

**Case****DECCAN PIGMENTS AND PAINTS LIMITED (DPPL):  
STEERING THROUGH VOLATILE MARKETS FOR  
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**Abstract:**

*DPPL, a public sector enterprise operating globally, involved in mining, processing and marketing of heavy metals like Zircon and Titanium Dioxide, is facing multi-dimensional challenges in its internal organisational matters and in external environment, facing volatile scenarios of competition from global markets and industry. The Managing Director is saddle with the task of crafting and fine tuning the competitive strategy to build the organisation as a pro-people, pro-customer entity that sustains its market presence over global volatilities of markets, industry, technology and customer needs for these products.*

*Case is developed to help orient the students with volatility of industrial products and markets that are b2b and help build elements of a pro-people organisation that addresses all stakeholders of the company. Especially, the case attempts:*

- to understand and appreciate VUCA scenarios in global businesses*
- to conduct and analyse external and internal environment appraisals to map the dynamics of heavy metals industry and paints and pigments business.*
- to build sensitivity to the issues of society and environment while involved in mining and metal processing industry*
- to map the global market dynamics and build a high level of responsiveness as a core competence to compete in global markets and global competitors.*

**Key words:** *Strategy, VUCA, Global Strategy*

### **Opening:**

Anand Rao, Managing Director, Deccan Pigments and Paints Limited (DPPL), was busy giving a final touch to the next Three-Year Strategic Plan for 2018-20, for the approval of the Board of Directors. It was a sultry afternoon of June 2017, and the scenarios in which DPPL has to steer through in the coming periods were adding to the heat, humidity and discomfort. The prospects for Titanium Dioxide appear to be challenging, in terms of global production and consumption trends and price fluctuations. While his company has built a portfolio of highly sought after minerals from the sands of Malabar beaches, a time has come when he has to take a firm call about how to handle the Titanium Dioxide business of the company; how to shield his company from the market fluctuations and how best to steer clear of the environmental pollution and sustainability challenges in the mining and processing operations.

Rao called for scheduling a meeting, asking for a brain-storming session on operations and marketing and industry scenarios, and requested all the senior managers of the company to join, especially, GM - Operations and his team in mining and processing departments, Senior Managers Marketing, Operations and Finance and GM - Administration, and the Management Trainee who was working under MD, for the past few months, to study DPPL marketing and business operations in the last three months. Krishna Joshi, working as a summer intern with Rao, just submitted

a brief report of a gist of his study findings. Krishna completed his first year MBA from a top B School of the country, interning at DPPL for the last three months, studied the organisation, its business, and market inquisitively and assessed the distribution network of the company. Rao was hoping that the internship report and its presentation would lead to better understanding of the global and domestic industry and help him shape the three year plan.

Rao prides himself to be part of a highly aggressive and successful company, despite it being a state level public sector enterprise and he is one of the few experienced marketers in this niche industry, working with DPPL during the last two decades, in reaching to this position and building its market position to a very strong and formidable level. He nurtures the dream of making DPPL a globally reckoned player in the minerals and metals sector and aggressively works to building up competitive space for his firm in developing and controlling the markets. Even as all invited joined the meeting and Krishna commenced his presentation, Rao was reminiscing the growth story of DPPL and the challenges it faced, and is continuing to face.

### **Titanium Dioxide Industry and Indian Beaches**

The long coastal line of India, with pristine beaches and white and golden sands is a cynosure of travellers from across the globe and one finds summers fully patronised by global tourists in these beaches across the length of east

and west coasts. While it be so, these beaches are also attractive to both Indian and foreign entrepreneurs, who would like to turn the raw minerals into real gold, so to say! Coming to the present case, Indian sea-coast holds abundant reserves of two minerals - Illeminite and Rutile, across the long line of Indian beaches, are expected to be more than 60 million tonnes. The beaches of Maharashtra, Kerala, Odisha and Tamilnadu are rich in these minerals, with some estimates that Kerala alone accounts for around 45 million tonnes reserves and Odisha for another 5-10 million tonnes of these minerals.

Illeminite and Rutile are highly valuable raw material sources in the manufacture of Titanium Dioxide ( $\text{TiO}_2$ ) pigment manufacture.  $\text{TiO}_2$  is the ingredient giving colour in many industrial products such as paints, rubber, plastic and printing inks etc. The partly restrictive industrial policy of India doesn't offer much access to global companies to access these mineral resources, however, allows to compete with local companies in supplying  $\text{TiO}_2$  as a raw material to industries involved in manufacture of paints, inks etc. Thus, the domestic companies which have an access to the mining of these minerals expect to have a competitive advantage against the foreign  $\text{TiO}_2$  suppliers. Abundant natural resources across the country also augurs well for continued long term growth story for a firm that can harvest the advantages of easy access, open mining and low cost beach sands in playing a dominating role in industrial markets across the globe.

### Early years of DPPL

Acknowledging  $\text{TiO}_2$  as a sustainable natural resource based industry, a visionary entrepreneur started harnessing the beach sands of Kerala way back in 1932. The first full-fledged mineral separation plant in Chavara, Kerala was established by M/s Pereira and Sons (Travancore) Pvt. Ltd., who were involved in mining and separating mineral sands into various constituents like Illeminite, Monazite, Rutile, Zircon, Leucoxene etc. In 1956 this concern was taken over by the state government of Kerala and was run under the control of industries department, for the next fifteen years and in 1972, it was converted into a fully owned state enterprise, in the name of Deccan Pigments and Paints Limited (DPPL), managed by Government of Kerala.

Till 1974, it continued its operations with just one Mineral Separation Plant; in 1974, it received a letter of intent to set up a manufacturing plant for the production of Titanium dioxide ( $\text{TiO}_2$ ) pigment using Chloride process. It soon obtained a license too, in the pre-liberalised India, as it happened to be a public sector enterprise, to set up its full-fledged mineral processing plant to recover Titanium Dioxide and few other industrial grade purified minerals. However, the construction and commissioning of the plant took a long time and after several delays, the plant was commissioned in December 1984, with which DPPL became the first and only Integrated Titanium dioxide plant in the world.

