

PROJECT MANAGEMENT ON NEW PRODUCT DEVELOPMENT AND LAUNCH IN THE AUTOMOTIVE INDUSTRY

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Abstract: Successful innovation has become a key driver for revenue growth, competitive margins and, in some cases, even for survival. The ability to bring innovation to the market quickly, efficiently and ahead of competition is becoming increasingly important. An efficient product launch requires integration and coordination among multiple functional areas, including product design, procurement, planning, manufacturing, sales and marketing. In addition, as organizations increasingly leverage core capabilities of other companies, innovation has to be delivered through virtual networks, working with partners in a collaborative environment in order to bring products and services to the market faster, smarter and cheaper. Consequently, organizations need to integrate itself internally and also externally with suppliers and customers, creating end- to- end supply chain processes and capabilities which impose differences on product and customer requirements.

The innovation as a business model is made up of all decisions that a company makes including six main elements, namely: “who, what, when, where, why and how much a company needs to provide its goods & services and receive value for its effort.” Some of the changes in business, that have the potential to impact a new product development (NPD) include: 1. Increased levels of competition; 2. Rapidly changing market environments; 3. Higher rates of technical obsolescence and; 4. Shorter product life cycles.

Moreover, the importance of being the first on the market is discussed extensively in various sources. Besides the instinctive idea of being the first, other measurable benefits are possible for those that get on the market sooner with innovative products and services: 1. Increased sales through longer sales cycles; 2. Increased margins; 3. Increased product loyalty; 4. More resale opportunities; 5. Greater market responsiveness; 6. A sustained leadership position.

By referring to new products launch in the auto industry we see that these trends include time for competition, globalization and strategy, extension of new product portfolios and a new management, outsourcing, cooperation and collaboration, support processes such as informatics systems, modularization and product complexity, research and development, production and distribution.

Keywords: Innovation, New Product Development (NPD), New Product Launch, Automotive Industry, Project Management, Work Breakdown Structure (WBS), Statement of Work (SOW), Microsoft Project, Gantt Chart

1 New Product Development & Launch

1.1 New product development

New product development is one of the most important value-creating processes in every industry. New products create interest, excitement and new business opportunities by providing customers with better, more convenient or lower priced ways to fulfil their needs. Many voices believe that distributors and suppliers working together as allies can both reduce the costs of product development and introduction and, more importantly, develop more and better products than those that are being produced today.

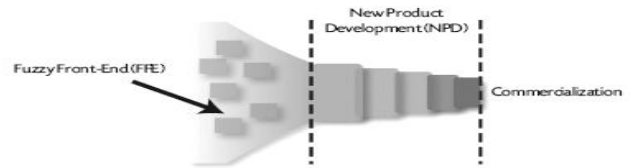
If the world was stable, there would be no need to change business operation and methods, or to understand what has changed and what works well. However, firms operate in dynamic environments, not stable ones. In response, management processes must also change over time so that firms can remain effective and profitable through this changing situation. Some of the changes in business with the potential to impact the ways in which new product development (NPD) is practiced and managed include: 1. Increased levels of competition; 2. Rapidly changing market environments; 3. Higher rates of technical obsolescence; 4. Shorter product life cycles.

A primary impact of these environmental changes is to implement changes which help speed products through development, and improve process efficiency and overall NPD effectiveness. The Model of the Product Development and Management Association (PDMA) wants to create and disseminate knowledge about managing and improving new product development.

Best research practices wish to:

- determine the current status of product development practices and performance;
- understand how product development has changed from five years ago;
- determine whether differences exist in NPD practice or performance across industry segments;
- investigate process and product development tools which differentiate the success on product development.

Fig.2 The three parts of the innovation process: fuzzy front end (FFE), new product development (NPD), and commercialization.



Source: www.stevens.edu/cce/NEW/PDFs/FuzzyFrontEnd_Old.pdf

1.2 New concept development model

PDMA model shown in Fig. 2 consists of three key parts:

- The engine or bull's-eye portion is the leadership, culture, and business strategy of the organization that drives the five key elements that are controllable by the corporation;
- The inner spoke area defines the five controllable activity elements (opportunity identification, opportunity analysis, idea generation and enrichment, idea selection, and concept definition) of the FFE;
- The influencing factors consist of organizational capabilities, the outside world, and the enabling sciences that may be involved.

