

# Process for Product Design and It's Development

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**Abstract**— In today's advancement of world, the life of every product changes with in the short period of time because the consumers want and expect better and new products. The designer should understand the way that the product sustains in customer's fence. Existing manufacturers or suppliers are not able to meet the existing demand. Product design is directly linked to economic life. The product life cycle is so that short because of other competing neighbor. The design process involves analysis, concept and synthesis. Design factors is more demanded than the product due to some of the factors like aesthetics, features and life. The design should not be old as it passes time. Design modifications are more economically high at a later stage of product life. Product design must concentrate in Functionality aspect and Operational aspect. To this point, in this paper we interrelated and revised steps in product design and its changing factors in design. The phases involved in product life is also mentioned. Through product design, there is successful possibility of communication between designer and customers.

**Index Terms**—Analysis, Concept, Synthesis, Economic factor and Development

## I. INTRODUCTION

The major focus in manufacturing is Designing the product. The design approach must be change in every perspective. In manufacturing the factors like Need of a New Product Design, Need of a New Product Design, Product Development, New Product Development Strategy, New Product Development Process, Successful Product Development and Product Life Cycle. Every organization has to design, develop and introduce new products as a survival and Growth Strategy. Product design is approach of an idea about a commodity and revolution of the plan into a runtime progress. To transform the plan into run time progress a details about the commodity is prepared. Product Planning refers to the systematic decision making related to all aspects of the development and management of a firm products. New Products are created as the result of an idea or perceived gap in the the current world.

In order for a new product idea to succeed, it must be or have desirable attributes for their target market and be unique. When a new idea is generated, the next stage is to some research on the respective department of thought. If the feasibility research finds that the idea worth pursuing and is doable the product development process begins. This procedure associate 8 stages that each commodity needs to go over in order to be enter into display. The stages of product development involve few steps. The steps as follows like Idea generation, Idea screening, Concept Development, Market Strategy, Feasibility Analysis, Product Design, Test Marketing and Market Entry. Product development process provides a new product with a much better chances of success. Should constantly revisit process and improve and update products to stay ahead of competitors.

The specification is prepared by considering different constraints such as production process, customer expectation etc. In product design stage, various aspects of the product are analyzed. Also closing decision regarding the commodity is taken on the support of the study. Organization are required to design the new products to be in business for a long time, To satisfy unfulfilled needs of the customers, To much competition in the existing commodity line, The profit margin is on the decline, The company's actual object line becomes congested and the market is on the failure. The few reasons for new product failure are Overestimation of market size, Poor design, Incorrect positioning, wrong timing, Priced too high, Ineffective promotion, Management influence, High development costs and competition. The Characteristics of Successful product development as follows Product quality, Product cost, Development time, Development cost and Development capability. The product life cycle concept is derived from a fact that a given product's volume and revenue follow a typical pattern of growth, Maturity and Decline.

## I. PRODUCT DESIGN



Product design is conception of a view about a commodity and conversion of the plan into a run time. To mutate the plan into run time a details about the commodity is utilized. This stipulation is adapted by taking account to contrasting constraints such as commodity process, market opinion, etc. In commodity plan stage all conditions of the result are analyzed. Closing statement regarding the plan is taken on the support of the scrutiny. This decision can be any aspect related to the product dimension and tolerances, type of the material for each component. The main objective of product design is to ensure growth of the organization, to meet new requirement of the customers, to utilize the surplus fund of the organization and to increase company's market share and to target new market segment.

Features of Good Product Design is Functionally, Reliability and Productivity. This explains that the product must function properly for intended purpose. And at last, the product must be produced with a required quantity and quality at a defined and feasible cost. Reverse engineering is the process of carefully dismantling its design and developing a product which is better than the existing one. By using modeling software, designers implement a graphical replica of commodity and analyze its design characteristics. After computer aided design (CAD), computer aided manufacturing (CAM) system produce the product by using CNC. Concurrent engineering also known as simultaneous engineering.

Idea development plays a crucial role in design process. The ideas come from customers, Competitors and Suppliers. In this strategy sources ideas source can come from customers. This is in the favor of the developer side, where it is the direct contact between product makers and its customer. In product design, they are certain things to execute ourselves. The requirements of new facilities and equipment's. Availability of labor skills to make the product and obtaining of the material. Analyzing the potential size of the market for the proposed new product.

The estimation of effort need to develop the product into the market. The Financial investment must be calculated to the product. The final design has some factors to be checked before confining the decisions of the product they are selecting equipment, outlining jobs that need to be performed, identifying specific materials needed, Suppliers that will be used and all the other aspects of organizing the process of product production. It has two benefits environmental and cost. They are certain strategies to satisfy to different type of customers. They are Make to stock Strategy, assemble to order strategy and Make to stock strategy.

