

Marketing Of Titanium Dioxide By Kerala Minerals And Metals Limited - An Analysis

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INTRODUCTION

The Kerala Minerals and Metals Ltd. (K.M.M.L.) is a public limited company situated at Sankaramangalam, Kollam district of Kerala state. It has a monopoly in Titanium Dioxide (Rutile) pigment (TiO_2) industry in India. It produces Titanium dioxide (Rutile), which is used for the manufacture of paints, plastic, rubber and printing ink, and in chemical industries also. The main customers of K.M.M.L. are paint industries.

STATEMENT OF THE PROBLEM

The Kerala Minerals and Metals Ltd. is exporting Titanium Dioxide (Rutile) to different countries in the world like China, Sri Lanka, South Korea, Italy, Turkey, Bahrain, Iran, Singapore and South Africa. The K.M.M.L. is facing stiff competition from the giant multinational companies like El Dupont de Nemours and Co. Inc. - U.S.A., Kerr-McGee Chemical Corporation - U.S.A., Kronos Titan - Germany, Ishihara Sangyo Kaisha - Japan, Sachtleben - Germany, National Titanium Dioxide Company - Saudi Arabia, Kemira - Finland, Huntsman Tioxide - a joint venture between Huntsman and ICIPIIC and Woodall - U.S.A. are also involved in the marketing of Titanium Dioxide. The K.M.M.L. also produces Titanium Tetra Chloride, Monazite, Ilmenite Zircon and Rutile. The major product of KMML is Titanium Dioxide (Rutile) (TiO_2), in which the company enjoys monopoly in India. It is worthwhile to know how far K.M.M.L. has succeeded in marketing their products by competing with the multinational companies.

OBJECTIVE OF THE STUDY

The objective of the study is to analyze the trends in the marketing of the products of Kerala Minerals and Metals Ltd.

MATERIALS AND METHODS

To study the trends in the marketing of K.M.M.L.'s products, secondary data for a period of 10 years from 1993-94 to 2002-03 were collected from the records and registers of the company. The percentage changes in production, price, demand, sales and export over the years were found out using the formula,

$$\frac{Y_2 - Y_1}{Y_1} \times 100$$

where, Y_2 = Production for the current year

Y_1 = Production for the previous year

The annual average growth rate in production, price, demand, sales and export were calculated using the formula,

$$\frac{\sum \left(\frac{Y_i - Y_{i-1}}{Y_{i-1}} \right) \times 100}{N}$$

Where, N is the number of observations.

Y_i is the production or price or demand or sales or export in i^{th} year.

The linear trend in production, sales, demand and price was attempted on the basis of following equation,

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$$\ln y_t = \alpha_1 + \alpha_2 di + \beta_1 t + \beta_2 (di \cdot t) + U_t$$

Where $di = 0$ for the first sub period = 1 for the second sub period.

RESULTS AND DISCUSSION

Keeping in view of the objectives, the results of the study are discussed under the following heads

Table 1: Year Wise Capacity Utilization

Year	Installed capacity (Metric tonnes)	Utilized (Percentage)
1990-'91	22000	41
1991-'92		46
1992-'93		44
1993-'94		67
1994-'95		82
1995-'96		68
1996-'97		48
1997-'98		66
1998-'99		88
1999-'00		103
2000-'01		115
2001-'02		117
2002-'03		128

