4. Product Cannibalization due to New Product

4.1 Introduction

Product cannibalization due to new product has been studied by many researchers and hence before studying the cannibalization issue due to remanufactured product, it is necessary to understand the cannibalization due to launching of a new product in detail. To understand the concept of cannibalization, case study of an air cooler is explained. Study of Product Life Cycle (PLC) of an existing product is very much necessary for successful launching of a new product. Perfect Launching of new product is necessary for getting maximum share in the market for remanufacturing industries, otherwise early or late cannibalization may cause huge loss for organization (Ferrer and Swaminathan, 2006; Vasudevan et al., 2011). Demand of new product depends upon the product life cycle of existing product. Prediction of the demand of new product and its perfect launching is not easy task for any company (Ostlin et al., 2009). Study of disposal rate of existing product is also another crucial issue for remanufacturing industries. Perfect launching of new product and its product life cycle play a major role for getting maximum profit share. It is also interesting to study the product cannibalization due to entry of new products (Hermansson and Sundin., 2005; Butner et al., 2006; Sarvary and Wassenhove., 2009; Terkar et al., 2011).

Small and Medium Enterprises (SMEs) constantly work under tremendous pressure to generate revenue and improve operating efficiency. Challenges in meeting targets include changes in consumer’s demographics, competition in mature markets, expenditure on services, rise of private labels and the low success rate of new brands (Butner et al.,
Today market is in the era of innovation and heavy competition. It is pervasive and influencing on every industry or company. Moreover, companies think about virtually every aspect of research, marketing, PDP, suppliers, materials management, manufacturing, distribution, warranty & defect management, maintenance repair and overhaul, & product end-of-life & disposal (Kotler and Wong., 2006). Innovation is global and without any boundaries. Its growth is being nurtured by active investments, grants, and tax incentive policies of established industrialized nations and emerging economies (Kotler and Armstrong., 2002). In this era of innovation, the Perfect Product Launch, Product Cannibalization, Product Lifecycle Management (PLM) and Product life Cycle management (PLCM) are now viewed in a different and expanded way (Terkar et al., 2011).

All products and services have certain life cycles. The life cycle refers to the period from the product’s first launch into the market until its final withdrawal and it is split up in phases (Vasudevan et al., 2011). During this period significant changes are made in the way the product is behaving in the market i.e. its reflection in respect of sales to the company that introduced it into the market. Since an increase in profits is a goal of the company that introduces a product into a market, the product’s life cycle management is very important. Some companies use strategic planning and others follow the basic rules of the different life cycle phase that are analyzed later. The understanding of a PLCM, can help a company to understand and realize when it is time to introduce and withdraw a product from a market, its position in the market compared to competitors, and the product’s success or failure.
4.2 Product Cannibalization due to New Product

Product cannibalization occurs when a company decides to replace an existing product and introduce a new one in its position in the market (Ioannis, 2002). This is due to newly introduced technologies and it is most common in LSI. In product life cycle, there is negative and positive cannibalization (Ioannis, 2002; Mazumdar et al., 1996). In the normal case of cannibalization, an improved version of a product replaces an existing product as the product reaches its sale peak in the market. The new product is sold at a high price to sustain the sales, as the old product approaches the end of its life cycle (Terkar et al., 2011). Nevertheless there are times when companies have introduced a new version of a product, when the existing product has only started to grow. In this way the company sustains peak sales all the time and does not wait for the existing product to enter its maturity phase. The trick in cannibalization is to know when and why to implement it, since bad, late or early cannibalization can lead to bad result for company sales (Terkar et al., 2011; Gupta, 2011).