Thereafter, for several years, DPPL struggled to run the business in a profitable way, and ran into losses till 1991. In 1991, DPPL realised the need to address the losses and the need to turnaround, as the company realised that it has core strengths and advantages that no other firm in this industry can dream of. The realization that it can establish itself as a market leader serving the TiO<sub>2</sub> due to the vertical integration it created for raw material sourcing, processing and offer industry relevant and highly sought after products, lead to the company gearing up for turnaround. DPPL worked on turn-around strategies, with the commitment starting from top management percolating down to the lowest cadre of workers, during 1991-1993. The Company reached the breakeven level by 1993. From 1993-1994 onwards, the company started to make profits and wiped out the entire accumulated loss within a few years and repaid the long term loans. Thereafter, it did not look back from its story of success and growth.

### **DPPL in 21st Century**

DPPL is located at Sankaramangalam near Chavara, Kollam, and a coastal town 85 km north of Thiruvananthapuram. DPPL is situated on the side of NH-47 with around 285 acres for its factory and various activities.. DPPL has worked to grow to a worldwide reputation as a successful, profitable and socially responsible company with an eco-friendly image between 1994 and 2017. The company derived strength from its dedicated manpower and

customer organization. About 2000 employees are in the rolls of the company.

The DPPL has established itself as a modern, progressive and state of the art technology holder in TDO industry, by way of a series of technical collaborations with M/s. Kers Gee Chemical Corporation of USA; M/s. Belight Corporation of America; and M/s. Wood Dunkham of UK, to handle the raw materials and produce TDO using Chloride based production process. DPPL is certified by various certification authorities for testing, inspection and calibration services, good quality management system, environmental management system and occupational health and safety (OH&S) management system. The manufacturing processes followed by DPPL for two of its key products is detailed in Diagrams No. 1 and 2. DPPL pursued global level certification standards and accomplished setting them in an exemplary way over the years. They are detailed in exhibit 8. As a result, DPPL's management was acknowledged by various bodies and DPPL received several awards for its manufacturing, quality and environmental standards, as listed in exhibit 9.

### **Titanium Dioxide and its significance in global industrial markets**

TDO is an effective ingredient of paints. It increases the opacity of paint and improves the gloss and finishing quality of the paint. Almost 30% of the cost of manufacture of a paint is accounted by TDO. Apart from paint industry, it is

extensively used in ceramics, tiles, designer outdoor fixtures, plastic, cosmetics and paper industry. So, wherever there is colour, TDO pigment has a role to play. Its ability to screen UV rays makes it useful in sunscreen lotions also. The history of commercial grade rutile TDO pigment dates back to 1951 when it was first launched in market as a far superior alternative to pigments like white lead for paint industry. It is very interesting to note that companies such as Du Pont in USA and Europe went ahead with processing of sands for TDO, around the same time when M/s Pereira and Sons (Travancore) Pvt. Ltd was pioneering manufacture and sale of TDO through indigenous ways to the local and European industry. Since then the growth saga of DPPL was neck-to-neck with Du Ponts, and others, in terms of upgrading to newer technologies and processing methods, by 1991, when Chloride based TDO manufacturing became most sought after by the industry, DPPL was already leading in supplying large quantities of the same to Indian and International clients. From the times when the demand for TDO was a small 100,000 MT globally in 1950s, to the present global industry consumption has reached about 5.5 million tons with a market value of around \$15 billion by 2020-22.

The other products of this company include various minerals extracted from the sand, such as titanium dioxide sponge – a product used and completely bought by Bharat Space Research Organisation (BSRO); and few other products which are produced as

intermediaries during the production of titanium dioxide. A list of all minerals and products made by DPPL is given in Exhibit 1. The company planned to reach a production level of 100,000 MT by early 21<sup>st</sup> century, so as to establish as a major supplier, however for various reasons, the company maintained the production capacities at the initially established levels of 40,000 MT till date. Rao is still not very sure whether to pursue capacity expansion in the current global scenarios.

### **The Market**

The demand for titanium dioxide pigments in India is around 200,000 MT, of which 60,000 MT is met by domestic players and the rest is fulfilled by international players. DPPL has a share of about 28000 MT in domestic market in the year 2013-14, and also registered 12,000 MT international sales. DPPL accounts for a market share of about fifty percent of domestic players and caters to around 15% of the total domestic demand.

The global demand for  $TiO_2$  is around 5.5 million tons valued at around \$15 billion, with two of the US companies accounting for almost fifty percent of market. China has the dubious distinction of world's largest consumer for several decades, using almost 70% of the global production, and was very shrewd to tap the business opportunity when west went into repeated cycles of recession, and thus refraining from adding capacities to, and set up several production units and encouraged joint ventures to become not only the

cheapest but a significant volume supplier of  $\text{TiO}_2$  disrupting the global supply chains and markets. Today, Chinese players account for 10- 30% of the global supplies. However, industry data is highly contradicting, with no firm understanding of who controls the demand and supply globally. Titanium Dioxide Manufacturers Association, majorly representing American, European and Pacific producers, offers mixed interpretation of the impact of Chinese players and supplies.

### Competitive Scenario:

DPPL is witnessing chequered sales both in domestic and international markets. In the last couple of years the competition level has raised to a very significant level and the outcome of this has resulted in shrinking market share for DPPL. At present there are better products available in the market, produced by international players like Chemour, DuPont, Crystal and Tronox. A large number of Chinese players, working with small quantities each, have turned the competition even more intense.

### $\text{TiO}_2$ and Global market scenario

The list of international players, who operate both Chloride based technologies as well as other technologies in making TDO are:

- Dupont (USA)
- Chemours (USA)
- Huntsman (USA)
- Ishihara (Japan)
- Hoitex (USA)
- Millennium (Germany)

- Henduk (Seoul, Korea)
- Flectha Titanium Products (New Zealand)
- Tofins (Netherlands)
- Crystal (Multi-country)
- Tronox (Multi-country)

Competition aggressively pursues differentiation strategies based on the  $\text{TiO}_2$  production processes; based on application purposes and based on core  $\text{TiO}_2$  product characteristics bundled with production process. Deriving TDO is done using either sulphate process or chloride process and chloride process is touted to be the cleanest and sulphate process the dirtiest, with the third process being evolved as a mid-way in terms of cost of production as well as extent of pollution it leads to, is increasingly attempted by companies, but with unique adaptations by each company to suit its supply chain.