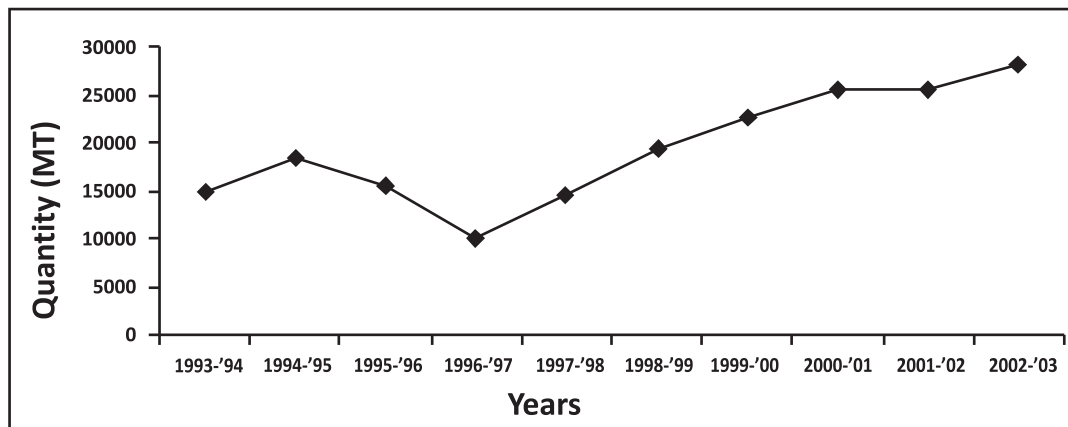
Source: Annual Reports of Kerala Minerals and Metals Ltd.

1) Capacity Utilization : The installed capacity of KMML production plant was 22000 metric tonnes. Table 1 shows the capacity utilization of the production plant of K.M.M.L. It can be seen from Table 1 that the capacity of the plant was 22,000 Metric Tonne per annum, but the utilization was only 41 percent in the year 1990-91. It increased to 82 percent in the year 1994-95. However, it declined to 48 percent in the year 1996-'97, due to some technical problems. Acceleration in the capacity utilization was registered from 1998-'99 onwards. The company produced more quantity rather than the installed capacity from 1999-'00 to 2002-'03 periods.

2) Production And Price : The production and price of K.M.M.L's Titanium Dioxide (Rutile) over the reference period along their rate of growth are presented in Table 2. The trends in production and price can also be seen from Figures 1 and 2 respectively.

The commercial production of Titanium Dioxide (Rutile) (TiO_2) started in the year 1985. The plant utilization was very

Figure 1 : Line Chart Showing The Production Of KMML Products



low due to technical and operational problems. The net result was low capacity utilization during 1985-86. It can be seen from Table 2 that the production, which was at 14707 metric tonnes in the year 1993-'94, increased to 18402 metric tonnes in the year 1994-'95, showing an annual growth rate of 25.12 percent. However, it declined to 15378 metric tonnes in the year 1995-'96 at the rate of - 16.43 percent. Further, the production declined to 10115 metric tonne in the year 1996-'97 at a rate of - 34.22 percent. Thus, during the four years from 1993-94 to 1996-97, the production declined at an annual average rate of - 25.53 percent. This was mainly due to the power supply failure, voltage dip, technical and operational problems. The power cut imposed by Kerala State Electricity Board due to lay-off was also a major reason for the decline.

Acceleration in production was registered from 1997-'98 onwards. The production, which was at 14486 metric tonnes in the year 1997-98, increased to 28136 metric tonnes in the year 2002-03. It recorded an annual average growth rate of 19.45 percent. The steady increase in production during this period was mainly the outcome of the increase in demand for the product.

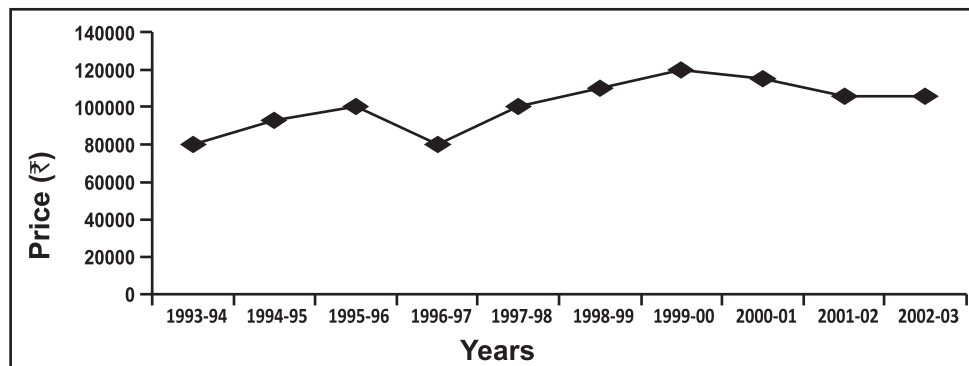
Table 2 : Year Wise Production And Price Of K.M.M.L's Titanium Dioxide Rutile

