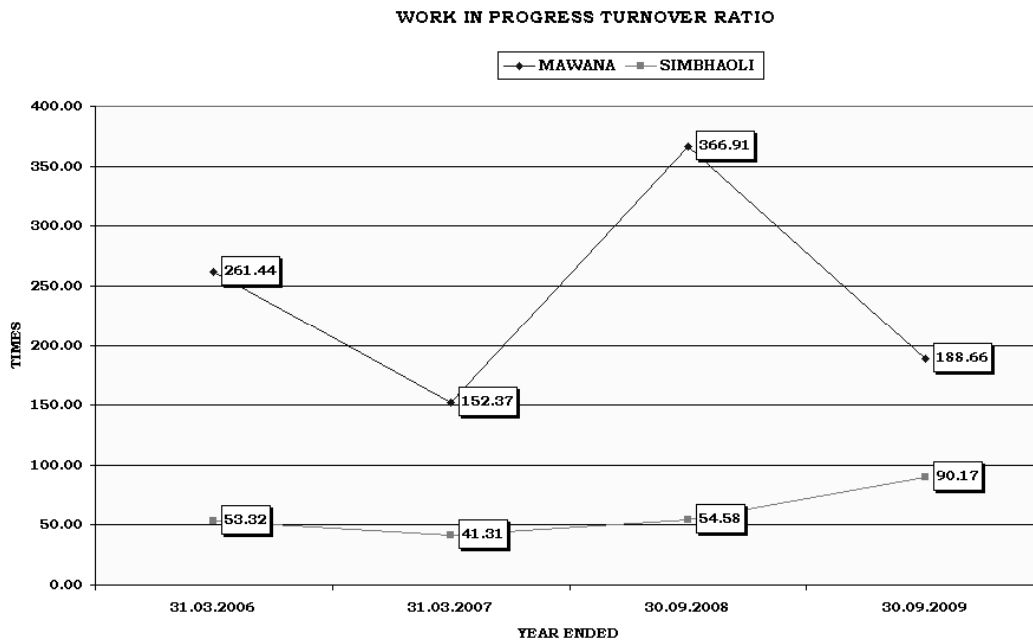
**SHOWING COMPARATIVE FIGURES OF WORK IN PROGRESS
TURNOVER RATIO**

WORK IN PROGRESS TURNOVER RATIO			
<i>(NUMBER OF TIMES)</i>			
YEAR ENDED	MAWANA (MSL)	YEAR ENDED	SIMBHAOLI (SSL)
31.03.2006	261.44	31.03.2006	53.32
31.03.2007	152.37	30.09.2007	41.31
30.09.2008	366.91	30.09.2008	54.58
30.09.2009	188.66	30.09.2009	90.17

It is quite clear from the above table that the work-in-progress turnover ratio of MSL registered a downfall in the alternative years (i.e. 2006-07 and 2008-09) whereas SSL showed a downfall in the second year of study period only (i.e. 2006-07). But in comparison to the turnover ratio of SSL, MSL maintained a very high turnover ratio throughout the study period. The highest turnover ratio of MSL was in 2007-08 where in it touched the level of 366.91 times. So far as SSL is concerned, it registered its highest turnover ratio of 90.17 times in the last financial year 2008-09.

Thus, the work in progress inventory management of Mawana Sugars Limited looks better than that of Simbhaoli Sugars Limited. Its stock rotation policy seems to be better than that of Simbhaoli Sugars Limited as throughout the study period MSL has maintained higher work in progress turnover ratio.

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



7.2 (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. 7.7

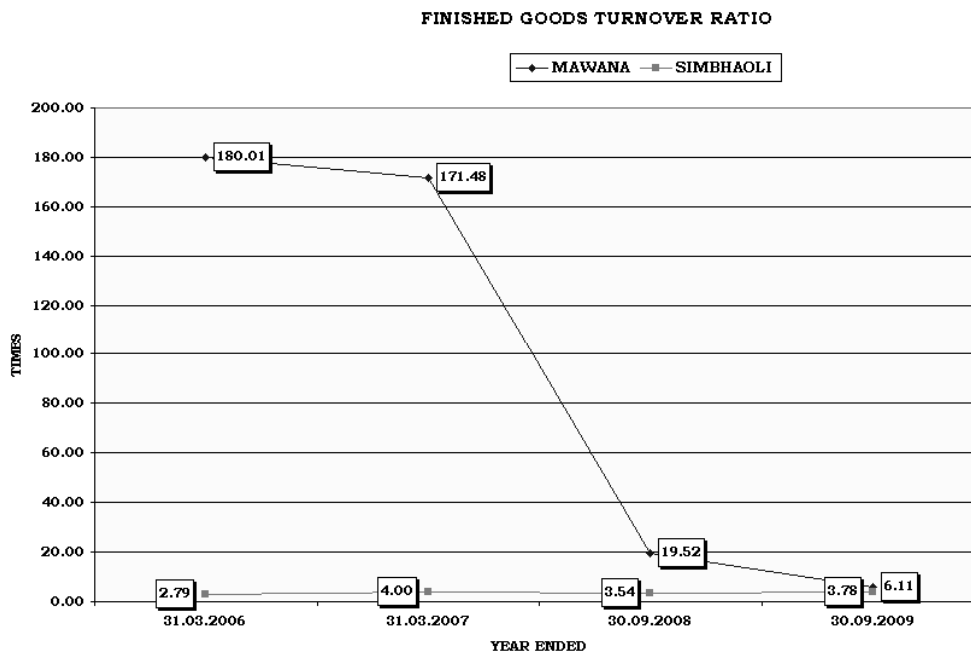
SHOWING COMPARATIVE FIGURES OF FINISHED GOODS TURNOVER RATIO

FINISHED GOODS TURNOVER RATIO <i>(NUMBER OF TIMES)</i>			
YEAR ENDED	MAWANA (MSL)	YEAR ENDED	SIMBHAOLI (SSL)
31.03.2006	180.01	31.03.2006	2.79
31.03.2007	171.48	30.09.2007	4.00
30.09.2008	19.52	30.09.2008	3.54
30.09.2009	6.11	30.09.2009	3.78

The above table clearly shows constant downfall in case of MSL, which started with 180.01 times in 2005-06 and touched the minimum level of study period in 2008-09 (i.e. 6.11 times). Due to higher raw material turnover ratio and work in progress turnover ratio, the Mawana Sugars Limited finished goods stock achieved significant heights in the last two years (i.e. 2007-08 & 2008-09) of study period, resulting into an increase of 6487% and 90% respectively in the finished goods stock. This resulted into a sudden fall in the finished goods turnover ratio, which is quite evident from the above table. On the contrary, SSL started with its minimum figure of study period (i.e. 2.79 times) in the 2005-06 and reached its highest figure of 4.00 times in 2006-07 and then it stood reduced to ultimate figure of 3.78 times at the end.

Thus, MSL maintained a better finished goods turnover ratio, in comparison to SSL through out the study period under consideration, though initially it was too high. Hence, it can be said that the finished goods inventory management of Mawana Sugars Limited looks better than that of Simbhaoli Sugars Limited. In other words, its stock rotation policy seems to be better than that of Simbhaoli Sugars Limited as throughout the study period MSL has maintained higher finished goods turnover ratio.