The demand for  $\text{TiO}_2$  pigment is present around the globe but as a country, China has surpassed all other countries in terms of consumption. Almost quarter of the entire world's demand is used to fulfil the rapid growth of Chinese economy. Europe consumes over 30% of the total demand, while Asian countries command 19% of the TDO consumption and rest in the American continent.

The TDO pigment industry has witnessed surge in the demand over the last two decades after India's economic reforms during 1991-92, with rapid growth witnessed in infrastructure development, real estate sector and

lifestyle spending. Paint industry is leading consumer of  $\text{TiO}_2$  pigment with around 75% of the total consumption, followed by plastics, ink and paper industry. The consumption of chloride based pigment is on lower side as compared to sulphate based in spite of better properties, due to the cost and price it commands. The Chinese market used to specialize in the cheaper sulphate route pigment till 2014, and suddenly transformed itself as a major player in other two process based TDO too, thus giving TDO at all price points to its buyers. Today around 70% of local demand is met by importing the pigment with a majority volume coming from China. International players like Chemours, Huntsman are expanding by partnering with distribution firms in India. The production capacity of firms around the world today is way more than the demand. This scenario is keeping the prices below the level of year 2012 when it reached its peak, even at the end of 2016.

#### **Domestic Market of TDO:**

The major domestic firms in Titanium dioxide market are:

- TTP Ltd , Trivandrum
- Kimburn Chemicals, Chennai
- Konark Chemicals, Kolkata

These firms are producing the rutile based Titanium dioxide which are of different variety having different properties and uses and said to be inferior for paint industry but a better option for textile industry.

#### **The DPPL operations**

##### **The Production:**

The significance of Chloride process for making  $\text{TiO}_2$  for DPPL, happens to be both technology driven as well as customer application driven.

Titanium dioxide ( $\text{TiO}_2$ ), also referred to as Titania, is a substance as old as the earth itself. Titanium Dioxide is essentially harvested from sea. The beaches with a wealth of rare earth minerals help obtain not only Titanium Dioxide, but various other production grade minerals, such as Zircon, Monazite, Magnesium etc. The Mineral Separation Unit (MS Unit) of DPPL is engaged in the separation of Ilmenite, Rutile, Leucoxone, Monazite, Silliminite etc. from the sand obtained from beaches by open mining. The MS Unit employs Gravitational, Magnetic & High Tension Electrostatic Techniques for separation of minerals from the sand. Raw Ilmenite is chemically processed to remove impurities such as iron, leaving the pure, white pigment available for use. DPPL is India's first and only manufacturer of Rutile Grade Titanium dioxide using the chloride process.

Another unique product offered by DPPL is Titanium Sponge. The production technology being adopted for production of titanium sponge is a batch process based on the Kroll process. The titanium sponge plant is designed to produce 500 TPY of commercially pure Titanium sponge by the reduction and pyro-vacuum distillation of anhydrous titanium tetrachloride ( $\text{TiCl}_4$ ) with Magnesium.

The company, maintained the production levels of  $\text{TiO}_2$  at 40,000 MT and Sponge at 500MT to meet the demand of its clients. While it was a huge accomplishment in 1990s, its ambitions to increase production to 60,000 MT in the first phase and then to 100,000 MT subsequently, didn't materialize till date. Company introduced few incremental changes in the mechanical and chemical processing equipment but the overall technology and production process unchanged. As a result, it appears to have become sensitive to the costs of oscillating demand - when the prices are low, its profits plummet and over stocking becomes unavoidable. DPPL has very high fixed costs, about 200 crores annually, and its guessed that increasing production capacities, might help in achieving economies of scale as well as harvest experience curve effect in bringing down the production costs.

As of April 2017, the cost of producing  $\text{TiO}_2$  for DPPL went up to Rs.1,36,000 per MT which, in the understanding of DPPL, is very high as compared to industry standards. It was observed that the manufacturing costs of DPPL are hovering around 73-95% of total sales. A comparative sales and cost data for the last ten years is given in Exhibit 3.

It was noted by the dealers of DPPL that competition from the Chinese brands is mainly driven by aggressive pricing, with prices operating in Indian markets at less than Rs.1, 30,000 per MT.

Rao, thinking loudly, interrupted the meeting and said to his team and to the intern, "one of the key challenges will

be to address the cost competitiveness, in order to protect Indian markets from the aggressive pricing adopted by Chinese players; how do we crack it? Continuing, Mr. Rao said that he wanted to know, whether expanding the production capacities will help in meeting the cost challenge, while bringing larger quantities into market? Or will it only add to the woes of unsold stocks?

A back of envelope calculations was quickly made and GM, Operations had a view that expanding the production levels to 100,000 MT will help bring down the costs to less than Rs. 100,000/- per ton. The discussions then moved to address the questions... will it be practical and feasible to achieve? Can DPPL push its present manufacturing facility to produce 2.5 times of its present production levels without expanding the machinery and other factory infrastructure?

One other challenge that the meeting brought forward was with regard to introducing new technologies to produce TDO cheaper and in larger quantities? Are the  $\text{TiO}_2$  manufacturing technologies changing? Could DPPL contemplate to become world-class, in terms of processing and production, by investing in pro-environmental methods of sand mining and cleaning, without exposing workers and the nearby localities to possible radiation effects and affluent management? Are the present methods of recycling the processed sands for refilling of sand mined pits safe for the society? Can DPPL offer  $\text{TiO}_2$  and Titanium Sponge

in international markets by competing against players offering TDO and TS of International Standards with a premium for being eco-friendly and pro-earth? Are there Certification Standards that vouch-safe the Pro-earth processes at DPPL?

### **The current pollution control processes at DPPL**

DPPL has an elaborate Pollution Control system with respect to both water and air pollution. The plant uses recycling and regeneration methods at various levels of processing, including acid regeneration, which helps maintain minimum to negligible levels of pollution. Responsible harvesting of sands from the seas reaffirms DPPL's commitment to the environment.