Year	Production		Price	
	Quantity (MT)	Growth rate (%)	Quantity (MT)	Growth rate (%)
1993-'94	14707	-	80000	-
1994-'95	18402	25.12	92500	15.63
1995-'96	15378	-16.43	100000	8.11
1996-'97	10115	-34.22	80000	-20
1997-'98	14486	43.21	100000	25
1998-'99	19317	33.35	110000	10
1999-'00	22723	17.63	120000	9.10
2000-'01	25426	11.90	115000	-4.16
2001-'02	25612	0.73	106000	-7.83
2002-'03	28136	9.85	106000	0

Source: Annual Reports of Kerala Minerals and Metals Ltd.

Table 2 also shows the changes in price of the Titanium dioxide (Rutile) pigment produced by K.M.M.L., during the reference period. The price of the TiO_2 is fixed by the pricing committee of K.M.M.L., on the basis of variations in demand in the market. It can be seen from Table 2 that the price of TiO_2 (Rutile), which was at ₹ 80,000 for one metric tonne in the year 1994 increased to ₹ 100,000 for one metric tonne in the year 1996, showing an average growth rate of 11.87 percent, which was due to the good demand from the customers. The monopolistic nature of the company might be a contributory factor for the increase in price. However, it declined to ₹ 80,000 per metric tonne in the year 1996-97 at a rate of -20 percent.

Figure 2 : Line Chart Showing The Price Of The KMML's Products



Acceleration in the price of the Titanium Dioxide (Rutile) was registered from the year 1998 onwards, due to the

demand from the customers and also due to high cost in production. The increase in cost of production had also been a factor, which induced a price increase. The price of the product increased to ₹120,000 in the year 1999-2000, which recorded an annual average growth rate of 14.7 percent. However, it declined to ₹ 106,000 for one metric tonne in the year 2001-2002, registering an annual average rate of decline of 5.99 percent. During this period, the giant multinational companies entered into the Indian market after globalization, liberalization and privatization. K.M.M.L. was unable to compete with the innovative marketing strategies by providing some compliments to the customers, which were adopted by the multinational companies. An American company named El Dupont was one of the major importers of the TiO_2 in India. These types of multinational companies are selling their products at a low prices as compared to KMML. Hence, the company has to reduce the price for competing with multinational companies.

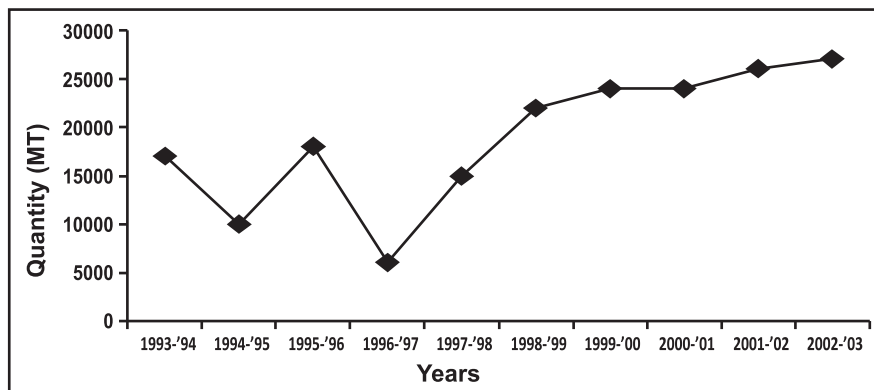
3) Demand And Sales : The '*KMML marketing department*' forecasts the demand for the Titanium Dioxide (Rutile) pigment based on the sale of the products in the previous years. Table 3 and Figure 3 shows the demand for the Titanium dioxide (Rutile) pigment of KMML.