These changes can be shown with the help of graph, as under –



7.3 Comparative Analysis of Inventory Holding Period of Mawana Sugars Limited and Simbhaoli Sugars Limited

As already discussed in the previous chapter no.05 & 06, 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 inverse of Inventory Turnover ratio is used in order to calculate inventory holding period or say,

AVERAGE **MONTHS** TO SELL INVENTORY

= Number of months a Year ÷ Inventory Turn Over Ratio

= 12 months a year ÷ Inventory Turn Over Ratio

In other words, wherever inventory turnover ratio is found to be on a higher side, the inventory holding period is destined to be low and vice-versa. Thus, the inventory holding period of various inventory items of Mawana Sugars Limited and Simbhaoli Sugars Limited is calculated & discussed as under-

7.3 (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. 7.8

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

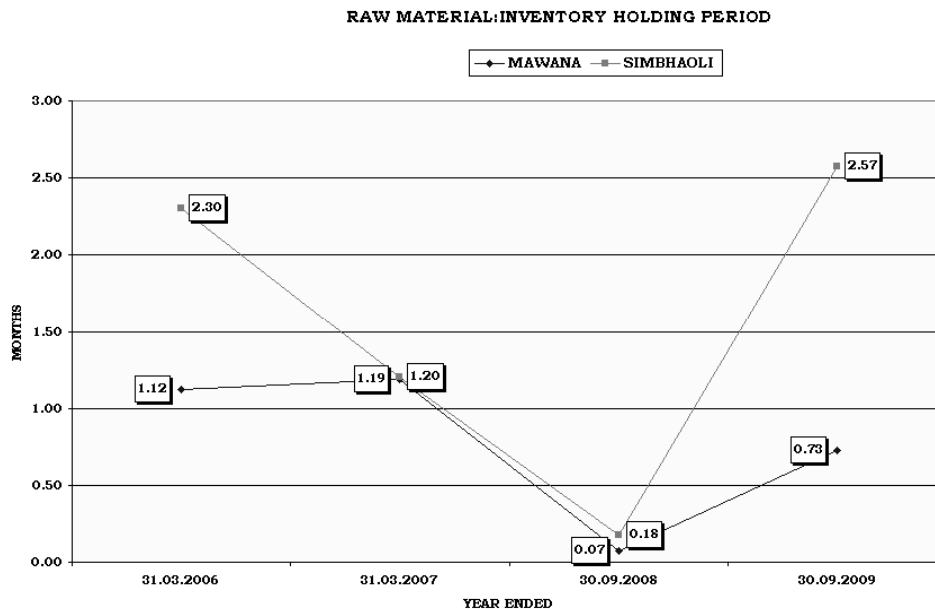
RAW MATERIAL INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS)			
YEAR ENDED	MAWANA (MSL)	YEAR ENDED	SIMBHAOLI (SSL)
31.03.2006	1.12	31.03.2006	2.30
31.03.2007	1.19	30.09.2007	1.20
30.09.2008	0.07	30.09.2008	0.18
30.09.2009	0.73	30.09.2009	2.57

The above table shows that initially in the year 2005-2006 raw material holding period of SSL was 2.30 months whereas MSL had 1.12 months holding period during the same time period. In next year MSL's holding period increased to 1.19 months though SSL witnessed a downfall and it decreased to 1.20 months. During 2007-08, MSL touched the minimum level of study period at 0.07 months. On the other hand too, SSL experienced downfall also and it also touched its lowest level of 0.18 months in the same year. In the last year 2008-09, MSL's turnover improved and

reached the figure of 0.73 months but there was a tremendous amount of increase in the level maintained by SSL (i.e. 2.57 months) which was nearly 3.50 times more than that year's figure of MSL.

Thus, the lesser raw material inventory holding period of Mawana Sugars Limited indicates better management of inventory. As throughout the study period, Mawana Sugars Ltd.'s raw material holding period remain lesser than that of Simbhaoli Sugars Ltd.

This can be shown with the help of following graph also –



7.3 (B) WORK IN PROGRESS INVENTORY HOLDING PERIOD:

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

TABLE NO. 7.9

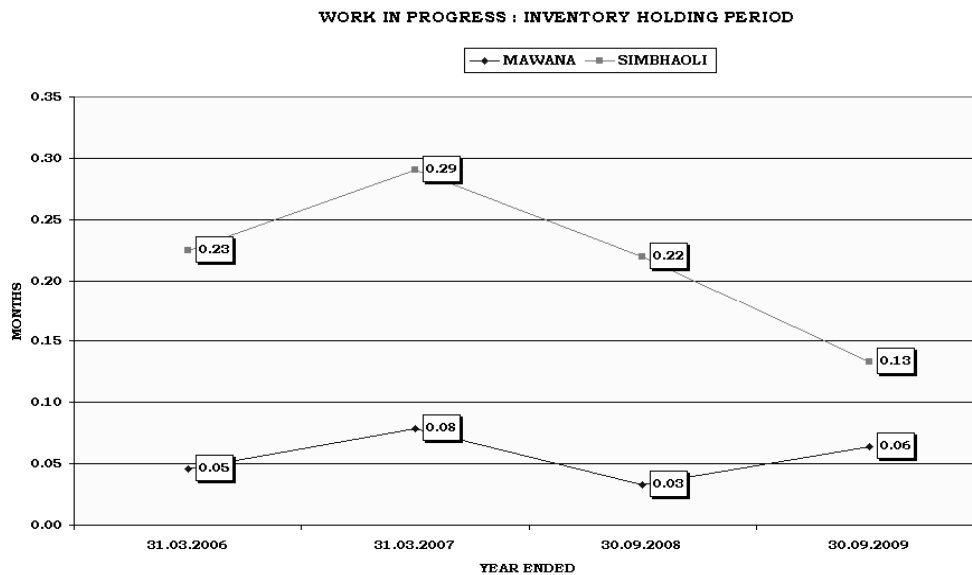
**SHOWING COMPARATIVE FIGURES OF WORK IN PROGRESS
INVENTORY HOLDING PERIOD**

WORK IN PROGRESS INVENTORY HOLDING PERIOD			
i.e. AVERAGE AGE OF INVENTORY			
(IN MONTHS)			
YEAR ENDED	MAWANA (MSL)	YEAR ENDED	SIMBHAOLI (SSL)
31.03.2006	0.05	31.03.2006	0.23
31.03.2007	0.08	30.09.2007	0.29
30.09.2008	0.03	30.09.2008	0.22
30.09.2009	0.06	30.09.2009	0.13

The average inventory holding period of work in progress of SSL has shown higher figures in comparison to that of MSL. SSL had the highest holding period of 0.29 months in the year 2006-07 over the entire study period whereas MSL had 0.08 months as highest one in the same financial year. The minimum holding period of MSL was in 2007-08 when it became 0.03 months but the SSL's minimum level reached in the last year 2008-09 when it touched the figure of 0.13 months.

Here also, the lesser work in progress inventory holding period of Mawana Sugars Limited indicates better management of semi-finished inventory & its efficiency in managing production processes. Throughout the study period, average age of work in progress of Mawana Sugars Ltd. remain lesser than that of Simbhaoli Sugars Ltd.

These changes can be portrayed with the help of following graph also –



7.3 (C) FINISHED GOODS INVENTORY HOLDING PERIOD:

