

Designing the Product Development(PD) Process

The PD process is the framework to build up both product development projects and the product development program. The selection of activities in the PD process depends on the

- Knowledge and skills in the company
- Knowledge easily available outside the company
- The risks involved through lack of knowledge
- The importance of the product development for the future of the company
- The level of innovation

The effects of knowledge and skills on the PD Process

Knowledge and skills in the company, and also the company's philosophy on product development, affect the choice of activities and therefore the structure of the PD Process.

- If the company is not able to do consumer research, it may do personal research with the retailer, food service buyer, their family and friends.
- If the company does not have formulation skills, it will take a formula from the ingredient supplier.
- If the company does not have process engineering skills, it will buy a turnkey processing line from an equipment supplier.
- If there are no innovation skills in the company, then it will acquire another company
- Some company managers are conservative and some want excitement, some are risk takers and some are fearful of risk; these differences cause differences in the PD Process used in the company.
- Some companies bring new products through to market as quickly as possible, missing activities such as business analysis and test marketing, as they are prepared to live with failures; other companies include all activities so as to reduce their risk of failure in the market. So the PD Process is specific to the company and its knowledge, skills, and philosophy.

Level of innovation and the PD process

A comparison of the PD processes for radical and incremental changes is shown in Figure. The sequence of the activities varies, for example, in the incremental change there is generally a linear sequence in the PD process, but in the radical innovation, there is often recycling of activities. The incremental product changes can be developed and marketed according to a standard PD process with strong involvement of the functional departments such as marketing and production.

Radical innovations (new platform products)	Incremental changes (derivative products)
Stage 1: Product strategy development	
Probing problems with consumers	Consumers setting attributes
Focused project objectives	Clear schedules and time goals
Developed product concept	General product concept
New product design specifications	Standard product design specification
New market probing studies	Market surveys
Stage 2: Product design and process development	
Building product attribute measures	Refining product attribute measures
Product/process interrelationship studies	Product formulation
Pilot plant studies	Process improvement
Frequent product testing	Strategic product testing
Stage 3: Product commercialisation	
Design of new production method	Adaptation of production
Design of new quality assurance	Adaptation of quality assurance
Commissioning of new plant	Minor plant changes
New marketing strategy	Improvement of marketing strategy
Detailed business and market analysis	Setting market and financial targets
Stage 4: Launching and post-launch evaluation	
Rolling launch or pre-launch test market	National launch
Continuous market analysis	Assessing if market targets met
Continuous financial analysis	Assessing if financial targets met
Overall management	
Project milestones to control	High importance of speed
Long-term commitment of capital	Short-term commitment of capital
Long-term commitment of human resources	Short-term commitment of human resources

Differences in the PD process for platform and derivative products

The radical innovation uses generalized activities because creativity and problems in the project are difficult to predict. For the radical innovation, there is a need to develop technical and market knowledge in the first two stages of the product development process and to include product/market testing and business analysis in the product commercialization stage. In the initial stages:

- Product concepts are developed with the consumers
- Product designers make some models or simple prototypes of possible products and ask the consumers to evaluate them
- Further product concepts are developed
- Evaluated by marketing and processing technologists to see if any, are possible for commercialization.

Later in the PD process, early versions are marketed quickly on a small scale, obtaining the user feedback and making modifications before expanding the market. Usually for the radical innovation, the company's resource commitments are made at sequential times in the PD process, and not at the beginning of the project as for incremental products.

In the incremental product projects, a great deal of the knowledge has been already in the company, so there is less need for new research in building the direction of the project. The product concept can be developed by a marketer and a product designer, evaluated by consumers to check that no mistakes have been made, and the product specifications written in the standard form for this type of product. A national launch usually targets the total market.

Between the extremes of radical and incremental changes, major product changes can need different types of PD processes. If major changes in product, market and production are being made, they can be similar to the PD process for radical innovations. If the major change is marketing related, for example a positioning change, the PD process is similar to the incremental PD process with an emphasis on the marketing change; if production related, such as a new process, it is an incremental PD process with an emphasis on technical development.