Table 3 : Year Wise Demand And Sales For The Titanium Dioxide (Rutile) Pigment (TiO_2)

Year	Demand		Sales	
	Quantity (MT)	Growth rate (%)	Quantity (MT)	Growth rate (%)
1993-'94	17000	-	16817	-
1994-'95	10000	-41.20	10150	-39.64
1995-'96	18000	80	18015	77.51
1996-'97	6000	-66.66	6059	-66.37
1997-'98	15000	150	14708	142.75
1998-'99	22000	46.66	21527	46.36
1999-'00	24000	9.09	23384	8.63
2000-'01	24000	0	23502	0.50
2001-'02	26000	8.33	26202	11.49
2002-'03	27000	3.85	26746	2.10

Source: Annual Reports of Kerala Minerals and Metals Ltd.

Figure 3: Line Chart Showing The Demand For The KMML's Products



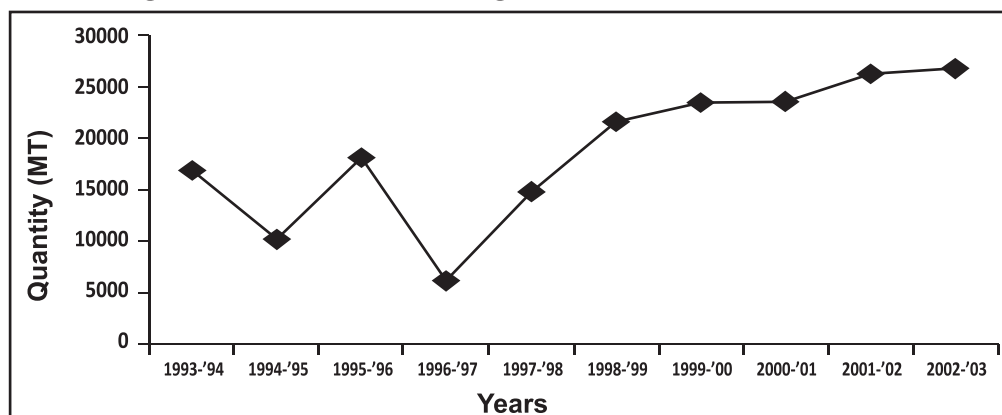
It can be seen from Table 3 that there had been no specific trend in the demand for TiO_2 prior to 1996-97. It declined from 17,000 metric tonne in the year 1993-94 to 10,000 metric tonne in the year 1994-95 at a rate of 41.20 percent. Then, it increased to 18,000 metric tonne in 1995-96, showing a growth rate of 80 percent. However, again, it declined to 6,000 metric tonne in the year 1996-97 at a rate of 66.66 percent due to the price variation of the product. The price of the product was ₹ 80,000/- per metric tonne in the year 1993-94 and corresponding demand was 17,000 metric tonne, but in the next year, the price increased to ₹ 92500 per metric tonne and the demand declined to 10000 metric tonne. It

shows that price is a major factor affecting the demand of the product.

Acceleration in demand was registered from 1997-98 onwards. Demand which was at 6,000 metric tonne in the year 1996-97 increased to 27,000 metric tonne showing an average growth rate of 36.32 percent. Then, the demand recorded an increasing trend from 1997-98 onwards, as evidenced by Table 3 and Figure 3. The steady increase in demand during this period was mainly the outcome of the sale of the products during the previous years.

4) Sales: The sales section of the KMML obtains orders from the customer, receives the payment in the form of cheque or Demand Draft, despatches the product and forwards the invoice to the financial department.

Figure 4 : Line Chart Showing The Sale Of KMML's Products



The trend in sales of Titanium Dioxide is shown in Table 3 and Figure 4. It can be seen from Table 3 that sales, which were at 16,817 metric tonnes in the year 1993-94, declined to 10,150 metric tonnes in the year 1994-95 at a rate of 39.64 percent due to increase in price and decrease in demand for the product. Then, it increased to 18,015 metric tonnes in the year 1995-96 at a growth rate of 77.51 percent. However, again it declined to 6,059 metric tonnes in the year 1996-97 at a rate of 66.37percent. This shows that the sale of TiO_2 is closely associated with demand, price and production of the product.