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

TABLE NO. 7.10

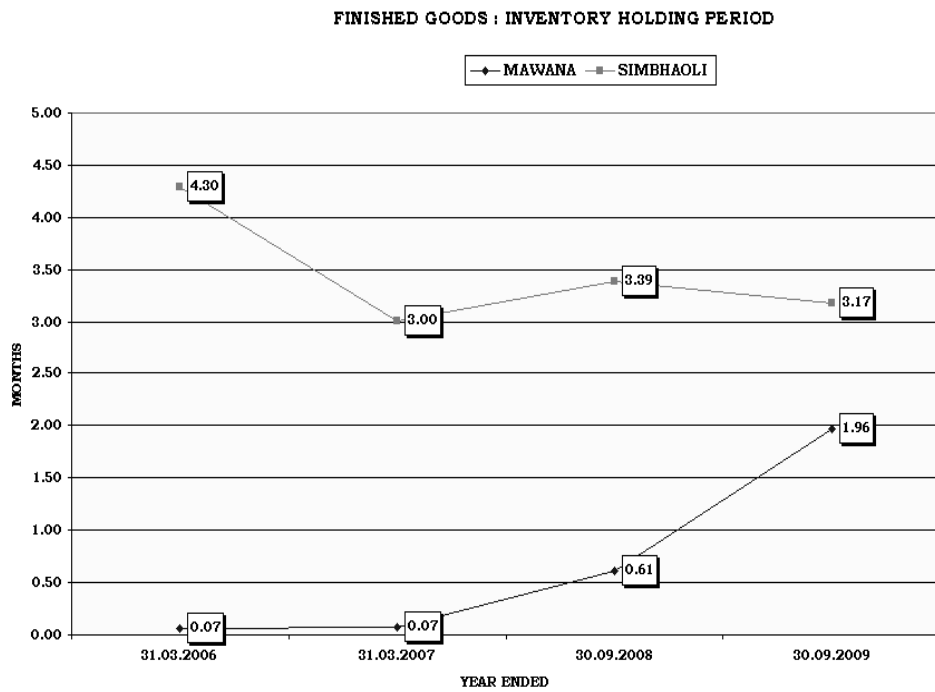
**SHOWING COMPARATIVE FIGURES OF FINISHED GOODS
INVENTORY HOLDING PERIOD**

FINISHED GOODS INVENTORY HOLDING PERIOD i.e. AVERAGE AGE OF INVENTORY (IN MONTHS)			
YEAR ENDED	MAWANA (MSL)	YEAR ENDED	SIMBHAOLI (SSL)
31.03.2006	0.07	31.03.2006	4.30
31.03.2007	0.07	30.09.2007	3.00
30.09.2008	0.61	30.09.2008	3.39
30.09.2009	1.96	30.09.2009	3.17

The above table clearly shows that finished goods inventory holding period of SSL remain higher in comparison to MSL throughout the study period. MSL had 0.07 months average age in the first two years viz., 2005-06 and 2006-07 but at the same time SSL had 4.30 months & 3.00 months finished goods holding period respectively. The year 2007-08 witnessed increase in both the companies' average inventory holding period. On one hand, MSL had a holding period of 0.61 months, which was almost 9 times higher than its previous year's figure. On the other hand, SSL's holding period moved to 3.39 months from the preceding figure of 3.00 months. In the last year, SSL holding period reduced to 3.17 months but MSL had 1.96

months average age which is an increase of almost more than three times in comparison to previous year's figure.

Here, MSL lower finished goods holding period reflects a better demand position of its finished goods, as its holding period is far less than that of SSL. It indicates better inventory management of finished goods by Mawana Sugars Limited. This can be shown by way of graphical presentation as under –



7.4 Comparative Trend Analysis of Inventory Management in Mawana Sugars Limited and Simbhaoli Sugars Limited

As discussed in the previous chapter no.05 & 06, the 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 period 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 both the companies' future inventory position.

7.4 (A) STORES, SPARES etc.: The trend analysis of stores, spares etc. of Mawana Sugars Limited and Simbhaoli Sugars Limited with the help of modified & comparable data, as calculated in the previous chapter no. 05 & 06, can be tabulated & compared as under -

TABLE NO. 7.11

SHOWING COMPARATIVE TREND VALUES OF STORES, SPARES etc.

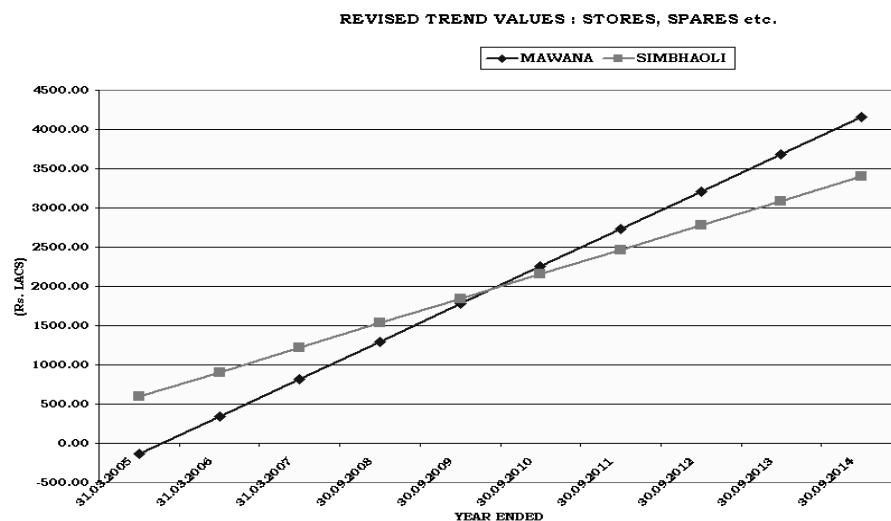
(Rs. LACS)

MAWANA		SIMBHAOLI	
(MSL)		(SSL)	
YEAR ENDED	TREND VALUES Y=a + bx	YEAR ENDED	TREND VALUES Y_c =a + bx
	Y = 819.78 + 477.83 x		Y_c = 1,219.49 + 311.48 x
31.03.2005	-135.88	31.03.2005	596.53
31.03.2006	341.95	31.03.2006	908.01
31.03.2007	819.78	30.09.2007	1219.49
30.09.2008	1297.61	30.09.2008	1530.97
30.09.2009	1775.44	30.09.2009	1842.45
30.09.2010	2253.27	30.09.2010	2153.93
30.09.2011	2731.10	30.09.2011	2465.41
30.09.2012	3208.93	30.09.2012	2776.89
30.09.2013	3686.76	30.09.2013	3088.37
30.09.2014	4164.59	30.09.2014	3399.85

The above table shows that there is an increasing trend in case of both these companies. On one hand MSL shows an increase of Rs. 477.83 lacs per year in the closing stock of stores, spares etc. and on the other hand SSL is having an increase of Rs.311.48 lacs per annum, which, of course, are subject to changes in the prices of stores &

spares items concerned due to fluctuations in purchasing power of rupee, imposition or withdrawal of tax, levy, cess etc. pertaining to these items.

But, right now MSL seems to be more concerned about an interruption-free manufacturing process as it's yearly trend clearly shows its intention of investing more funds every year, in times to come, for procuring stores, spares etc., in comparison to its counterpart. The above situation can be easily viewed & compared with the help of following graph also –



7.4 (B) RAW MATERIALS, COMPONENTS etc.: The trend analyses of Raw Materials, Components etc. of Mawana Sugars Limited and Simbhaoli Sugars Limited can also be assessed from the following table -

TABLE NO. 7.12

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

(Rs. LACS)

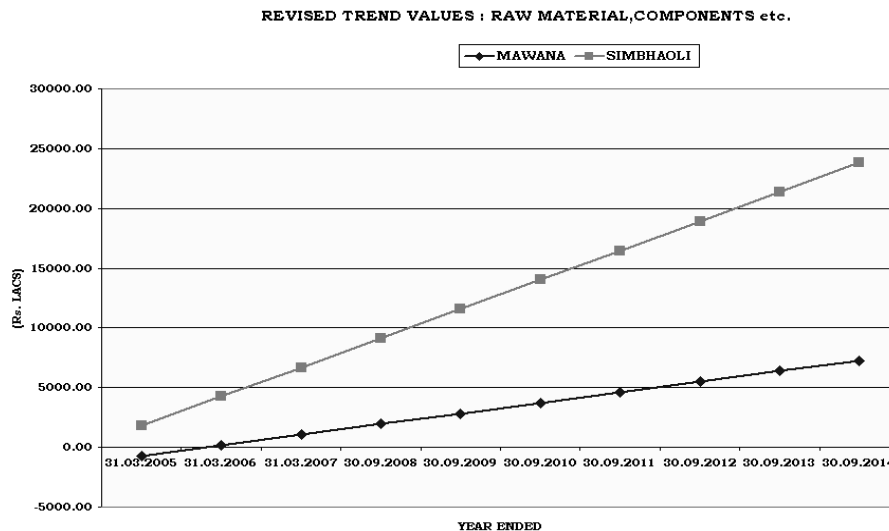
MAWANA		SIMBHAOLI	
(MSL)		(SSL)	
YEAR ENDED	TREND VALUES Y=a + bx	YEAR ENDED	TREND VALUES Y_c =a + bx
	Y=1,072.91 + 886.35 x		Y_c = 6,696.89 + 2,445.38 x
31.03.2005	-699.79	31.03.2005	1806.14
31.03.2006	186.56	31.03.2006	4251.51
31.03.2007	1072.91	30.09.2007	6696.89
30.09.2008	1959.26	30.09.2008	9142.26
30.09.2009	2845.60	30.09.2009	11587.64
30.09.2010	3731.95	30.09.2010	14033.02
30.09.2011	4618.30	30.09.2011	16478.39
30.09.2012	5504.65	30.09.2012	18923.77
30.09.2013	6391.00	30.09.2013	21369.14
30.09.2014	7277.35	30.09.2014	23814.52

