Lesson-13

NEW PRODUCT DEVELOPMENT (NPD)
PART-I

"New Product Development is a business and engineering term which describes the complete process of bringing a new product to market‖.

There are two parallel aspects to this process;

One involves product engineering; the other marketing analysis. Marketers see new product development as the first stage in Product Life Cycle Management.

Types of New Products
There are several types of new products.

- Some are new to the market
- Some are new to the firm,
- Some are new to both.
- Some are minor modifications of existing products
- While some are completely innovative.

The process

There are several stages in the new product development process:

- Idea Generation
  - o Ideas for new products obtained from customers, R&D department, competitors, focus groups, employees, or trade shows
  - o Formal idea generating techniques include attribute listing, forced relationships, brainstorming, morphological analysis, and problem analysis
- Idea Screening
  - o eliminate unsound concepts
  - o must ask three questions:
    - *f* will the target market benefit from the product
    - *f* is it technically feasible to manufacture the product
    - *f* will the product be profitable
- Concept Development and Testing
  - o develop the marketing and engineering details
    - *f* who is the target market
    - *f* what benefits will the product provide
    - *f* how will consumers react to the product
    - *f* how will the product be produced
    - *f* what will it cost to produce it
  - o test the concept by asking a sample of prospective customers what they think of the idea
- Business Analysis
  - o estimate likely selling price
  - o estimate sales volume
  - o estimate profitability and breakeven point

- Beta Testing and Market Testing
  - o produce a physical prototype or mock-up
  - o test the product in typical usage situations
  - o make adjustments where necessary
  - o produce an initial run of the product and sell it in a test market area to determine customer acceptance
- Technical Implementation
  - o New program initiation
  - o Resource estimation
  - o Requirement publication
  - o Engineering operations planning
    - Department scheduling
    - Supplier collaboration
    - Resource plan publication
    - Program review and monitoring
    - Contingencies - what-if planning
- Commercialization
  - o launch the product
  - o produce and place advertisements and other promotions
  - o fill the distribution pipeline with product
  - o critical path analysis is useful at this stage

To reduce the time the process takes many companies are completing several steps at the same time referred to as concurrent engineering). Most industry leaders see new product development as a proactive process where resources are allocated to identify market changes and seize upon new product opportunities before they occur (in contrast to a reactive strategy in which nothing is done until problems occur). Many industry leaders see new product development as an ongoing process (referred to as continuous development) in which a new product development team is always looking for opportunities.

Research and development

The phrase Research and Development (also R and D or R&D) has a special commercial significance apart from its conventional coupling of research and technological development.

In the context of commerce, "Research and Development" normally refers to future-oriented, longer-term activities in science or technology, mimicking scientific research in an apparent disregard for profits.

Statistics on organizations devoted to "R&D" may express the state of an industry, the degree of competition or the lure of scientific progress. Some common measures include: budgets, numbers of patents or on rates of peer-reviewed publications.

Bank ratios are one of the best measures, because they are continuously maintained, public and reflect risk.

In the U.S., a typical ratio of research and development for an industrial company is about 3.5% of revenues. A high technology company such as a computer manufacturer might spend 7%. Some very aggressive organizations spend as much as 40%, and are famous for their high technology. Companies in this category include the "big pharma" such as Merck or Novartis, and the engineering companies like pre-merger Hewlett-Packard, IBM, Pratt & Whitney, or Boeing.

These companies are also famous for their inability to get bank loans, because their spending ratios are so unusual that banks correctly interpret their business as extremely risky.
Generally such firms prosper only in markets whose customers have extreme needs, such as medicine, scientific instruments, safety-critical mechanisms (aircraft) or high technology military armaments. The extreme needs justify gross margins from 60% to 90% of revenues. That is, gross profits will be as much as 90% of the sales cost, with manufacturing costing only 10% of the product price. Most industrial companies get only 40% revenues.
The high margins more than compensate for the high overhead of the expensive R&D organizations.
Generally the largest technology companies not only have the largest technical staffs, but also more skilfully extract value from them.
On a technical level, the organizations try to use every trick for re purposing and repackaging advanced technologies for multiple purposes and products. They often reuse advanced manufacturing processes, expensive safety certifications, specialized embedded software, computer-aided design software, electronic designs and mechanical subsystems.

Conjoint analysis (in marketing)
Conjoint analysis, also called multi attribute compositional models, is a statistical technique that originated in mathematical psychology. Today it is used in many of the social sciences and applied sciences including marketing, product management, and operations research. The objective of conjoint analysis is to determine what combination of a limited number of attributes is most preferred by respondents. It is used frequently in testing customer acceptance of new product designs and assessing the appeal of advertisements. It has been used in product positioning, but there are some problems with this application of the technique.

Process
The basic steps are:
- Select features to be tested
- Show product feature combinations to potential customers
- Respondents rank the combinations
- Input the data from a representative sample of potential customers into a statistical software program and choose the conjoint analysis procedure. The software will produce utility functions for each of the features.
- Incorporate the most preferred features into a new product or advertisement