Product Cannibalization refers to reduction in sales volume, sales revenue, or market share of existing product as a result of the introduction of a new product and/or remanufactured product by same manufacturer or by competitors. Normally product cannibalization may be considered negative, even in the context of a carefully planned strategy. It can be efficient by eventually raising the total sales volume of a company's product or superior consumer demands. Cannibalization is a key consideration in Product Portfolio Analysis (PPM). Product cannibalization is defined as the process by which a new product gains sales by diverting sales from an existing product (Frederic, 2001). Cannibalization is a real threat for vast majority,
prevalence of line extensions as manufacturers struggle to maximize the leverage of their brand equity (Mason and Milne, 1994; Terkar et al., 2011).

4.3 Product Life Cycle

It is important to study the Product Life Cycle and study of the product sale behavior with respective to profit is very interesting. Product Life Cycle of an air cooler manufactured in India is shown in Figure 4.1.

![Product Life Cycle of air cooler](image)

**Fig. 4.1: Product Life Cycle of air cooler**

The study conducted covered a total sale of air coolers 11,021 in 2559 days i.e. on an average more than four air coolers were being sold in a day. In the region where the coolers are used, the atmospheric temperature varies from 26°C to 42°C in twelve months. Rise of temperature starts from February and ends in June. In hot atmosphere, demand of air cooler is more. In March, April and May the company sells more number of air coolers. As atmospheric temperature decreases, sale of air coolers keeps coming down. Thus, for a seasonal product, sales fluctuate as per customer demand and season. Customer demand not only depends on atmospheric temperature but also on upgradation and quality of a product. Sale volume in initial two years was less; however, after two years, sale volume
increased rapidly. In third to the seventh year, sales volume did not change drastically. In the growing phase product, sale growth is not accelerated. After introduction phase, sale volume has not increased constantly in growing phase.

4.4 Need of Product Cannibalization
The overall net profit in every season is shown in Figure 4.2. In third to seventh year, sale volume of air cooler has not changed drastically but profit volume has reduced drastically. After 901 days, profit of air cooler has reduced continuously. Here, manufacturer has not thought about new product development. In the fourth season, company should have thought of launching of new updated air cooler. But unfortunately company did not develop new version of air cooler. Meanwhile customer expectation has increased continuously and loyal customers have shifted to buy new version of air cooler from competitors. In Product Lifecycle Management, the focus should be on how to satisfy the customer need by developing new products.

![Fig. 4.2 Profit Trend and Variation](image)

Here, perfect product cannibalization is the trick for getting more profit. Perfect product development and perfect product launching are essential
for getting maximum profit in product life cycle. In this context, study of strategies related to perfect product development and perfect product launching are very necessary. Prices of air coolers should be increased during hot season but in rainy and winter season prices should be cut down to generate profit.

![Fig. 4.3 Price-Profit Trend and Variation](image)

Prices of air coolers are more during hot season but in rainy and winter season, prices are comparatively less as shown in Figure 4.3. After 04 years, prices have remained constant for one year and it fell suddenly for next few years. When prices are comparatively constant or variation in prices are little and cost of product increases constantly, then that is the right time for product cannibalization in product life cycle. As shown in Fig. 4.2 and 4.3, overall profit decreases every day, whereas quantity of sale has not decreased at all. Here, company must develop a new upgraded product for perfect launching. Thus proper strategies for product development and perfect product launch are important.
4.5 Importance of Poor Quality

Lot-off parameters affect the decreasing of profit in industries. Here, mainly two important parameters have been studied for getting exact cause of reduction in profit. First parameter studied is the quality of product and second one is number of competitors in the market. Customer is the main cause for production of any goods. In Air Cooler products mainly water leakage from cooler tank and side panels are major issues. As per the data available in Fig. 4.4, numbers of air coolers sold have a leakage problem. In second and third year and subsequently, many air coolers have a leakage problem.