The above table shows an increasing trend in respect of inventory of raw material, components etc. of both these companies. MSL shows an increase of Rs. 886.35 lacs per annum, whereas SSL is having an yearly increase of Rs.2,445.38 lacs, which is almost three times more than the

yearly increase of MSL. These, of course, are subject to changes in the prices of raw materials, components etc., especially in view of rates of sugarcane announced & controlled by government. Furthermore, fluctuations in purchasing power of rupee, imposition or withdrawal of tax, levy, cess etc. pertaining to these items could also affect the values of these items.

Thus, the annual trend values of SSL are a matter of worry and indicate an alarming situation because it is expected to invest more funds in raw materials etc. in times to come. As such, we cannot say that the inventory management of raw materials etc. by SSL is better than that of MSL. SSL needs to review immediately its policy of maintaining such a high level of raw materials inventory.

The above situation can be seen easily with the help of following graph also –



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

TABLE NO. 7.13

SHOWING COMPARATIVE TREND VALUES OF WORK IN PROGRESS

etc.

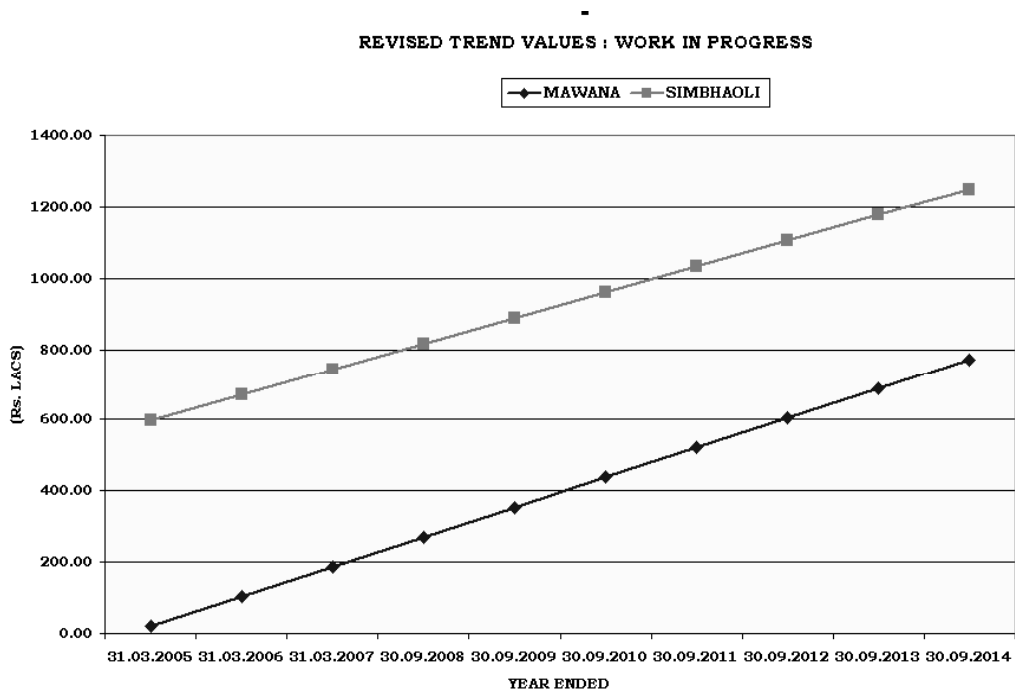
(Rs. LACS)

MAWANA		SIMBHAOLI	
(MSL)		(SSL)	
YEAR ENDED	TREND VALUES Y=a + bx	YEAR ENDED	TREND VALUES Y_c =a + bx
	Y = 187.03 + 83.60 x		Y_c = 743.13 + 72.35 x
31.03.2005	19.83	31.03.2005	598.42
31.03.2006	103.43	31.03.2006	670.77
31.03.2007	187.03	30.09.2007	743.13
30.09.2008	270.63	30.09.2008	815.48
30.09.2009	354.22	30.09.2009	887.83
30.09.2010	437.82	30.09.2010	960.19
30.09.2011	521.42	30.09.2011	1032.54
30.09.2012	605.01	30.09.2012	1104.90
30.09.2013	688.61	30.09.2013	1177.25
30.09.2014	772.21	30.09.2014	1249.60

This table also shows an increasing trend in the inventory level of work in progress of both these companies. MSL shows an increase of Rs. 83.60 lacs per annum, whereas SSL is having lesser annual increase of Rs.72.35 lacs, which, of course, are subject to changes in the prices & availability of the components of work in progress viz., raw materials, labour, overheads etc.

Thus, the work in progress inventory management of Simbhaoli Sugars Limited seems to be better in comparison to Mawana Sugars Limited as its annual investment in work-in-progress inventory is lesser than that of MSL.

The trend values can be portrayed with the help of a graph also –



7.4 (D) FINISHED GOODS: The trend analyses of finished goods of Mawana Sugars Limited and Simbhaoli Sugars Limited can be tabulated as under -

TABLE NO. 7.14

SHOWING COMPARATIVE TREND VALUES OF FINISHED GOODS etc.

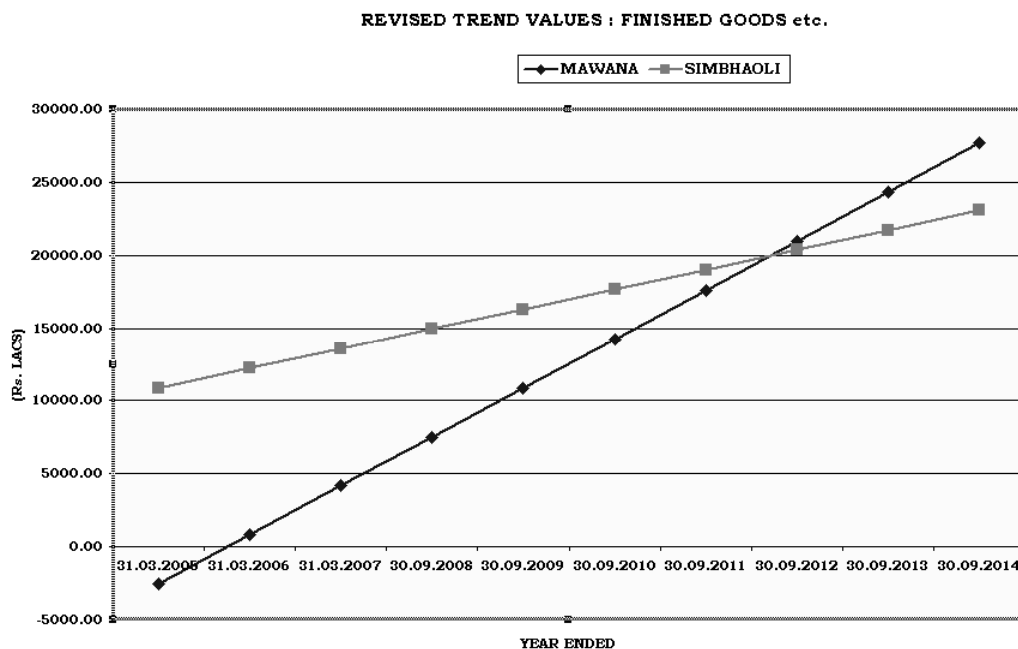
(Rs. LACS)

MAWANA (MSL)		SIMBHAOLI (SSL)	
YEAR ENDED	TREND VALUES $Y = a + bx$	YEAR ENDED	TREND VALUES $Y_c = a + bx$
	$Y = 4,169.52 + 3,356.63 x$		$Y_c = 13,601.20 + 1,353.14 x$
31.03.2005	-2543.74	31.03.2005	10894.91
31.03.2006	812.89	31.03.2006	12248.05
31.03.2007	4169.52	30.09.2007	13601.20
30.09.2008	7526.15	30.09.2008	14954.34
30.09.2009	10882.78	30.09.2009	16307.48
30.09.2010	14239.41	30.09.2010	17660.63
30.09.2011	17596.05	30.09.2011	19013.77
30.09.2012	20952.68	30.09.2012	20366.92
30.09.2013	24309.31	30.09.2013	21720.06
30.09.2014	27665.94	30.09.2014	23073.20

The above table shows an increasing trend in the inventory level of finished goods of both these companies.