The inner are called elements, as opposed to processes. A process implies a structure that may not be applicable and could force the use of a set of poorly designed controls to manage FFE activities. In addition, the model has a circular shape, to suggest that ideas are expected to flow, circulate, and iterate between and among all five elements.

New concept development (NCD) construct is a relationship model, not linear process.[1]

Influencing Factors (The Environment)

The FFE exists in an environment of influencing factors: the corporation's organizational capabilities, customer and competitor influences, the outside world's influences, and the depth and strength of enabling sciences and technology. Organizational capabilities determine whether and how opportunities are identified and analyzed, how ideas are selected and generated, and how concepts and technologies are developed.

Sciences and technology become enabling when they can be used repeatedly in a product or service. “Enabling” is not the same as “mature”. It is the point when the technology is developed enough to build it into a manufactured product or a regular service offering. Enabling technologies usually provide some degree of enhanced utility, cost avoidance, value, or quality improvement for the customer.

Outside world, government policy, environment regulations, laws concerning patents, and socioeconomic trends, all affect the FFE as well as the new product development or Stage-Gate part of the innovation process. Some of these factors are indicated in Porter’s “five force” model (1987). Porter’s model evaluates the relative power of customers, competitors, new entrants, suppliers, and industry rivalry – a power relationship that determines the intensity of competition and often inspires innovation.

The Engine (Leadership, Culture and Business Strategy)

The element of leadership, culture, and business strategy sets the environment for successful innovation. Proficiency in this element distinguishes highly innovative companies from the less innovative ones.

The seven factors that set these companies are :

- Leaders demonstrating in every decision and action that innovation is important for their company;
- Encouraging purposeful evolution and encouraging employees to try new things;
- Developing real relationship between marketing and technical people;
- Generating customer intimacy by encouraging their employees to interact closely with customers;
- Engaging the whole organization in understanding that innovation is the fundamental way by which company brings value to its customers;
- Continuing to value the individual and set an environment that is conducive to high motivation;
- Telling powerful stories that reinforce the principles and practices of innovation;

Opportunity Identification

Business and technology opportunities are explicitly considered so that resources will be

allocated to new areas of market growth, operating effectiveness, and efficiency. For example, the opportunity may be a near-term response to a competitive threat, a “breakthrough” possibility for capturing competitive advantage, or a means to simplify operations, speed them up, or reduce their cost. It could be an entirely new direction for the business or an upgrade to an existing product. It could also be a new product platform, a new manufacturing process, a new service offering, or a new marketing or sales approach.

Opportunity identification in many cases precedes idea generation and enrichment. It also may enable linking unanticipated notions to business or marketplace needs that were not previously known.

Opportunity Analysis

In this element, an opportunity is assessed to confirm that it is worth pursuing.

Opportunity analysis may be part of a formal process or may occur iteratively. Business capability and competency are assessed in this element, and sponsorship further work is also determined.

A typical analysis for a large-scale opportunity would include: 1. Strategic framing; 2. Market segment assessment; 3. Competitor analysis; 4. Customer assessment;

Idea Generation and Enrichment

The element of idea generation and enrichment concerns the birth, development, and maturation of a concrete idea. An idea may go through many iterations and changes as it is examined, studied, discussed, and developed in conjunction with other elements of the NCD model. Direct contact with customers and users and linkages with other cross-functional teams as well as collaboration with other companies and institutions often enhance this activity.

Idea generation and enrichment may be a formal process, including brain-storming sessions and idea banks so as to provoke the organization into generating new or modified ideas for the identified opportunity. A new idea may also emerge outside the bounds of any formal process – such as an experiment that goes awry, a supplier offering a new material, or a new user making an unusual request. Idea generation and enrichment may feed opportunity identification,

demonstrating that the NCD elements often proceed in a nonlinear fashion, advancing and nurturing ideas wherever they occur.

Idea Selection

The problem is not coming up with new ideas. The problem for most businesses is selecting which ideas to pursue in order to achieve the most important business value. However, there is no single process that will guarantee a good selection. Most idea selection involves from an iterative series of changes, often modified by new insights from the influencing factors and new directives from the engine.