![Fig. 4.4 Leakage of Air Coolers and Total Sale](image)

Table 4.1 illustrates the Coefficient of Correlation (COC) and Coefficient of Determination (COD) between cooler sold and leakage problem with them. COD for first to fourth year is not more than 5% in the initial 4 years, but in the fifth year, it is around 19.84%. Improvement in quality of air cooler will boost the sale. Here, manufacturer has to take care of the leakage problem. In fifth year, poor quality shows the impact on air cooler sale.
As shown in Table 4.2, decreasing profit and leakage problem have a very negligible correlation. Only in fourth year, it shows a 7.2% impact of poor quality. From Table 4.1 and Table 4.2, it is clear that leakage problem of air cooler has not shown much of an impact on total sale of air cooler and decreasing profit. It is necessary to find the genuine factor, which has
shown tremendous impact on decreasing profit of air coolers. Sale of the air cooler has not increased drastically and profit is also reduced continuously. Due to this, increasing competitors in the market product get cannibalized. Here product cannibalization is not due to launching of own product but it is due to competitors product.

4.6 Effect of Competitors on Profit

It is very interesting to see the effect of competitors on profit of product. As shown in Fig. 4.5, numbers of competitors were less in first year. From first year to seventh year, price of the air cooler has not increased or decreased drastically, where as profit was healthy in some initial year, but after three years it is decreasing continuously. As competitors increased continuously, profit of air cooler get reduced as shown in Fig. 4.6.

![Fig. 4.5 Competitors in the market](image)

From Table 4.5, it is clear that number of competitors in the market not more impacted on over all sale of the company. It is also very interesting to find out the COC between approximate profit per item and number of competitors in market in a seven years period. Square of COC will give the value of COD.
Table 4.3 COC & COD between Sale and Competitors

<table>
<thead>
<tr>
<th>Year</th>
<th>COC Between Sale &amp; Number of Competitors (R)</th>
<th>COD Between Sale &amp; Number of Competitors (R^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.1037</td>
<td>0.01075</td>
</tr>
<tr>
<td>2</td>
<td>0.1729</td>
<td>0.02989</td>
</tr>
<tr>
<td>3</td>
<td>0.09038</td>
<td>0.0081</td>
</tr>
<tr>
<td>4</td>
<td>-0.1518</td>
<td>0.03578</td>
</tr>
<tr>
<td>5</td>
<td>-0.0400</td>
<td>0.0016</td>
</tr>
<tr>
<td>6</td>
<td>-0.2036</td>
<td>0.04145</td>
</tr>
<tr>
<td>7</td>
<td>-0.02392</td>
<td>0.00057</td>
</tr>
</tbody>
</table>

Fig. 4.6 Decreasing Profit

As shown in Table 4.4, COC changes from first year to seventh year. In the first two years, number of competitors have increased, so product gets cannibalized. Here COD increases from 10.70 % to 15.88 %. In third year, product cannibalization is negligible. In fourth year COD is around 72.62 % so huge impact on reduction of profit taking place due to the competitors. In sixth and seventh year, product cannibalization and reduction of profit are negligible due to increase in competitors. In this case study, sale
volume per year has not changed drastically, but profit has decreased continuously and hence finding of correlation between decreasing profit and increasing competitor is necessary. From Table 4.4, it is clear that competitor's presence has shown tremendous impact on profit of product. In such a situation, the company is not able to increase the price of item due to entry of new competitors. Actually, the price of the product is driven by the market. Every company tries to reduce the manufacturing cost. In this case, company is not able to reduce the cost of product due to increase in competition.

Table 4.4: COC & COD between Profit & Competitors

<table>
<thead>
<tr>
<th>Year</th>
<th>COC Between Decreasing Profit &amp; No. of Competitors increasing (R)</th>
<th>COD Between Decreasing Profit &amp; No. of Competitors increasing (R^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.3272</td>
<td>0.1070</td>
</tr>
<tr>
<td>2</td>
<td>0.3986</td>
<td>0.1588</td>
</tr>
<tr>
<td>3</td>
<td>0.05634</td>
<td>0.0031</td>
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<tr>
<td>4</td>
<td>0.8522</td>
<td>0.7262</td>
</tr>
<tr>
<td>5</td>
<td>-0.5277</td>
<td>0.2784</td>
</tr>
<tr>
<td>6</td>
<td>-0.1364</td>
<td>0.01860</td>
</tr>
<tr>
<td>7</td>
<td>-0.02164</td>
<td>0.000468</td>
</tr>
</tbody>
</table>

