UNIVERSITY OF KENTUCKY

MASTER IN BUSINESS ADMINISTRATION

ECO 610 MANAGERIAL ECONOMICS

THE EUROPEAN PLASTIC INDUSTRY
ANALYSIS BASED ON PORTER’S FIVE FORCES

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1. **Background and market definition**

In 2012, the plastics industry including plastics producers, plastics converters and the plastics machinery accounted for an estimated 1.4 million jobs in the European Union’s 27 Member States and had a combined turnover of above 300 billion euro. With more than 62,000 companies in operation in the EU, plastics not only enable modern lifestyles, the material also contributes to research and innovation, to higher standards of living and the overall welfare of the European citizens.

In the second half of the 20th century, plastics became one of the most universally used and multipurpose materials in the global economy. Today, plastics are utilized in more and more applications and they have become essential to our modern economy. The plastics industry has benefited from 50 years of growth with a year on year expansion of 8.7% from 1950 to 2012. Plastics have become an essential part of our modern lifestyle.

Their applications are many: From electronic applications such as LCD flat screen televisions, touch screen smartphones and tablets, cables to sports applications such as balls, boots, racquets, helmets, skis, surf boards, swimming or diving suits sport. There are also numerous other applications in automotive industry, medical industry (body parts), in protection equipment (helmets, firemen suits or bullet proof jackets) etc.

Main categories of plastics produced:

1) **POLYEThYLENE TEREpHTHALATE (PET)** is one the most recycled plastic used in bottles for water.

2) **HIGH DENSITY POLYEThYLENE (HDPE)** is generally used in detergent bottles and in milk jugs.

3) **POLVINYL CHLORIDE (PVC)** is commonly used in plastic pipes, furniture, and cables.

4) **LOW DENSITY POLYEThYLENE (LDPE)** is used in dry cleaning bags, food storage containers etc.

5) **POLYPREpYLENE (PP)** is commonly used in bottle caps, drinking straws and other containers with high mechanical properties.

6) **POLYSTYRENE (PS)** is used in cups, plastic tableware etc.

7) **POLYEThETER** is a common substance in film industry.
There are also two big categories regarding plastics industries:

A) POLYMER AND COMPOUNDING MANUFACTURERS

B) CONVERTING INDUSTRY

i. Packaging (39.4 % of the total plastics demand)

ii. Building and construction (20.3 %)

iii. Automotive (8.2 %)

iv. Electrical (5.5 %)

v. Agricultural (4.2 %)

vi. Other such as appliances, household and consumer products, furniture and medical (22.4 %)

The European Plastics Converters (EuPC) is the leading EU-level Trade Association, based in Brussels, representing European Plastics Converters. EuPC now totals about 50 European Plastics Converting national and European industry associations, it represents close to 50,000 companies, producing over 45 million tones of plastic products every year. More than 1.6 million people are working in about 50,000 companies (mainly small and medium sized companies in the converting sector) to create a turnover in excess of 280 billion € per year.

2. Threat of New Entrants and Entry Barriers

In the plastic industry one can say that there are not severe problems regarding the entry of a new company. This is an argumentative statement since although it seems an easy task for a company to start its activities in European Union as a producer in plastics; this is not so easy for the following reasons:

A) The choice of the product is an essential thing for the entry. If the output of the production activity is something common it is easy to get into the industry (polyethylene film). But in case that this is something more complex (Halogen free flame retardant polyolefin based compounds) there are more severe barriers for entering the business such as extensive know-how.

B) The choice of the country is essential since there is a problem regarding bureaucracy. Many countries of the south such as Greece
and Italy for example, have bureaucratic problems regarding the
authorization of a company.
There is a strict environmental policy to the Northern countries of
Europe which put an economic burden to the company regarding the
antipollution technology.

C) In order to have a chance in the intense competition, one firm should
produce something innovative. In this case patents and proprietary
knowledge serve to restrict entry into an industry.

D) Economies of scale are another barrier of entering the industry, since a
company should have inventories of their own, distribution network of
its own etc.

E) Also many firms act individually since collective action would be illegal
collusion, keep prices artificially low as a strategy to prevent potential
entrants from entering the market; such entry-deterring pricing
establishes a barrier.