Idea selection is expected to be less rigorous in FFE than in the NPD portion, since many ideas must be allowed to grow and advance. Additional effort will be invested to define the concept after the idea has been selected.

Concept definition

This element provides the only exit to the NPD or technology stage gate. Most companies specify guidelines for gatekeepers, who to make decisions at the outset of the development process.

Objectives: 1. Fit the concept with corporate and/or divisional strategies; 2. Size the opportunity, size the financial impact; 3. Assess customers needs and benefits; 4. Make a business plan that specifies a specific win/win value proposition for value chain participants; 5. Evaluate commercial and technical risk factors; 6. Assess environmental, health, and safety “showstoppers”; 7. Settle a project plan including resources and timing.

1.3 Automotive industry

While automakers tend to rely more heavily on outsourcing, deficits exist in the successful delivery of new product launch projects regarding launch time, launch costs, product and process quality. As launch collaboration requires standardized but also flexible processes with hundreds of partnering organizations, deficits exist in implementing support tools for more efficient project coordination and for the monitoring of project- and product maturity levels.

Firms are recognizing the strategic performance potential that collaborative relationship with

suppliers can provide. Those companies that invest in their technological processes introduce products with more value added and gain a well position on the market. A further result was the establishment of a mutual understanding and illustration of a launch and change-over management framework that could be used for the quantitative analysis.

Product creation processes:

- “Pre-“series: comprises the test of the serial tools and machinery at the suppliers plant.
- “Null” series: contains the production tests at the suppliers plant. Usually, three rounds of production tests are conducted. Production tests are often referred to as “Try Outs.”
- Production ramp up: represents the timeframe from the start of production (SOP) until it has reached the full production capacities.

Practitioners revealed also product development processes and logistical processes, particularly material scheduling and –management, demand and capacity management, inventory management, and transport planning. Classic performance measures regarding time, costs, and launch quality for processes and products were confirmed [2]. Other authors laid the foundation for the concept of performance measurement in product creation processes and launch projects.

The concept of performance measurement was soon picked up and referred to as a key performance indicator (KPI). Relevant performance measures regarding launch projects are time schedule, cost measures and product performance characteristics (such as quality, weight, or size). We clustered in this study the following three outcome dimensions as relational outcomes: overall launch time, overall launch costs, products and processes launch quality.

In today’s competitive environment, time is one of the most distinct resources for competitive advantage and, meanwhile, it is managed consequently and effectively as companies manage costs, quality, or inventory. Today, companies in every part of the world compete with flexible manufacturing and rapid-response systems, expanding variety and increasing innovation.

Manufacturer has to balance costly technological innovativeness of car models with competitive prices on the market while the supplier must

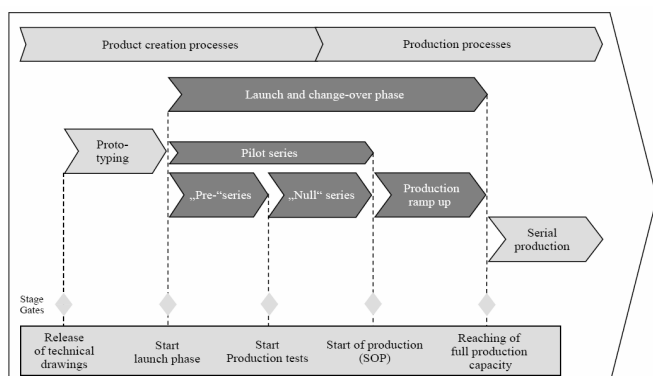
succeed in allocating his resources most effectively in order to be able to offer the largest value and the latest innovation for the best price possible.

Automotive industry at a globalized level demands standardized workflows and risk analysis as prerequisites for robust launch processes.

2. Project Management on New Product Development and New Product Launch in the Automotive Industry

Project Management represents the combination between know-how, abilities, instruments and project's techniques in order to fulfil its requirements.

Fig.4 New Product Development Management



Source :Witt, Christian (2006), „Interorganizational New Product Launch Management”, Dissertation of the University of St. Gallen

We need to change different levels, including systems, practices and philosophies. Each company needs to learn to "work for us."