MSL shows an increase of Rs. 3,356.63 lacs per annum, whereas SSL is having an annual increase of Rs.1353.14 lacs, which, of course, are subject to change in demand, production factors' prices & availability, imposition of bans by the government, emergence of new competitors etc.

As the annual increase, in the invested amount of finished goods inventory, is more in case of MSL, its inventory management policies needs an urgent review in order to avoid unnecessary blockage of funds in it. The above situation can be portrayed with the help of a graph also –



7.5 Quantitative Trend Value Analysis

As discussed in the previous chapter no.05 & 06, in addition to trend analysis in terms of monetary value above, it is necessary for the researcher to throw light on those items also which directly or indirectly usually affects inventory levels. This mainly includes quantitative details pertaining to production, sales, and raw material consumed along with, of course, the closing figures of inventories. As the purchasing power of rupee is also supposed to be affected by fluctuations in the exchange rates, therefore, it also becomes necessary to conduct a quantitative analysis of trend values.

7.5 (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. 7.15

SHOWING COMPARATIVE TREND VALUES OF PRODUCTION

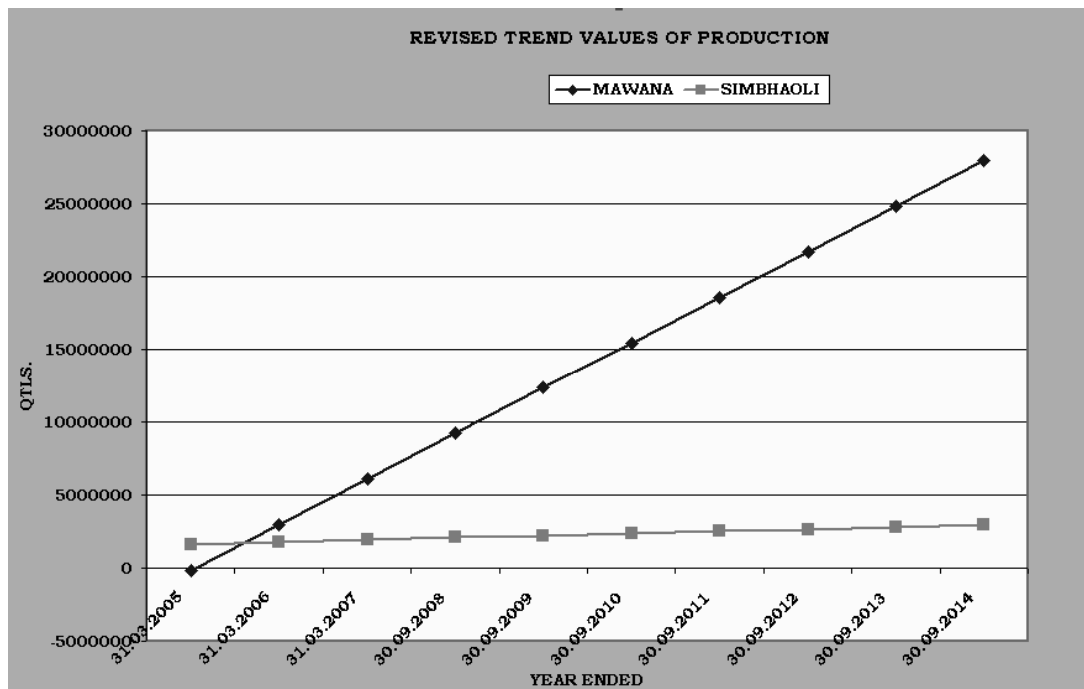
(QUINTALS)

MAWANA		SIMBHAOLI	
<i>(MSL)</i>		<i>(SSL)</i>	
YEAR ENDED	TREND VALUES $Y = a + bx$	YEAR ENDED	TREND VALUES $Y_c = a + bx$
	$Y = 60,97,144 + 31,22,358 x$		$Y_c = 19,34,638 + 146,036 x$
31.03.2005	-147572	31.03.2005	1642565
31.03.2006	2974786	31.03.2006	1788601
31.03.2007	6097144	30.09.2007	1934638
30.09.2008	9219502	30.09.2008	2080674
30.09.2009	12341860	30.09.2009	2226710
30.09.2010	15464218	30.09.2010	2372747
30.09.2011	18586576	30.09.2011	2518783
30.09.2012	21708934	30.09.2012	2664820
30.09.2013	24831292	30.09.2013	2810856
30.09.2014	27953650	30.09.2014	2956892

The above table shows an annual increase of 31,22,358 quintals in case of MSL which is almost 21 times more than the increase in production of SSL which is expected to be 146,036 quintals per year. This has a possibility of further reaching new heights due to adoption of more advanced techniques of production, use of more sophisticated plant & machinery, efficient management of

waste products, better changes in production schedules, increase in the demand of finished goods due to introduction of better varieties, timely arrival of monsoon, sufficient rainy season, fewer restrictions on imports etc.

Thus the yearly increase in production shows better management by MSL. The same can also be shown with the help of graph, as under-



7.5 (B) SALES: Similarly, the sales data is also used to get a better picture of future trend values, which can be tabulated as under -

TABLE NO. 7.16

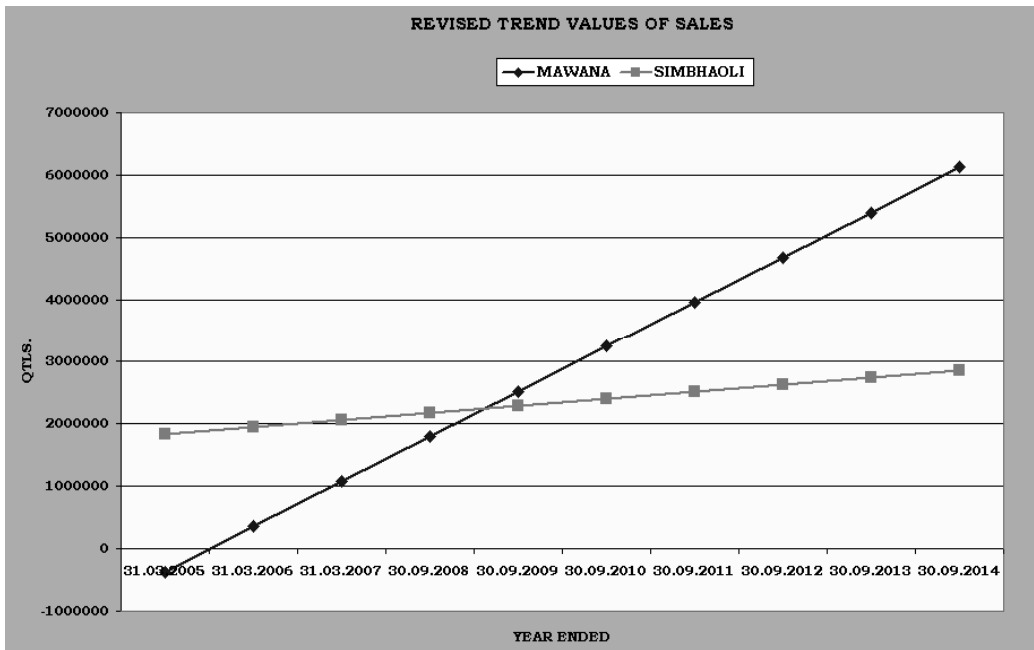
SHOWING COMPARATIVE TREND VALUES OF SALES

