

# The Importance of A New Product Development (NPD) Process: Getting Started

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**Abstract-** *With current scenario of industrialization development of new products has become vital for organizations to succeed. The Significant factors of new product development and the influence of these factors on product development process is detailed in this paper. In order to achieve a successful new product, and its effective implementation of a new product into an organization, it is necessary to investigate summary of literature reviews done on which of the product development components of product performance, speed, and development costs is affected by the key factors and systematic organizational structure. This paper highlights the NPD method, from concept to end user and the key success drivers are, such as findings for real product superiority and effective concurrent functional teams. It is a competitive advantage for industry to be successful with new innovative approach. This paper to suggest to give high priority to key factors of product development cycle.*

**Keywords-** Product Development, Project Management

## I. INTRODUCTION

With continuously evolving technology market at global level for survival and growth focuses on investment in NPD, The development of New products and is mainly considered as an important factor of business profit. But with journey of developing new products several times lead to failures, it happens mostly at the level of commercialization may be due to ineffective structured process. Hence if new product managed well will lead higher growth than existing product. Recent business is more conscious towards understanding customer requirements and expectations thus attainment customer expectations with product features will define success of product development means customer defines quality of product hence delivering what is needed makes design focus.

To launch the product in market needs implementation of defined systematic procedure which helps the product to develop and analysis of the product the integration of generated ideas for the new product and their implementation in practice. The Three factors define

development process is the time needed for launching a new product, costs arising from product marketing and the final product price in the market. Though process is not standardized the factors like idea creation, design and analysis of product, prototype making are the most generalized.

## II. STAGES OF NPD (BAH MODEL)

Many researchers have contributed for developing a model which covers the relevant stages of the NPD process such as (Ulrich & Eppinger, 2011). From the many of NPD Models proposed so far Booz, Allen and Hamilton (1982) model is found to more prominent which broadly covers all the basic stages of NPD process. A number of detailed NPD models have been developed over the years, the best known of which is the shown in Fig.2.1, also known as the BAH model, which underlies most other NPD systems that have been put forward. This widely recognized model appears to encompass all of the basic stages of models found which is based on extensive surveys and case studies shows to be a comparatively good representation of standard practices in industry.

NPD process mainly deals with launching and development of New products It takes sequence of stages to evolve a new product in time being, it starts with idea or concept generation for new product then understanding its feasibility, development, testing and enter into the market (Booz, Allen & Hamilton (BAH), 1982). There is series of data is collected simultaneously throughout the development stages. Which results uncertainty and opportunity for reevaluation of basic concept during product evolving process. This information gathered during the development stage helps to minimize the level of risk and limiting the usage of resources which may lead to product failure. It means the BAH model mainly focusses on balancing the opportunities and prevention of high risk factors. The stages of the model for promoting the product which is necessary to verify earlier business judgments are as follows:

- **New Product Strategy:** It describes the NPD process to company goals and provides focus for idea/concept

generation also the guidelines for establishing screening criteria.

- **Idea/ Concept generation:** It is identification for scope of the new product development.
- **Screening of ideas:** It is procedure to validate feasibility of an idea.
- **Business Analysis:** Further evaluation on the basis of quantitative factors, such as profits, Return-on-investment (ROI), and sales volume, productivity etc.
- **Testing and Validation:** It deals with current commercial requirement of product specialization.
- **Commercialization of Product:** Planning production target and strategies launching of products.

Our approach towards NPD is based on the BAH model, however our study deals with scope till the pre-commercialization stages of the NPD process.

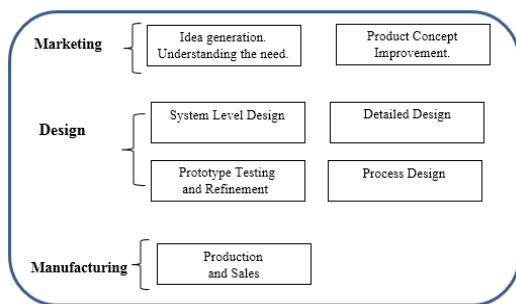


FIG. 2.1:- Stages of New Product Development (NPD) (Booz, Allen & Hamilton,1982).