Day by day profit of product gets reduced and product will be dead after some years. Company cannot stop the competitors in the market, but they can upgrade the existing product as per the customer need to increase more sale and profit. Here Product Cannibalization is the way to become more competitive in the market. Introduction of new upgraded product before fourth year was necessary. Product development team has
tremendous responsibility for up gradation of the product as per the customer need (Ulrich and Eppinger, 2000; Ulrich and Eppinger, 2003)

4.7 Benefits of Early Launching

![Fig. 4.7 Faster Time to Market](image)

Table 4.4 indicates the impact of competitors on the overall profit of product. Nobody can stop the competitors in the market and hence the industries have to concentrate on increasing their learning capacities for early introduction of product in the market. Competitors always try to offer good quality product with competitive price to eat old market from established industries. Companies have to be on alert continuously for up gradation of product with low cost method without affecting quality and is the key of success. Effect of early launching is shown in Fig. 4.7. Due to early launching, sale of the product will increase throughout the life cycle and profit margin will also increase to a certain extent. Getting the first opportunity to attract customers, especially early adopters, offers an advantage in terms of customer loyalty such that customers will most likely upgrade, customize or purchase companion products. For components,
commodities or products that other companies can Private-label, being first to market can often help and ensure enhanced resale value. The faster, the companies bring products to market that satisfy new or changing customer needs, the greater is the opportunity to capitalize on those products for margin lift and increase in brand recognition.

4.8 Cannibalization due to Remanufactured Product

Launching of a New upgraded product is a challenge to the industries. Nowadays many firms are producing remanufactured products for getting maximum share in the market. Remanufacturing operation involves taking used products, bringing them back to as it is in new condition and selling them again, often with exactly the same warranty as a new product (Sarvary and Wassenhove, 2009). Cannibalization due to remanufactured version of a product is very essential in the context of newly launched products. Original Equipment Manufacturers (OMEs) initially believed firmly that a remanufactured version of a product is a potential devil, cannibalizing the market share from new product (Atasu et al., 2010). In fact, companies often compare maximum new product sale with maximum profits and this is simply not fully true. There are many examples, where offering remanufacturing versions show greater profit than new product. Internal resistance to remanufactured products from product development and marketing group can often does, doom efforts to make additional profit despite the truth that remanufacturing is technically viable at many OEMs (Vasudevan et al., 2012).

The product cannibalization issue due to the entry of new product is explained by using this case study. Product cannibalization of existing new cartridge is beneficial for the company. Product Life Cycle Management is a very valuable decision making tool for perfect launching of new product for
survival of SMEs. Product Life Cycle of air cooler does not look healthy in the above explained case study. Sale volume of product has not increased drastically and profit per item decreases day by day. For any manufacturing company a healthy product life cycle is necessary along with increase in profit and market share. In this study, the number of competitors in the market shows tremendous impact on profit. As shown in Table 4.1, Coefficient of Determination (COD) of 19.84% in fifth year shows the impact of poor quality on sale of air cooler. Table 4.4 shows the impact of number of competitors on profit. In fourth year, COD is about 72.62%, increasing competitor's impact on decreasing of profit per item. SMEs have to concentrate on increasing their learning capacity for early launching in the market. Product Cannibalization is the way for better survival in the market. If the company is to cannibalize its own product, then other competitors will launch better upgraded product and cannibalization process automatically is initiated. To reduce such impact, company has to launch upgraded product before competitors for getting maximum share from market. As shown in Table 4.4, company can think of introducing new product in the beginning fifth year or middle of fourth year. Introduced new version possibly helps small industries for getting more market share and profit. Remanufactured products are in good demand in the market due to low price and remarkable functional quality as new products have. Demand of remanufactured products depends upon the pace of product cannibalization of existing products.