(QUINTALS)

MAWANA		SIMBHAOLI	
(MSL)		(SSL)	
YEAR ENDED	TREND VALUES Y=a + bx	YEAR ENDED	TREND VALUES Y_c =a + bx
	Y = 10,71,153 + 7,21,923 x		Y_c = 20,51,282 + 113,023 x
31.03.2005	-372694	31.03.2005	1825236
31.03.2006	349230	31.03.2006	1938259
31.03.2007	1071153	30.09.2007	2051282
30.09.2008	1793076	30.09.2008	2164305
30.09.2009	2514999	30.09.2009	2277328
30.09.2010	3236922	30.09.2010	2390351
30.09.2011	3958845	30.09.2011	2503374
30.09.2012	4680769	30.09.2012	2616396
30.09.2013	5402692	30.09.2013	2729419
30.09.2014	6124615	30.09.2014	2842442

The above table shows an yearly increase of 7,21,923 quintals in the sales volume of MSL whereas it is only 1,13,023 quintals per year for SSL. This has resulted in total projected demand of 61,24,615 quintals for MSL at the end, i.e. during the last year 2013-14 of study period, though it is expected to be only 28,42,442 quintals in case of SSL. This is a good sign and portrays a better picture of

management by MSL. This can be viewed with the help of following graph –



7.5 (C) CLOSING STOCK: Likewise, closing stock data of finished goods is used to assess the future position of closing inventories, which can be tabulated as under -

TABLE NO. 7.17

SHOWING COMPARATIVE TREND VALUES OF CLOSING STOCK

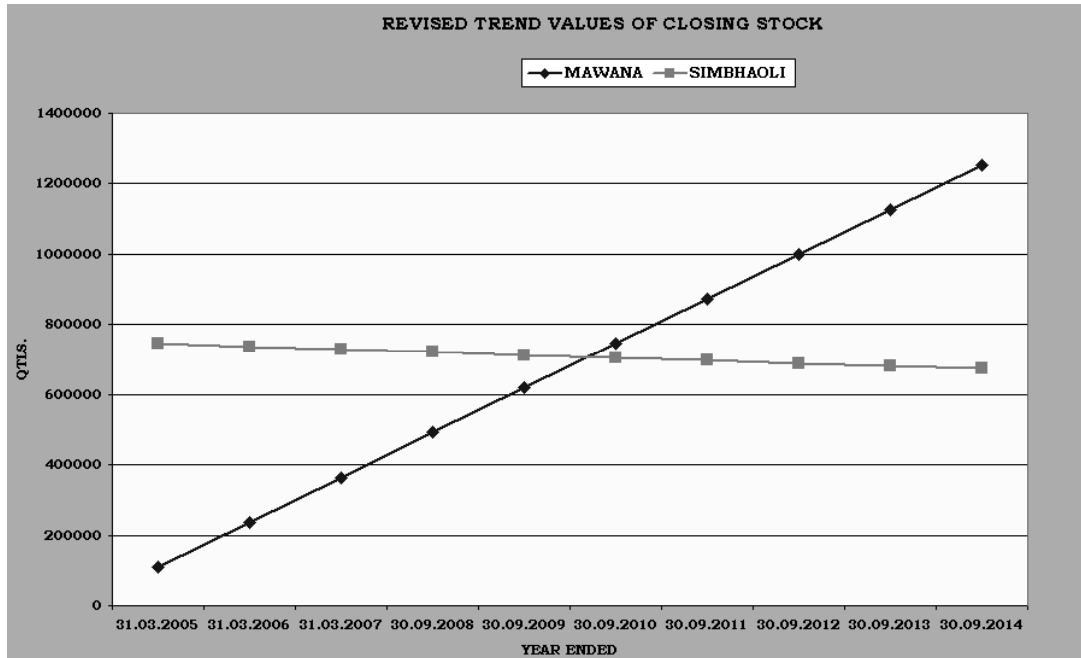
(QUINTALS)

MAWANA (MSL)		SIMBHAOLI (SSL)	
YEAR ENDED	TREND VALUES $Y = a + bx$	YEAR ENDED	TREND VALUES $Y_c = a + bx$
	$Y = 364,270 + 127,023 x$		$Y_c = 729,545 - 8006 x$
31.03.2005	110223	31.03.2005	745557
31.03.2006	237247	31.03.2006	737551
31.03.2007	364270	30.09.2007	729545
30.09.2008	491293	30.09.2008	721539
30.09.2009	618317	30.09.2009	713533
30.09.2010	745340	30.09.2010	705528
30.09.2011	872363	30.09.2011	697522
30.09.2012	999387	30.09.2012	689516
30.09.2013	1126410	30.09.2013	681510
30.09.2014	1253433	30.09.2014	673504

The above table shows an increase of 1,27,023 quintals per year in case of closing stock figures of MSL but on the other hand SSL shows a *decreasing* trend of 8,006 quintals annually. This has resulted in a figure of 673,504 quintals for SSL at the end of study period which is almost half of what MSL is expected to maintain by that time.

Thus, here SSL scores over MSL as its intentions of

reducing investment in closing stock of finished goods are quite clear from the above table and this is a sign of better inventory management. This relationship can also be portrayed with the help of following graph –



7.5 (D) RAW MATERIAL CONSUMED: Raw material consumption figures of study period is used to assess the future level of raw material consumption, which can be tabulated as under -

TABLE NO. 7.18

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

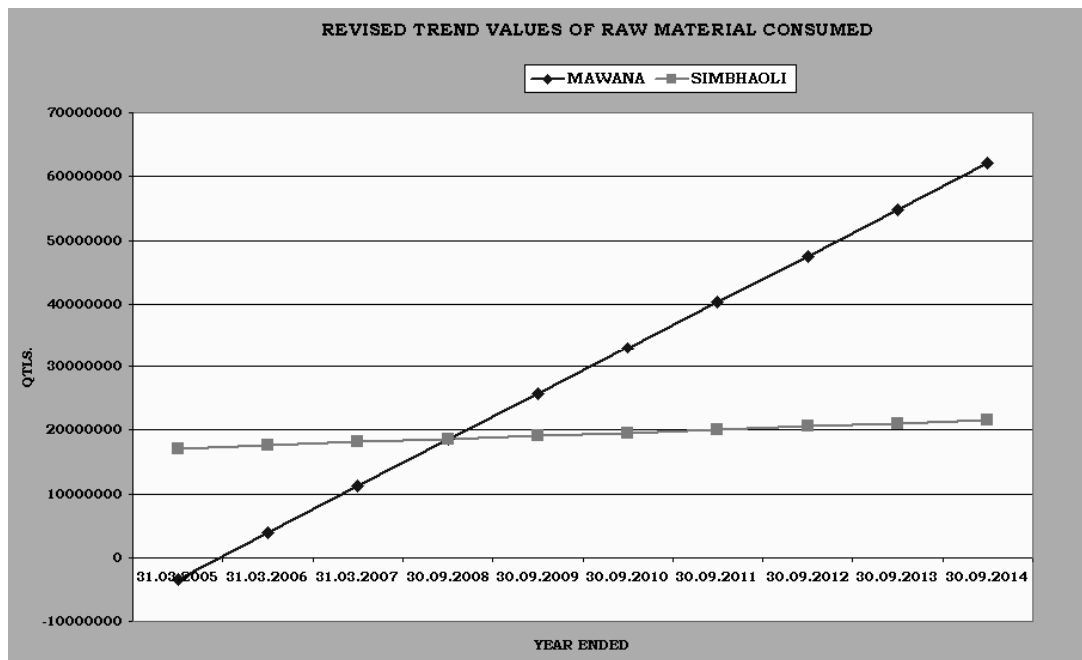
(QUINTALS)