Acceleration in the sales was registered from 1997-98 onwards. From 1997-98 to 2002-'03, the sales recorded increasing trend with an annual average growth rate of 35.31 percent. This was made possible due to rupee devaluation, which made the import of TiO_2 (Rutile) pigment uneconomical.

5) Export: The trend in export of Titanium dioxide (Rutile) pigment produced by the Kerala Minerals and Metals Ltd. is shown in Table 4.

Table 4 : Year Wise Export Of Titanium Dioxide (Rutile) Pigment (TiO_2)

Year	Quantity (Metric tonne)	Growth rate (Percentage)
1999-00	84.05	-
2000-'01	52.90	-37.06
2001-'02	1751	32.10
2002-'03	2696	53.96

Source: Annual Reports of Kerala Minerals and Metals Ltd.

It can be seen from Table 4 that the export which was at 84.05 metric tonne in the year 1999-00, which declined to 52.90 metric tonne in the year 2000-01, at a rate of 37.06 percent, due to the high price compared to other multinational companies. However, it increased from 2001-02 onwards. The growth rate during this period was 32.10 percent in 2001-02 and 53.96 percent 2002-03. These figures may be pointing towards the possible increasing trend in the export of TiO_2 (Rutile) by KMML, after the globalization and liberalization.

6) Overall Growth Rate Of KMML : The overall growth rates in the selected economic variables were analyzed using the methodology discussed earlier and the results are given in Table 5.

From Table 5, it can be seen that there is significant difference in the rate of growth achieved during the first and second sub periods. It can be seen that production, demand and sales registered a four-fold increase in growth rate during the

Table 5 : Growth Rate Of KMML In The Selected Variables

Variable	Growth rate		R ²
	First sub period (1993-94 to 1996-97)	Second sub period (1997-98 to 2002-03)	
Production	2.26	17.37	0.86
Sales	3.50	22.56	0.63
Demand	2.89	22.56	0.62
Price	0.78	0.39	0.67

Table 6: Pearson's Correlation Coefficient Between Pairs Of Different Variables (2-tailed)

	Production	Price	Demand	Sales
Production	1	0.744*	0.868**	0.872**
Price	0.744*	1	0.777**	0.766**
Demand	0.868**	0.777**	1	0.999**
Sales	0.872**	0.766**	0.999**	1

* Significant at 0.05 level (2-tailed) ** Significant at 0.01 level (2-tailed)

second sub period. These three variables are moving together. The high correlation between the above three variables is evident from Table 6. However in the case of price, the average growth rate was relatively higher during the first sub period than the second.

There is significant and high correlation between production, demand and sales. The correlation between demand and production is 0.87 percent, sales and production was 0.87percent. However, the correlation between price and other variables are comparatively lower. This is mostly due to the stiff competition from the multinational giant, El Dupont that offered a lower price for the Titanium Dioxide (Rutile) pigment.

CONCLUSION

From the above analysis, it is clear that K.M.M.L. is one of the significant players in the world oligopoly market of Titanium Dioxide (Rutile) pigment. The installed capacity is lower than the domestic market. Thus, there is an excess demand in the market, which is left to be tapped by KMML. However, the liberalization and opening up of the economy have thrown KMML to stiff competition from multinational companies like, El Dupont, Kerr-McGee Chemical Corporation, Kronos Titan, Sachtleben etc. These companies are adopting various price and non-price marketing strategies, which the KMML is fighting hard to withstand.

To increase the efficiency of KMML, the marketing department must design checklists for all its activities and use them regularly. This will ensure that each aspect of marketing activity is looked into and can take corrective measures wherever necessary. The company should take the decision for increasing the plant production capacity of the Titanium Dioxide (Rutile) pigment unit, so as to reap the economies of scale, which will reduce the cost of production and improve their competitiveness in the market.

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