3. Threat Of Substitutes

It is well known in economics that a product's price elasticity is affected
by substitute products - as more substitutes become available, the
demand becomes more elastic since customers have more alternatives. In
the case of the plastic industry this is not the case since plastics give
multiple advantages against its substitutes:

A) In the packaging industry, there is no comparison in prices between
metal containers and plastic containers since there is a huge difference
in price. There are also many differences in logistics and transportation
since plastics are lighter than their substitutes giving in this way an
important advantage. The weight and the fragile nature of glass is
another problem against the plastics.

B) In the pipe industry there is also a substantial difference regarding the
price of copper or aluminum or steel to this of plastics.

C) In other industries such as medical (regarding the synthetic body parts),
there is no actual threat since no other material can be used in such
applications.
D) In electric and electronic applications, plastics also have no threats since there is no alternatives for insulations or sheaths in cables

4. **Buyer Power**

In 2012, demand in Europe decreased by 2.5% but there were significant differences between the Western and Central European markets. While Western European showed a 3% decline in demand, Central European countries showed a 0.6% increase.

There are also strong differences in terms of market segments as Germany accounts for about 25% of the European market and together with Italy, France, UK, Spain and the Benelux countries, makes up almost 75% of the total demand in the EU while Central European countries account for about 14% of EU plastics demand.

Reading the above analysis one can say that there is a small decrease in demand in EU which in general terms is true. But on the other hand we should focus also on the exports of the EU countries regarding plastics. Historically the European Union has always been a net exporter of plastics materials. Exports of primary plastics from the EU to the rest of the world increased by 2.9% in 2012.

5. **Supplier Power**

Generally, supplier power is investigated through concentration of supplier, volume importance to supplier, differentiation of inputs and switching costs of firms in the industry. A few factors which eliminate the supplier power are (a) presence of many suppliers (b) low costs of switching suppliers.

There are a large number of small firms with a variety of product differentiation. Due to the wide applicability nature of plastic in a variety of spheres, there is a great variety in demand also. Also there are some firms producing a product with wide application areas. Last but not the least, there are also firms that are producing two or more related products that serves as raw material to produce a finished product in another firm.

The suppliers of raw materials (substances) on the other hand, have the advantage of the conformity with REACH regulation regarding chemicals, an
advantage which in some cases act as a barrier for external (outside from EU) competitors.

6. **Rivalry**
   It is a common knowledge that in the traditional economic model, competition among rival firms drives profits to zero. But competition is not perfect and firms are not unsophisticated passive price takers. Rather, firms strive for a competitive advantage over their rivals.
   The factors that affect the intensity of rivalry (actually increasing the rivalry) are the following:

   1. **A larger number of firms** increase rivalry because more firms must compete for the same customers and resources.
   2. **Slow market growth** causes firms to fight for market share. This phenomenon is taking place due to the economic crisis in Europe from 2008.
   3. **High fixed costs** result in an economy of scale effect that increases rivalry.
   4. **High storage costs** cause a producer to sell goods as soon as possible.
   5. **Low switching costs**
   6. **Strategic stakes are high** when a firm is losing market position or has potential for great gains.
   7. **A diversity of rivals** with different cultures, histories, and philosophies make an industry unstable and in this way gives the opportunity for higher rivalry among participants

7. **Conclusions**
   From the above Porter’s five forces analysis of the industry of plastics in Europe we can summarize the following:

   1) The entry is dependent on the product and sector of the specific industry. In case of products with high added values such as special compounds is difficult and it entails the incumbent to have significant capital to invest and know-how if it wants to enter this industry.
2) Bargaining power of suppliers is low while that of buyers is high due also to export.
3) As far as substitutes are concerned, there are no severe threats up to the moment even though significant amount of money is spent in this direction regarding research.
4) On the internal rivalry context, the rivalry is high.
5) As a last remark and taking into account that plastics are going to continue to improve our quality of life, it is expected that despite the fact of the current economic crisis, they will continue to grow dynamically.

APPENDIX

2. PORTER’S FIVE FORCES ANALYSIS OF THE INDIAN PLASTIC INDUSTRY SANTANU MANDAL, ZENITH International Journal of Multidisciplinary Research Vol.1 Issue 7, November 2011, ISSN 2231 5780
4. Plastics Converting in Europe