MAWANA		SIMBHAOLI	
(MSL)		(SSL)	
YEAR ENDED	TREND VALUES Y=a + bx	YEAR ENDED	TREND VALUES Y_c =a + bx
	Y = 111,74,666 + 72,76,723 x		Y_c = 180,83,345 + 4,90,546 x
31.03.2005	-3378780	31.03.2005	17102254
31.03.2006	3897943	31.03.2006	17592799
31.03.2007	11174666	30.09.2007	18083345
30.09.2008	18451388	30.09.2008	18573891
30.09.2009	25728111	30.09.2009	19064437
30.09.2010	33004834	30.09.2010	19554983
30.09.2011	40281557	30.09.2011	20045528
30.09.2012	47558280	30.09.2012	20536074
30.09.2013	54835003	30.09.2013	21026620
30.09.2014	62111726	30.09.2014	21517166

The above table shows a tremendous amount of increase i.e. 72,76,723 quintals per year in the raw material consumption of MSL (which of course is subject to increase in production capacity due to increase in demand etc.) whereas it is only 4,90,546 quintals in per year in case of

SSL. In other words, MSL's raw material consumption is almost 15 times more than that of SSL.

Thus, more consumption of raw materials is a sign of better management which in turn will lead to more production, with an underlying assumption of having more demand of its goods. This comparison can easily be seen with the help of graph as under –



7.6 Testing of Hypotheses

7.6 (A) – HYPOTHESIS TESTING ABOUT STOCK OF

STORES, SPARES etc. OF BOTH SUGAR MILLS

NULL HYPOTHESIS (H_0) : *There is no difference between stock of stores & spares of both sugar mills.*

ALTERNATIVE HYPHESIS (H_1) : *The difference between stock of stores & spares of both sugar mills is significant.*

i.e. $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.19

SHOWING HYPOTHESIS TESTING ABOUT STOCK OF STORES, SPARES etc.

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	STORES & SPARES (Rs. LACS) (X)	YEAR ENDED	STORES & SPARES (Rs. LACS) (Y)
31.03.2005	146.51	31.03.2005	710.04
31.03.2006	296.48	31.03.2006	950.56
31.03.2007	324.53	30.09.2007	880.09
30.09.2008	1295.00	30.09.2008	1628.10
30.09.2009	2036.40	30.09.2009	1928.67
N_1	$\sum X$	N_2	$\sum Y$
5	4098.92	5	6097.46
MEAN OF X	819.78	MEAN OF Y	1219.50
CALCULATED VALUE		TABULATED VALUE	
$t = (-) 0.918$	or say, $ t = 0.918$	$t_8 (0.05) = 2.31$	

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS LESS THAN THE TABULATED VALUE, SO H_0 IS ACCEPTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN STOCKS OF STORES & SPARES OF BOTH THE SUGAR MILLS.

IN OTHER WORDS, INVENTORY OF STORES, SPARES etc. OF BOTH SUGAR MILLS IS NOT SIGNIFICANTLY DIFFERENT.

7.6 (B) - HYPOTHESIS TESTING ABOUT STOCK OF RAW MATERIALS, COMPONENTS etc. OF BOTH SUGAR MILLS

NULL HYPOTHESIS (H₀) : *There is no difference between stock of raw materials, components etc. of both sugar mills.*

ALTERNATIVE HYPOTHESIS (H₁) : *The difference between stock of raw materials, components etc. of both sugar mills is significant.*

i.e. H₀ : $\mu_1 = \mu_2$ against H₁ : $\mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.20

SHOWING HYPOTHESIS TESTING ABOUT STOCK OF RAW MATERIALS, COMPONENTS etc.

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	RAW MATERIALS, COMPONENTS (Rs. LACS) (X)	YEAR ENDED	RAW MATERIALS, COMPONENTS (Rs. LACS) (Y)
31.03.2005	112.87	31.03.2005	6664.47
31.03.2006	261.03	31.03.2006	4910.14
31.03.2007	198.46	30.09.2007	345.88
30.09.2008	234.07	30.09.2008	435.06
30.09.2009	4558.10	30.09.2009	21128.89
N ₁	∑X	N ₂	∑Y
5	5364.53	5	33484.44
MEAN OF X	1072.91	MEAN OF Y	6696.89

CALCULATED VALUE	TABULATED VALUE
------------------	-----------------

$t = (-) 1.437$	or say, $ t = 1.437$	$t_{\beta}(0.05) = 2.31$
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CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS LESS THAN THE TABULATED VALUE, SO H_0 IS ACCEPTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN STOCKS OF RAW MATERIALS, COMPONENTS etc. OF BOTH THE SUGAR MILLS.

IN OTHER WORDS, INVENTORY OF RAW MATERIALS, COMPONENTS etc. OF BOTH SUGAR MILLS IS NOT SIGNIFICANTLY DIFFERENT.

**7.6 (C) – HYPOTHESIS TESTING ABOUT STOCK OF
PROCESS STOCKS/ WORK IN PROGRESS etc. OF BOTH
SUGAR MILLS**

NULL HYPOTHESIS (H_0) : *There is no difference between process stocks/stock of work in progress of both sugar mills.*

ALTERNATIVE HYPOTHESIS (H_1) : *The difference between process stocks /stock of work in progress of both sugar mills is significant.*

i.e. $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.21

SHOWING HYPOTHESIS TESTING ABOUT STOCK OF WORK IN PROGRESS etc.

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	WORK IN PROGRESS (Rs. LACS) (X)	YEAR ENDED	WORK IN PROGRESS (Rs. LACS) (Y)
31.03.2005	69.35	31.03.2005	155.11
31.03.2006	86.53	31.03.2006	1233.22
31.03.2007	114.96	30.09.2007	930.67
30.09.2008	267.40	30.09.2008	526.28
30.09.2009	396.90	30.09.2009	870.35
N_1	$\sum X$	N_2	$\sum Y$
5	935.14	5	3715.63
MEAN OF X	187.03	MEAN OF Y	743.13

CALCULATED VALUE		TABULATED VALUE
$t = (-) 2.845$	or say, $ t = 2.845$	$t_8 (0.05) = 2.31$

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS MORE THAN THE TABULATED VALUE, SO H_0 IS REJECTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT PROCESS STOCKS / STOCK OF WORK IN PROGRESS OF BOTH SUGAR MILLS DIFFER SIGNIFICANTLY. IN OTHER WORDS, IT SHOWS THAT SSL IS HAVING MORE STOCK OF WORK IN PROGRESS IN COMPARISON TO MSL.

IN OTHER WORDS, INVENTORY OF WORK IN PROGRESS OF BOTH SUGAR MILLS IS SIGNIFICANTLY DIFFERENT.

**7.6 (D) – HYPOTHESIS TESTING ABOUT STOCK OF
FINISHED GOODS OF BOTH SUGAR MILLS**

NULL HYPOTHESIS (H₀) : *There is no difference between stock of finished goods of both sugar mills.*

ALTERNATIVE HYPHESIS (H₁) : *The difference between stock of finished goods of both sugar mills is significant.*

i.e. H₀ : $\mu_1 = \mu_2$ against H₁ : $\mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.22

SHOWING HYPOTHESIS TESTING ABOUT STOCK OF FINISHED GOODS

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	FINISHED GOODS (Rs. LACS) (X)	YEAR ENDED	FINISHED GOODS (Rs. LACS) (Y)
31.03.2005	154.83	31.03.2005	12337.12
31.03.2006	71.56	31.03.2006	14166.04
31.03.2007	107.48	30.09.2007	8200.52
30.09.2008	7079.93	30.09.2008	14232.88
30.09.2009	13433.80	30.09.2009	19069.42
N ₁	ΣX	N ₂	ΣY
5	20847.60	5	68005.98
MEAN OF X	4169.52	MEAN OF Y	13601.20

CALCULATED VALUE		TABULATED VALUE
$t = (-) 2.945$	or say, $ t = 2.945$	$t_{8(0.05)} = 2.31$

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS MORE THAN THE TABULATED VALUE, SO H_0 IS REJECTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT STOCK OF FINISHED GOODS OF BOTH SUGAR MILLS DIFFER SIGNIFICANTLY. IN OTHER WORDS, IT SHOWS THAT SSL IS HAVING MORE STOCK OF FINISHED GOODS IN COMPARISON TO MSL.