The sequential NPD process as shown in Fig.2.2 is the traditional approach towards NPD. In this process, after one stage has been completed the information gathered is passed onto next stage. However, at actual working environment information flows sequentially from department to department, and forms a problematic data flow. This leads to numerous revisions for updating the status of development in particular stage. Fig.2.2 details about “Over-the-Wall Approach”, which shows how it ignores of team working concurrent engineering approach which at the end lead to poor quality, overestimated less profit product.

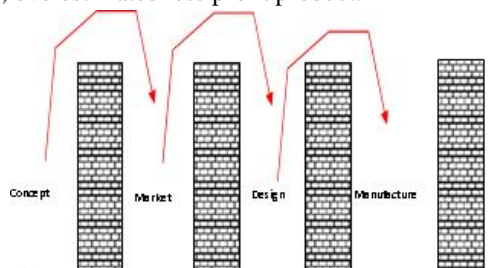


FIG. 2.2:- Typical ‘Over-the-Wall’ NPD approach.

In order to understand the effect of updating the late changes in the product development, Rush and Hansen, (1998) elaborated case study for design changes for Electronic industry Which showed that cost incurred in the development of new product due to late modifications in the product goes on increasing as the development stage advances towards utility of the product to the customer.

**Table 2.1:-**The Effect of cost of design changes in the Electronics industry (Rush and Hansen, 1998).

Stage	Relative Cost (\$)
Concept Stage.	1
Detail design.	11
Manufacturing	110
Testing and Commissioning.	1100
Post-release.	11000

Thus, the proposed standard approach towards NPD lead to numerous late changes which exceed the budget of project which finally hampers the profitability of the product. Hence an adaptive changes in the traditional NPD process is the stage-gate approach is proposed (Cooper, 1993). Fig.2.3 describes working mechanism for flow of a NPD process from concept to commercialization. In this Stage-gate approach NPD process is partitioned into five distinct stages. During each stage undergoes set of parallel tasks from different working departments but as concurrent teams so that, as the process flows information needed for progress in the next stage is collected. This helps to involve changes in the product to be communicated simultaneously to all departments working together as team on same project.

There is always an accountable challenge for NPD team to develop a new product when there is short product life and modifications in products are expected and also to deal with lots of uncertainties from concept till final product launch. In order to make the system more efficient and effective systematic implementation of NPD approach is necessary.

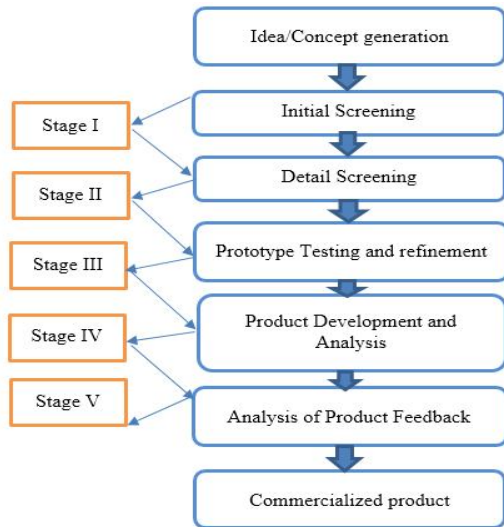


FIG. 2.3:- Stage-Gate Approach of NPD process

**III. THREAT OFFAILURE**

Since the risks of failure is unavoidable in every new product development. The balance between investments, risk and returns will determine whether or not to lead with a new product (Kuczmariski,1992).For the companies to grow and also to survive for the global challenges NPD plays vital role but there is higher percentage for new product failures in the market. It is observed that only 15% new products launched in the market could get success on the basis of commercialization. So there is always tremendous pressure to opt for NPD since cost associated with it is comparatively much higher than existing product. To concern this factor there are developments going for tools and techniques. Hence it is necessary to understand the consequences of uncertainty and opportunity to study new product furcating techniques as described in Table 3.1. Since the tools and techniques for NPD are significantly expensive it is always necessary to analyze effects of success and failure through some accountable factors, which clears the impact of implementation on industry and also on market. With current transition in the technology any new product’s life can be estimated for five years. Almost two-third of companies achieved success due to increased new product development strategies.