The waste (acid) from illmenite Beneficiation Plant are sent to Effluent Neutralization Plant (ENP). ENP consist of a Primary Neutralization Tank (PNT) and Secondary Neutralization Tank (SNT) where it is treated with caustic soda solution. The totally neutralized slurry from the SNT is pumped to 50000 m<sup>3</sup> capacity setting pond provided with impervious clay, polythene lining at bottom side where the solids are settled. The dye solution from setting pond of 25000m<sup>3</sup> capacity where the balance solids are allowed to settle. Then clean water from the polishing pond meeting all specification stipulated by Pollution Control Board authorities is pumped in to the Arabian Sea.

All gases from Chlorination, Oxidation, Illmenite Beneficiation Plant and Acid Regeneration Plant are passed through scrubbed water or caustic solution to

absorb the toxic gases diluted with enough fresh air and only let out to the atmosphere through tall slacks.

### **DPPL's Markets:**

The company has a host of dealers around the country and from the analysis of sales data it was noted that around 80% of the sales is accounted by three dealers situated in Mumbai, Delhi and Coimbatore, nearer to the pigment consuming industries. A cursory analysis of company incentives flow show a large share of the sales incentives are garnered by these three dealers, leaving out others and also direct buyers and smaller retailers. expense on incentives has gone up. Also the small retailers are not coming to the company directly and actually going to those major dealers for better prices.

DPPL deals directly with some of the TDO end-user customers whose minimum monthly off take is 15 tons or more; some of the prominent paint brands in India procure their pigment from DPPL directly and DPPL is a preferred supplier for other public sector enterprises requiring TDO and/or other minerals. DPPL handles export markets by adopting a lot by offering deep discounts. The exports also help in to earn significant export promotion credentials.

### **Buyers and sales networks**

In DPPL distribution is divided into two major categories:

- 1) Direct Supply:- Direct Supply to the actual customers who require seven metric tons or more at a time.

2) Supply through Stockists:- Supplies to SME sector buyers are done through stockists appointed by the company in all major cities. Company fixes prices for its products and the stockists are responsible to see the sales are made at these prices. All the grades of Tioz pigment produced in DPPL come under the category of industrial goods.

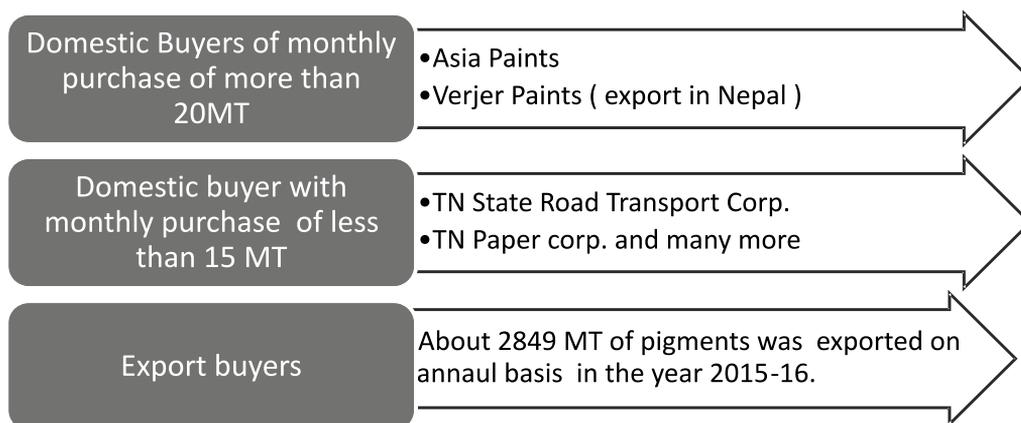
Some of the key direct customers of the products of DPPL are:

- ✓ Asia Paints
- ✓ HLR
- ✓ Shaleen Paint
- ✓ Nerolac Colours
- ✓ Jenson and Nicholson
- ✓ Sand Chemicals
- ✓ Mega Meditex
- ✓ Camlin Chemicals
- ✓ Plastic Chemix Industries
- ✓ Verjar Paints
- ✓ Rajdoot Chemicals

**Direct Customers**

For the company another important channel of sales is by way of direct customers. The company in previous years used to handle many direct customers lifting about 1000 MT per month but during the current year DPPL serviced only one buyer, who is lifting at a monthly average of 400 MT.

They can be classified as small, medium and large buyers, as below:



The key factors that led to many direct customers moving away from DPPL are identified as:

- Lack of assurance for constant supply of the pigments. DPPL does not cater to demands of some grades over a particular quantity on monthly basis
- It does not support producing specialized grades as per the particular demands of these customers. It believes in supplying generic grades.
- Its range of products is not wide and organised. The competitors have, for example, almost 5 grades for printing ink pigment.

### **Export Market**

Even through DPPL faces stiff competitors from multinational giants, DPPL receives a number of export orders from customers abroad (through e-mail, fax and through correspondence). DPPL enjoys good reputation for quality pigment in the international market. The company is exporting its products in Korea, South Africa, Sri Lanka, Turkey, Dubai, China, Mauritius, UK and Philippine. The company is now exporting approximately 30% of their production. It has plans to increase to its export share to 50% by 2018.

### **The Marketing and Sales Operations**

DPPL has a monopolistic hold in Titanium Dioxide (TiO<sub>2</sub>) pigment industry. DPPL is a public limited company that stands as a leader in production of TiO<sub>2</sub>. The company has a large number of customers from all over the world and outside. The marketing department is engaged in selling of the company's product. There is no separate department for sales and marketing management also performs these functions. The marketing section keeps detailed report about customers' product orders, product group control, dispatch and payment. The team ensures that the products supplied always maintain high standards of product delivery and quality assurance, working with the production team in achieving technical excellence in every phase of production.

DPPL fixes the price of TiO<sub>2</sub> is based on the market conditions in which top management is fully involved. Price revisions are cleared by its Chairman and the Finance Secretary of the

Government of Kerala. The price is periodically revised, closely monitoring market fluctuations.

As at the time of this narration, during June 2017, the selling price of all grades of TiO<sub>2</sub> (Rutile Grade Pigment) was Rs. 194000, plus 16% Excise duty and GST.