IN OTHER WORDS, INVENTORY OF FINISHED GOODS OF BOTH SUGAR MILLS IS SIGNIFICANTLY DIFFERENT.

7.6 (E) – HYPOTHESIS TESTING ABOUT PRODUCTION
OF BOTH SUGAR MILLS

NULL HYPOTHESIS (H₀) : *There is no difference between production of both sugar mills.*

ALTERNATIVE HYPOTHESIS (H₁) : *The difference between production of both sugar mills is significant.*

i.e. H₀ : $\mu_1 = \mu_2$ against H₁ : $\mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.23

SHOWING HYPOTHESIS TESTING ABOUT PRODUCTION

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	PRODUCTION (‘000 QUINTALS) (X)	YEAR ENDED	PRODUCTION (‘000 QUINTALS) (Y)
31.03.2005	62.630	31.03.2005	1731.590
31.03.2006	45.547	31.03.2006	1866.440
31.03.2007	1021.215	30.09.2007	1674.998
30.09.2008	27318.267	30.09.2008	2010.336
30.09.2009	2038.060	30.09.2009	2389.824
N ₁	$\sum X$	N ₂	$\sum Y$
5	30485.719	5	9673.188
MEAN OF X	6097.14	MEAN OF Y	1934.64

CALCULATED VALUE	TABULATED VALUE
$t = 0.517$	$t_8 (0.05) = 2.31$

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS LESS THAN THE TABULATED VALUE, SO H_0 IS ACCEPTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN PRODUCTIONS OF BOTH SUGAR MILLS.

IN OTHER WORDS, THE PRODUCTION OF BOTH SUGAR MILLS IS NOT SIGNIFICANTLY DIFFERENT. THEREFORE, DURING FURTHER ANALYTICAL STUDY OF INVENTORY ITEMS (i.e. STORES & SPARES, RAW MATERIALS, WORK IN PROGRESS & FINISHED GOODS) OF BOTH SUGAR MILLS, THE PRODUCTION LEVEL WILL ASSUME TO BE SAME.

7.6 (F) – HYPOTHESIS TESTING ABOUT SALES OF BOTH SUGAR MILLS

NULL HYPOTHESIS (H_0) : *There is no difference between sales of both sugar mills.*

ALTERNATIVE HYPOTHESIS (H_1) : *The difference between sales of both sugar mills is significant.*

i.e. $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.24

SHOWING HYPOTHESIS TESTING ABOUT SALES

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	SALES (‘000 QUINTALS) (X)	YEAR ENDED	SALES (‘000 QUINTALS) (Y)
31.03.2005	62.740	31.03.2005	1966.029
31.03.2006	44.781	31.03.2006	1888.506
31.03.2007	70.363	30.09.2007	1973.557
30.09.2008	2966.267	30.09.2008	1905.843
30.09.2009	2211.613	30.09.2009	2522.475
N_1	$\sum X$	N_2	$\sum Y$
5	5355.764	5	10256.410
MEAN OF X	1071.15	MEAN OF Y	2051.28

CALCULATED VALUE		TABULATED VALUE
$t = (-) 1.087$	or say, $ t = 1.087$	$t_8 (0.05) = 2.31$

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS LESS THAN THE TABULATED VALUE, SO H_0 IS ACCEPTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN SALES OF BOTH SUGAR MILLS.

IN OTHER WORDS, SALES OF BOTH SUGAR MILLS IS NOT SIGNIFICANTLY DIFFERENT. THEREFORE, DURING FURTHER ANALYTICAL STUDY OF INVENTORY ITEMS (i.e. STORES & SPARES, RAW MATERIALS, WORK IN PROGRESS & FINISHED GOODS) ON THE BASIS OF SALES OF BOTH SUGAR MILLS, THE SALES LEVEL WILL ASSUME TO BE SAME.

7.6 (G) – HYPOTHESIS TESTING ABOUT FINISHED GOODS CLOSING STOCK OF BOTH SUGAR MILLS

NULL HYPOTHESIS (H_0) : *There is no difference between finished goods closing stock of both sugar mills.*

ALTERNATIVE HYPOTHESIS (H_1) : *The difference between finished goods closing stock of both sugar mills is significant.*

i.e. $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.25

SHOWING HYPOTHESIS TESTING ABOUT CLOSING STOCK OF FINISHED GOODS

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	CLOSING STOCK (‘000 QUINTALS) (X)	YEAR ENDED	CLOSING STOCK (‘000 QUINTALS) (Y)
31.03.2005	0.460	31.03.2005	798.696
31.03.2006	12.258	31.03.2006	776.530
31.03.2007	963.110	30.09.2007	499.041
30.09.2008	407.633	30.09.2008	853.055
30.09.2009	437.889	30.09.2009	720.404
N_1	$\sum X$	N_2	$\sum Y$
5	1821.350	5	3647.726
MEAN OF X	364.27	MEAN OF Y	729.55

CALCULATED VALUE		TABULATED VALUE
$t = (-) 1.976$	or say, $ t = 1.976$	$t_8 (0.05) = 2.31$

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS LESS THAN THE TABULATED VALUE, SO H_0 IS ACCEPTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN FINISHED GOODS CLOSING STOCK OF BOTH SUGAR MILLS.

IN OTHER WORDS, FINISHED GOODS CLOSING STOCK OF BOTH SUGAR MILLS IS NOT SIGNIFICANTLY DIFFERENT.

7.6 (H) – HYPOTHESIS TESTING ABOUT RAW MATERIAL CONSUMED OF BOTH SUGAR MILLS

NULL HYPOTHESIS (H_0) : *There is no difference between raw material consumed of both sugar mills.*

ALTERNATIVE HYPOTHESIS (H_1) : *The difference between raw material consumed of both sugar mills is significant.*

i.e. $H_0: \mu_1 = \mu_2$ against $H_1: \mu_1 \neq \mu_2$, we calculate the test statistic :

TABLE NO. 7.26

SHOWING HYPOTHESIS TESTING ABOUT RAW MATERIAL CONSUMED

MAWANA SUGARS LTD.		SIMBHAOLI SUGARS LTD.	
YEAR ENDED	RAW.MAT.CONSUMED (‘000 QUINTALS) (X)	YEAR ENDED	RAW.MAT.CONSUMED (‘000 QUINTALS) (Y)
31.03.2005	1110.215	31.03.2005	16648.561
31.03.2006	1297.992	31.03.2006	17207.961
31.03.2007	1362.695	30.09.2007	18090.879
30.09.2008	27919.201	30.09.2008	21528.109
30.09.2009	24183.225	30.09.2009	16941.216
N_1	$\sum X$	N_2	$\sum Y$
5	55873.328	5	90416.726
MEAN OF X	11174.67	MEAN OF Y	18083.35

CALCULATED VALUE		TABULATED VALUE
$t = (-) 0.811$	or say, $ t = 0.811$	$t_8 (0.05) = 2.31$

CONCLUSION:

SINCE THE CALCULATED VALUE OF t IS LESS THAN THE TABULATED VALUE, SO H_0 IS ACCEPTED AT 5% LEVEL OF SIGNIFICANCE AND CONCLUDE THAT THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN RAW MATERIALS CONSUMED OF BOTH SUGAR MILLS.

IN OTHER WORDS, RAW MATERIAL CONSUMED OF BOTH SUGAR MILLS IS NOT SIGNIFICANTLY DIFFERENT.