**Table 3.1:-** Key Features of the ‘New model for improvement’ model.

Subject	Characteristics
Organized structure and awareness for NPD.	Stage-Gate Modal. Close monitoring & Evaluation at each stage.
Clarifications and corrections at initial stages	Bring key perspectives into the process early enough to influence design and prepare for downstream problems. Early detection of problems leads to less rework.
Parallel operating environment	Concurrent or simultaneous engineering to aid faster development whilst retaining cross-functional involvement.
Accountable systems	Choice of structure – e.g. matrix/line/project/heavyweight project management – to suit conditions and task.
Interdepartmental activities	Involvement of different perspectives, use of team-building approaches to ensure effective team working and develop capabilities in flexible problem solving.
Tools and Techniques	Use of tools – such as CAD, rapid prototyping, computer- supported co-operative work aids (e.g. Lotus Notes) – to assist with quality and speed of development.
Continuously improving environment	Carrying forward lessons learned, via post-project audits etc. Development of continuous improvement culture.

Major concern with the company when only few products are launched over period of time indicates that industry is either lacking of research environment or failing to understand the dynamic changes in global market. Which indicate that lesser the new products risk is more for the survival. Thus realizing the risk of failure should not lead to restrict NPD process but to learn from previous studies and experiences of the failure will give positive effect (Rosenthal 1999).

Thus to expel NIH syndrome (Not Invented Here) from industry new product development can be promising option than to struggle with the existing product competitions.

**IV. ANALYZING NPDSUCCESS**

There are no any absolute measures by which success of new product is made accountable but it can be analyzed through goals and milestone set at the beginning of project and this may take several years to study parameters to consider to cover various market segments and industry constraints. Table 4.1 explains impact of success due to NPD in five years. Though there are two criteria to decide dependent factors for product success are as follows

1. It is highly depends on situation in market.
2. There are always more than two interdependent factors to contribute major impact of the product.

**Table 4.1:-** Impact of Success due to NPD in Five years (Kuczmariski,1992).

Successful New Products	Products for Industrial Market (%)	Products for Consumer Market (%)
100%	8	15
70 to 90%	14	10
40 to 60%	15	11
20 to 10%	3	2
1 to 10 %	6	4
0%	9	15

**4.1 Cornerstones of Success**

So, it has become an essential task for identifying success defining factors for new product for industry. Fig.4.1 describes three major cornerstones of new product success in terms of available resources, process implemented and strategy acquired.

- **Company Strategy** – It defines the focus on the areas for product development, it is long term process and undergoes different modifications during NPD.
- **Resource Planning** – Adequate spending and resources is another factor that can contribute to company NPD success, by having the necessary people and R&D spending in place.
- **The Best New product** – Ultimately the aim is to develop a new product from stages through idea generation to new product launch through NPD process.

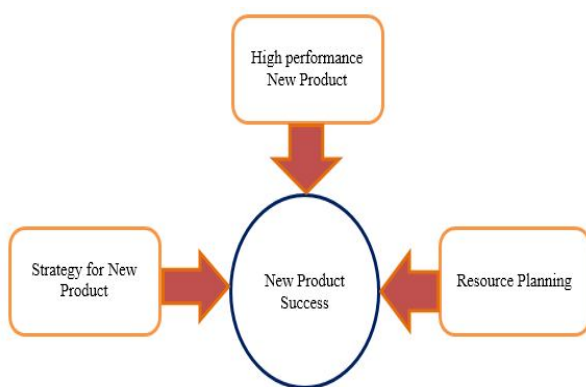


FIG.4.1:- Cornerstones of New Product performance.

**V. CONCLUSION**

The long-term survival of a business hinges upon its ability to successfully introduce new products into the market place. These new products and their successful development

can be the lifeblood of a company. These new products provide the ability for the company to grow and produce profitable returns. Also new products can gain new markets and market shares and subsequently help to defend against competitive pressures. Regularly establishing new products can potentially provide satisfaction to the continually changing customer needs and requirements. The introduction of new product in the market will make the long term survival of industry which opens the new way to think for profit and growth in terms of market shares and brand value, continuously addressing the customer needs can be observed through the presence of new products in the market which itself make up for barring the competitive pressure. Though it is essential, it needs strategic planning for NPD. As NPD is immense investment contribution and commitment toward NPD plays very important role to make the goal achievable. Also with success and failures innovative culture in the company which boost NPD.

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