During the presentation, Krishna provided the details of various grades of Titanium Dioxide that are being increasingly sought by dealers and end-users, which command a price premium, based on supplier's ability to match the grade and quantity with the deliveries. Exhibit 1a provides details of these grades. While DPPL acknowledges that such customization offers a very high premium to the supplies of DPPL, it is still not sure if it can fine tune the production processes to manufacture as many grades of TiO<sub>2</sub> and also what are the price premium these grades command.

### **IT and MIS Application:**

Rao, realising that IT and MIS tools are a basic requirement for any firm that is seeking to build market leadership, is not very sure whether the company can invest in IT related infrastructure and systems to augment its marketing. Rao is aware that DPPL has its customer base in overseas market also so these tools enable them for speedy and efficient response. In fact, it would be the right time to build a CRM system so as to be able to offer better services to its domestic and international client's and ensure that they continue to patronage the products of DPPL. The company has its own IT team which develops in house tools for different departments. Now this has created islands of

information in departments like marketing and finance, leading to slow flow of information. This has an impact on customers' grievance settlement and relationship. The processes of generating bills in different departments for same utility leads to repetitive work and wasting human resource too.

Another set of people who are crucial for profits are its sales network. Krishna Joshi, emphasised the value of CRM referring to his interactions with one of the consistent selling dealers of TiO<sub>2</sub>, Mr Jay Rao, based out of Coimbatore, who said, that relationship building efforts taken by some of DPPL's

competitors is very impressive and has forced them to give more priority to competitor brands. They lack the expected communication towards the problems faced by customers and sales partners.

By the time Rao listened through the presentation, these were the thoughts that kept on lingering in his mind, while he went back to complete the task of developing the Strategic Plan for his company that needs to address short term and medium term challenges in a fast growing, high stakes industry, that is built on seemingly abundant natural resources.

**Exhibit No. 1:** Products and their sales volumes at the end of 2015-16

S. No.	Product	Sales in MT
1	Titanium Dioxide	27714.75
2	Rutile	1638.20
3	Zircon	5573.70
4	Silimanite	557.00
5	Titanium Tetra Chloride	5114.43
6	Titanium Sponge	54.71
7	Magnesium Chloride	568.05
8	Leached Ilmenite	0.00
9	Beneficiated Ilmenite	0.00

**Exhibit 1A:** Grades of Titanium Dioxide produced by DPPL as in 2015-16

S.No.	Grade	Applications
1	Demox RC 800	for printing inks, high gloss coating, industrial coating, low abrasivity pigment for letterpress gravure polyamides and exterior application where maximum chalk resistance is not required
2	Demox RC-800 PG	application in plastic requiring a blue white high dispersion Tio2. Other areas of application are powder coating, polyethylene films and vinyl sheet goods. It is used in most other common plastic or rubber floor like applications

3	Demox RC-822	for interior and exterior enamels and lacquers for industrial and architectural purpose
4	Demox RC 813	used in both interior and exterior low gloss and flat paints and coating- both solvent and water based. It finds application in interior flat wall paints, exterior low gloss or flat house paints, low gloss maintenance pints, low gloss or flat chemical coating etc. Demox RC-813 can be described as a universal pigment for all coatings formulated at higher percentage pigment volume concentrations
5	Demox RC-802	is recommended for both interior and exterior applications. This is also recommended for architectural and industrial paints-both solvent and water based
6	Demox RC-808	for automotive, industrial and architectural finishes. It is also recommended for coil coating, radiation cured finishes; emulsion paint systems powder coating, water borne coating and printing inks. It can also be used for letterpress gravure, polyamides and other inks where low abrasive pigments are required

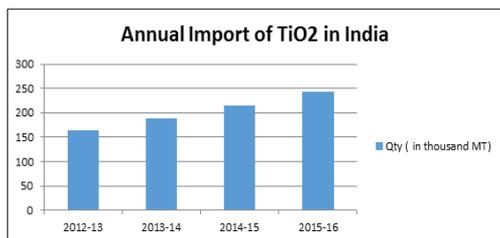
### Exhibit 2: sales and profits of DPPL over the years