## II. PRODUCT LIFE CYCLE

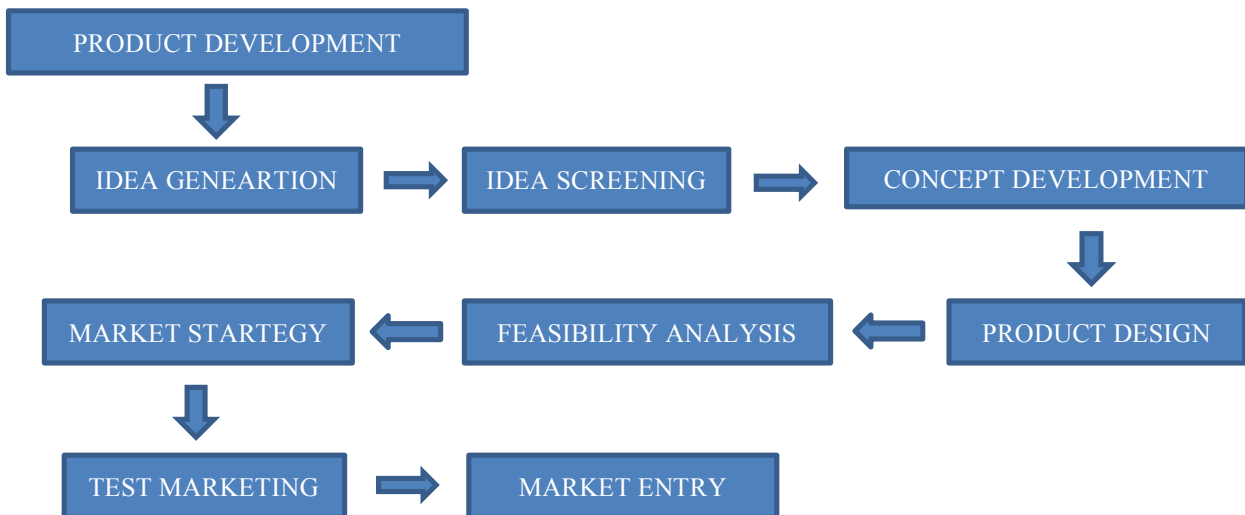
Product life cycle is essentially a series of stages that the product lifecycle is essentially a series of stages that products are much like humans go through from growth to maturity and to eventual demise of course. Product of course cannot last forever. Life cycle is that the product is born, it is developed and then it declines or may the sales of the product decline over a period of time. It attains a maturity level that means a sales of the product.

The starting phase of the product life cycle is development. Product life cycle determines revenue earned. It contributes to strategic marketing planning. It helps the firm to identify when a product needs support, redesign, withdrawal, etc. It also helps in planning for the new product development. It helps in forecasting and managing cash flow. The phases of product life cycle is product development, Introduction, Growth, Maturity and Decline.



Once the product is introduced into the market the profits start to increase and you can see there is a area in which the profits are maximum. The maximum stage is maturity. The introduction phase involves the introduction of the product into the market, it may be new product or old product to the new market, demand is low, high cost/low sales, advertisement and promotion, Monitor initial sales. In the Growth stage the period is the time to improve efficiency and product availability as well as service. Cost efficiency, time to market, pricing and discount policies are the major factors in gaining customer confidence. Increased consumer awareness. Sales growth rate increases because of limited or no competition and revenue increases. The sales, Costs, Profits, Marketing Objectives will give growth to Rapidly Rising, cost per customer is average, Rising and Maximize market share. In Maturity phase period supports in the highest returns from the product. Sales reach peak. Marketing cost of the product declines. Ratio of revenue to cost high. Sales growth likely to be low. Competition likely to be greater. Monitor market changes new strategies. In decline phase - Competitors enter the market with better product features, Advances technology and Reduced prices. Sales starts declining. Marketing cost of product rises. Selection to depart may be subordinate on oppurtunity of advanced merchandise and whether technology will enter to the new market.

### III. PRODUCT DEVELOPMENT



The first stage of Product Development is Idea Generation. Idea Generation is an invention or Innovation as a result of a gap in the current Market. An idea is to produce a product or service not currently available. The second stage is Idea Screening which involves marketers need to test consumer reaction to their idea before they continue. The idea should influence people on its trial presentation. The third stage is Concept Development. If the change in message from market and respective investor employee is good, a model or sample is implemented. This level will allow us to look if the commodity visuals and to allow your destination survival business-markets to use it/ provide feedback message for implementations, etc. The fourth stage is the Market Strategy. The development of your marketing strategy. Determining your target market and how to use the price, place, product and product to optimally set sell them your product. The fifth stage is Feasibility Analysis which often done at the same time as the product design and market stages. A few questions are answered in this stage for example material required, Price of Production, Distribution channels and Cost of promotion. After this step Selling the product in the market comes to the point. The Sixth Stage is Product Design which involves what the product will look like. The plan will buildup on what it does and what the destination business want. The Seventh stage is Test Marketing. Test Marketing is all about the test acceptance of the product. Patron message is used to implement the plan and its factors and to analyze whether the commodity should come under business strategy. The eighth stage is Market Entry. The product is already in the display and available to all. The Product life cycle begins and its life will be determined y the consumer market, competition and further product advances.

### IV. CONCLUSION

Final conclusion is made after revising the above thesis:

1. Function is certainly the end result or action desired by the customer.
2. Customer wants a function to be achieved reliably, efficiently and effectively by product or service.
3. Basic functions and Supporting functions are two type of functions in function analysis of product design development.
4. The bill of material of each component is prepared before the development of the product in manufacturing phase.
5. Product development, Introduction, Growth, Maturity and Decline are the five phases for product life cycle.
6. Functional Analysis System Techniques permits people with dissimilar technical backgrounds to effectively communicate and resolve issues that require multi-disciplined considerations.
7. Through product life cycle understanding a project is easy.
8. Cost Cutting, Design Review, Project Elimination, Scope Reduction, Quality Reduction, Detailed Cost Estimating and redesign does not come under value engineering.
9. New product development is the vital part of any business.
10. The goal of the product development is to end up with best possible product.

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