Particulars	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Gross Sales (including ED)	32854.54	34322.50	46359.35	51903.99	58552.56	61700.50	61092.60	72547.34	60091.20	56882.21
Net Sales	29574.49	30748.69	41908.91	48398.20	54022.58	57302.87	54763.36	65219.73	53801.11	51506.79
Other Income	1776.88	1043.46	1748.02	1654.35	1721.29	2083.52	1565.34	1093.02	934.27	454.55
Other Operating Income	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.78	37.51	17.32
Stock: Increase/Decrease	2959.65	(664.57)	(2977.67)	(1304.10)	242.21	6999.77	4568.98	(4499.04)	1561.78	7770.68
<b>Total Income</b>	<b>34311.02</b>	<b>31127.58</b>	<b>40679.26</b>	<b>48748.45</b>	<b>55986.08</b>	<b>66386.16</b>	<b>60897.69</b>	<b>61826.49</b>	<b>56334.67</b>	<b>59749.34</b>
Material Consumed	8644.40	7786.10	8015.00	9550.17	11838.74	9948.05	9767.12	9443.75	9244.25	11743.28
Power	2705.78	2681.27	3016.11	2533.08	2686.89	2522.55	3459.67	3693.16	3749.14	3931.68
Fuel	7486.84	7890.43	9456.35	9311.99	11327.22	13170.84	14506.48	16559.27	14092.55	12105.73
Stores & Spares	4123.76	3348.79	3410.68	3497.25	4226.67	5794.95	5885.50	6127.24	5081.53	4664.42
Royalty	71.58	67.25	80.44	97.36	87.94	246.39	294.35	227.44	195.67	181.03
Repair & Maintenance	827.52	523.36	463.55	496.55	449.83	340.63	183.43	472.55	1358.94	1216.07
Employee Cost	6788.54	6358.93	9735.98	8937.12	14602.73	13203.72	12977.22	14757.69	15827.46	15862.87
Selling & Administrative Expenses	583.00	521.73	912.34	3814.37	3048.16	3686.76	3893.53	5936.72	6211.55	5536.98
<b>Total Expenditure</b>	<b>31231.42</b>	<b>29177.86</b>	<b>35090.45</b>	<b>38237.89</b>	<b>48268.18</b>	<b>48913.89</b>	<b>50967.31</b>	<b>57217.82</b>	<b>55761.09</b>	<b>55242.05</b>
Gross Margin	3079.60	1949.72	5588.81	10510.56	7717.90	17472.27	9930.38	4608.67	573.58	4507.29
Depreciation	764.36	836.69	884.45	1245.94	1432.02	2021.75	1971.33	1925.81	1455.62	1255.60
Interest	72.00	69.40	30.10	19.60	26.71	42.06	364.83	120.29	318.70	419.96
Profit & Loss Before Prior period items	2243.24	1043.63	4674.26	9245.02	6259.17	15408.46	7594.22	2562.57	(1200.73)	2831.73
Exceptional Items/provisions/others	158.50	0.00	1638.34	859.96	0.00	0.00	287.05	0.00	(1205.20)	(2311.50)
Prior Period Expenses(-)/income	(7.67)	(28.91)	6.98	(13.56)	0.00	0.00	5.23	78.61	(72.41)	(192.73)
<b>Profit &amp; Loss Before Taxation</b>	<b>2077.07</b>	<b>1014.72</b>	<b>3042.90</b>	<b>8371.50</b>	<b>6259.17</b>	<b>15408.46</b>	<b>7312.40</b>	<b>2641.18</b>	<b>(2478.34)</b>	<b>327.49</b>
Current Tax	900.00	325.00	2000.00	1900.00	3398.87	4048.42	1800.00	1150.00	0.00	(74.29)
Mat credit Entitlement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.29
Fringe Benefit Tax	56.00	35.00	43.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Deffered Tax	116.08	(41.98)	(543.34)	(416.40)	48.38	(184.96)	1926.61	80.19	(11.28)	(504.41)
Income Tax Paid(prior period)	0.00	0.00	6.80	(8.13)	0.00	0.00	2.85	0.00	0.00	0.00
<b>Net Profit/Loss</b>	<b>1237.15</b>	<b>612.74</b>	<b>449.76</b>	<b>6063.23</b>	<b>2811.92</b>	<b>11545.00</b>	<b>3588.63</b>	<b>1410.99</b>	<b>(2489.62)</b>	<b>(176.92)</b>
<b>Cash Profit/Loss</b>	<b>2001.51</b>	<b>1449.43</b>	<b>1334.21</b>	<b>7309.17</b>	<b>4243.94</b>	<b>13566.75</b>	<b>5559.96</b>	<b>3336.80</b>	<b>(1034.00)</b>	<b>1078.68</b>

**Exhibit 3:** Installed Capacity, extent of utilisation and actual production of various products at DPPL

Installed Capacity (MTs)										
Titanium Dioxide	40000.00	40000.00	40000.00	40000.00	40000.00	40000.00	40000.00	40000.00	40000.00	40000.00
Ilmenite	51600.00	51600.00	51600.00	51600.00	51600.00	51600.00	51600.00	61600.00	61600.00	61600.00
Rutile	2400.00	2400.00	3400.00	3400.00	3400.00	3400.00	3400.00	4400.00	4400.00	4400.00
Zircon	1500.00	1500.00	2500.00	2500.00	2500.00	2500.00	2500.00	6500.00	6500.00	6500.00
Titanium Sponge									500.00	500.00
Capacity Utilisation (%)										
Titanium Dioxide	85.93	88.05	88.71	89.77	92.20	72.79	67.54	75.01	66.26	84.06
Ilmenite	101.74	95.40	82.38	85.85	75.43	84.11	87.67	102.03	105.60	106.54
Rutile	111.51	124.87	79.12	98.09	70.98	76.47	54.41	52.95	59.95	63.05
Zircon	117.59	145.03	97.80	103.68	113.51	208.52	158.40	55.92	73.35	82.22
Titanium Sponge									27.57	28.09
Production (MTs)										
Titanium Dioxide	34373.250	35220.518	35485.950	35908.200	36879.000	29116.600	27016.400	30004.417	26502.440	33624.800
Ilmenite	52500.000	49225.000	42510.000	44300.000	38920.000	43403.000	45240.000	62850.000	65050.000	65630.000
Rutile	2676.120	2996.950	2690.000	3335.000	2413.300	2600.000	1850.000	2330.000	2638.000	2774.300
Zircon	1763.901	2175.400	2445.000	2592.000	2837.650	5213.000	3960.000	3635.000	4768.000	5344.500
Silimanate	0.000	0.000	0.000	0.000	0.000	339.450	1265.000	1270.000	1012.000	471.450
Magnesium Chloride							384.000	500.722	540.610	565.770
Titanium Sponge							88.296	131.635	137.861	140.450

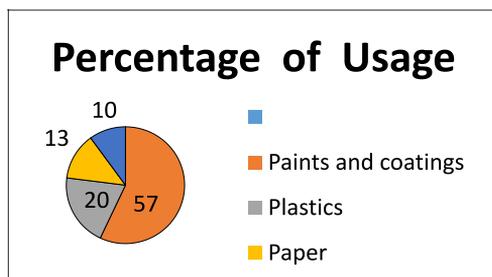
**Exhibit 4 :** Some facts and figures related to TiO<sub>2</sub> Industry



**Note:** This data is accumulated from Indian ports where the imported TiO<sub>2</sub> is received. It explains the steady rise in the stronghold of foreign players in the domestic market. The production capacity of DPPL is almost steady for all these years but the steep rise in quantity imported shows the market lost by DPPL and growing acceptance for the products which could make the future difficult because once a customer changes to a different brand of TiO<sub>2</sub> some changes in the production process have to be made and hence that customer becomes a lost opportunity.

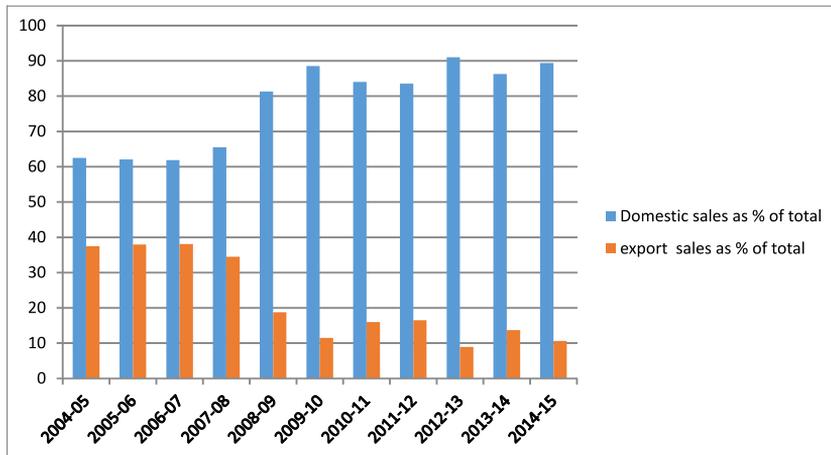
**Exhibit 5:** Consumption of TiO<sub>2</sub> Across Industries

Industry	% of Usage
Consumer industry	
Paints and coatings	57
Plastics	20
Paper	13
Others (like architectural designs and PVC)	10

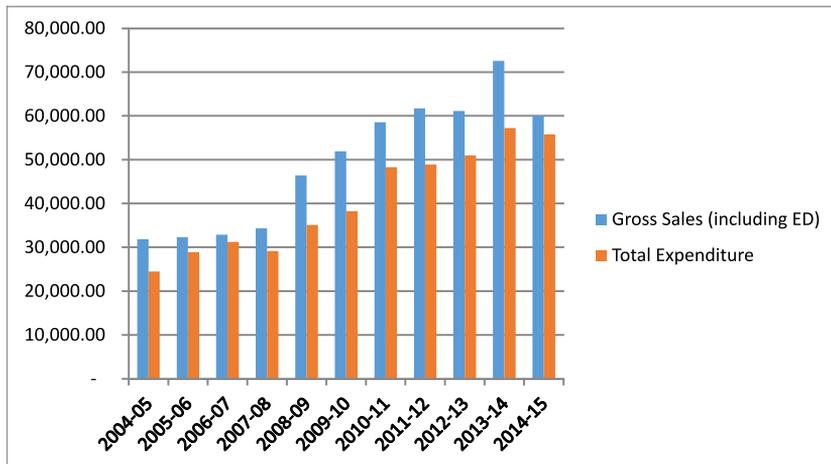


**Exhibit 6:** Sales of DPPL - share of domestic and international sales

**Exhibit 6a:** ratio of domestic and international sales in percentage of total sales – (all products rupee value)



**Exhibit – 6b** : sales revenues and total expenditure e incurred by DPPL



**Exhibit 7:** Sales of various products of DPPL for the last ten years (in MT)

Sales (MTs)										
Titanium Dioxide- ( Domestic)	19217.305	23122.845	31820.340	32982.090	30759.934	20721.745	22656.200	28733.832	24042.660	25946.630
Titanium Dioxide- (Export)	11828.000	12167.000	7338.000	4284.000	5853.800	4090.680	2225.800	4566.000	2589.050	1768.120
Titanium Dioxide- Total	31045.305	35289.845	39158.340	37266.090	36613.734	24812.425	24882.000	33299.832	26631.710	27714.750
Rutile	1384.001	1992.360	1604.000	3211.050	1544.350	2299.350	1855.000	1722.300	2694.780	1638.200
Zircon	1761.901	2065.060	2532.700	2601.400	2829.300	5114.350	3947.000	3726.680	4541.150	5573.700
Sillimanite	0.000	0.000	0.000	0.000	0.000	320.150	1087.000	1351.250	987.050	557.000
Titanium Tetra Chloride	1004.787	1039.620	909.360	717.500	1822.540	1893.315	2064.000	2129.640	3426.600	5114.430
Titanium Sponge							4.980	53.010	10.994	54.710
Magnesium Chloride							351.000	488.223	536.280	568.050
Leached Ilmenite	0.000	0.000	0.000	0.000	8.900	0.000	0.000	0.000	0.000	0.000
Beneficiated Ilmenite	0.000	0.000	0.000	0.000	8.000	0.000	0.000	0.000	0.000	0.000

## **Exhibit 8: Certifications of DPPL**

### **1) SO 9001:2000**

Certificate from Bureau Veritas Quality International (BVQI) and holes certification of United Kingdom Accreditations Service (UKAS). The United Kingdom Accreditation Service is the sole national accreditation body recognized by government to assess, against internationally agreed standards of an organizations that provide certification for testing, inspection and calibration services. And accredits certification from ANSI-ASQ National Accreditation Board(ANAB) is the U.S. accreditation body for management systems, ANAB is a member of the International Accreditation Forum and a signatory of the IAF Multilateral Cooperative Arrangements (MCA) , ANAB ensuring accredited certificates which are recognized nationally and internationally for good quality management system.

### **2) ISO 14001:2004**

Certificate from Bureau Veritas Quality International (BVQI) and accredits certification of National Accreditation Board for Certification Bodies (NABCB). NABCB is a member of International Accreditation Forum (IAF) having Multilateral Recognition Arrangement (MLA) to certify ISO 14001 - Environmental Management System. And holes certification of United Kingdom Accreditations Service (UKAS). The United Kingdom Accreditation Service is the sole national accreditation body recognized by government to assess, against

internationally agreed standards of an organizations that provide certification for testing, inspection and calibration services.

### **3) OHSAS 18001:1999**

Certificate from Bureau Veritas Quality International (BVQI) The Occupational Health and Safety Assessment Series (OHSAS) specification gives requirements for an occupational health and safety (OH&S) management system, to enable an organization to control its OH&S risks and improve its performance.

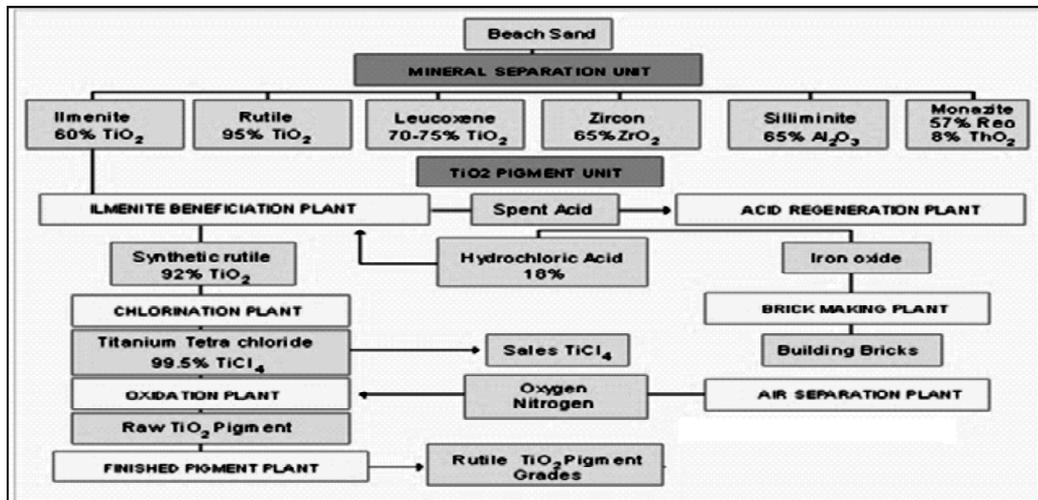
## **Exhibit 9: National and International awards conferred on DPPL**

- National award for R & D efforts industry for the best research and development efforts by department of Science and Technology(1992)
- FACT MKK NAIR Memorial productivity Award 1993-94, 1994-95 for the best productivity performance by Kerala State Productivity Council
- Energy Conservation Award 1999 in appreciation for outstanding achievements towards energy conservation and management in the category of large scale industries
- FACT MKK NAIR Memorial productivity Award 2001-02 for second in productivity performance by Kerala State Productivity Council 2001
- FACT MKK NAIR memorial productivity Award 1999-2000, 2000-01 for first in productivity performance(Large Organization) by Kerala State Productivity Council

- Energy Conservation Award 2001 for conservation and management in the category of large scale industries by Energy management centre Kerala 2001
- Award for Revenue performance 2003 for the best performance by central excise, customs Kollam Division 2003
- Marketing campaign Award 2003 for best marketing campaign by Asia pacific coating 2003
- International gold medal for the Quality of the product and efficiency of the company by Forum Kerala Lumpur Global Rating UK 2003
- Special Export Award for export performance by chemicals and Allied Export Promotion Council (CAPEXIL) sponsored by ministry of Commerce Government of India 2002-03

**Diagram 1: Titanium Dioxide Production – Process Difollowed by DPPL**

**Process Chart**



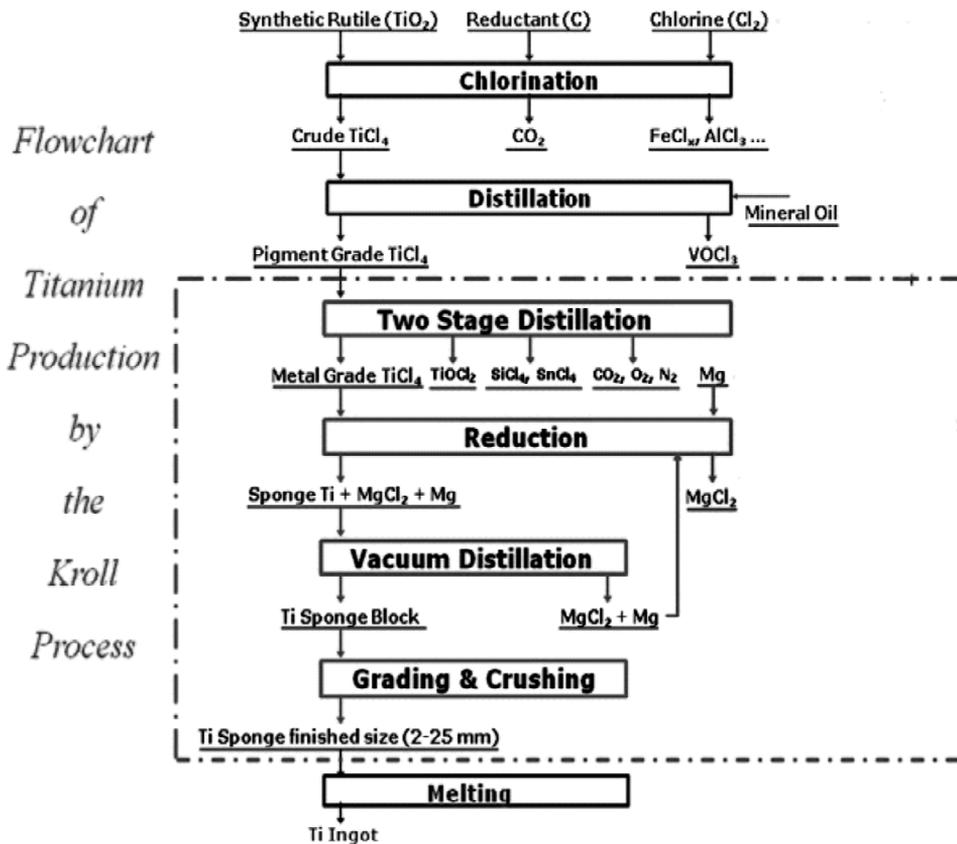
The Manufacturing Plant at DPPL comprises the Mineral Separation (MS) Unit and the Titanium dioxide Pigment (TP) Unit.

The MS Unit is where the separation of Ilmenite, Rutile, Leucosene, Monazite, Silliminite etc from the beach sand takes place, through the various stages in the Wet Concentration Plant, Dryer Plant, Dry Mill, Rutile & Zircon Recovery Plants. The MS Unit employs Gravitational, Magnetic, High tension

electrostatic techniques for separation of minerals from the sand.

The TP Unit is where the raw Ilmenite obtained from the MS Unit is taken for further processing, through the various stages in the Ilmenite Beneficiation Plant, Acid Regeneration Plant, Pigment Production Plant, Oxygen Plant & Utility Section. Titanium Dioxide is manufactured here using the chloride route.

**Diagram 2:** Production Process followed by DPPL in making Titanium Sponge



\*This case has been prepared based on the various secondary sources meant for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. Names of people referred have been camouflaged to protect their identity and relations within and outside the organisation and help simpler understanding of the case.