Several priorities:

- We need to develop a common vision of the value created by disseminating the information through all the participants to the value chain.
- We must agree on what type of information can be disseminated deliberately and what information is secret;
- We need to develop a frame, a schedule that must be approved in industry for the data that has to be standardized;
- Companies must be prepared to exchange the basic standards, in fact the data, freely or in return to an available rate of costs recovery. Common

standards will help you minimize the costs of sharing data;

- Once we have accepted that the value doesn't mean rude information, but analytical capabilities linked to it, we should not regard data sharing as a revenue engine;
- Security controls must be placed on each information platform;

2.1 New gearbox launch project

The project must meet the increased demands posed by the client but it should be also able to fold the production and the group's policy. It is a 6-speed gearbox which addresses to low-consumption engines.

By counting the success of a new product launch we measure the following factors: time, cost and quality.

Our project processes are:

- The Start process: define and authorize the project or the project phase;
- The Planning process: define, set goals, and all action plans necessary to achieve the objectives for which the project was undertaken;
- The Implementation process includes humans and other sources to carry out the management plan;
- The Monitoring and Controlling processes refer to identifying changes in the management plan and collect the further decisions to be taken;
- Project Closure.

The project is included in Dacia's Renault Mechanical Department.

2.2. New Project performance axes:

- Apply Renault production standards in design and manufacturing;
- Use industrial network in Romania (30% of investment);
- Capitalize the best practices used in all Renault plants that are producing gear boxes (France, Spain, Portugal, Turkey, Chile);
- Mine engineering-design team dedicated to achieving project objectives;
- 120 Romanian engineers and technicians;
- 25 French engineers;
- Support for all product-process experts from Renault.

2.3. Statement of work (SOW)

Project objectives:

"Making an engine with a low fuel consumption gearbox"

Deliverables: 1. Market surveys; 2. Technical Research; 3. Final product

Benchmarking: 1. Study of domestic and international car market; 2. Technical & Economic Evaluation of the new product; 3. Concept development; 4. Build a prototype; 5. Achieving Zero series and developing the process; 6. Product manufacturing in series; 7. Study the impact on market.

Technical requirements: 1. The product must be enrolled in technical enforced norms; 2. It must be reliable; 3. The implementation should be as simple as possible.

Constraints: 1. Budget surpluses must not exceed 2.5% of total budget; 2. Price for customer should be 20% lower than competition's price; 3. Project should not last more than 2.5 years; 4. Overtime allocation should not exceed 3% of the assigned number.

Work Breakdown Structure (WBS)

Rather than thinking a process as some number of discrete phases, look for the bigger picture of a large, evolving, general-purpose process, which we break up into steps partly for our benefit in presenting the story about new product activities. New product processes essentially turns an opportunity (a real start) into a profit flow (a real finish). It begins with something that is not a product (the opportunity) and ends up with another thing that is not a product (the profit). The basics stages are:

Phase 1: Opportunity Identification: Marketing planning; Corporate planning Opportunity analysis

Phase 2: Concept generation: Idea screening; Concept statement

Phase 3: Concept/project evaluation: Concept testing; Concept screening; Protocol concept

Phase 4: Development: Allocate resources; Prototype concept; Batch concept; Process concept; Piloting concept; Comprehensive business analysis

Phases 5: Launch/Commercialization: Test the market; Evaluate the market; Make a public announcement; Assess concept success

For us WBS is a tree structure that captures all project activities in an organized manner. Large, complex organized and understood projects are divided into pieces of increasingly smaller size until they become a collection of "work packages" which may include a set number of tasks (Appendix 2).

4 Conclusions:

Compared with previous similar projects, the present one reveals a number of factors that gives a higher score of excellence:

- A more assertive management involvement;
- A more efficient use of resources in order to obtain information (benchmarking studies, and comparison with competitors achievements, reference projects);
- An effective communication to all the persons involved for a better understanding of the objectives;
- Creating an atmosphere within the team in order to stimulate constructive criticism;
- Better training, including a project manager;
- Better understanding of customer needs, the more efficient feed-back come from the final customers;
- Defining an employee incentive scheme;
- Assess the degree of achieving the objectives.

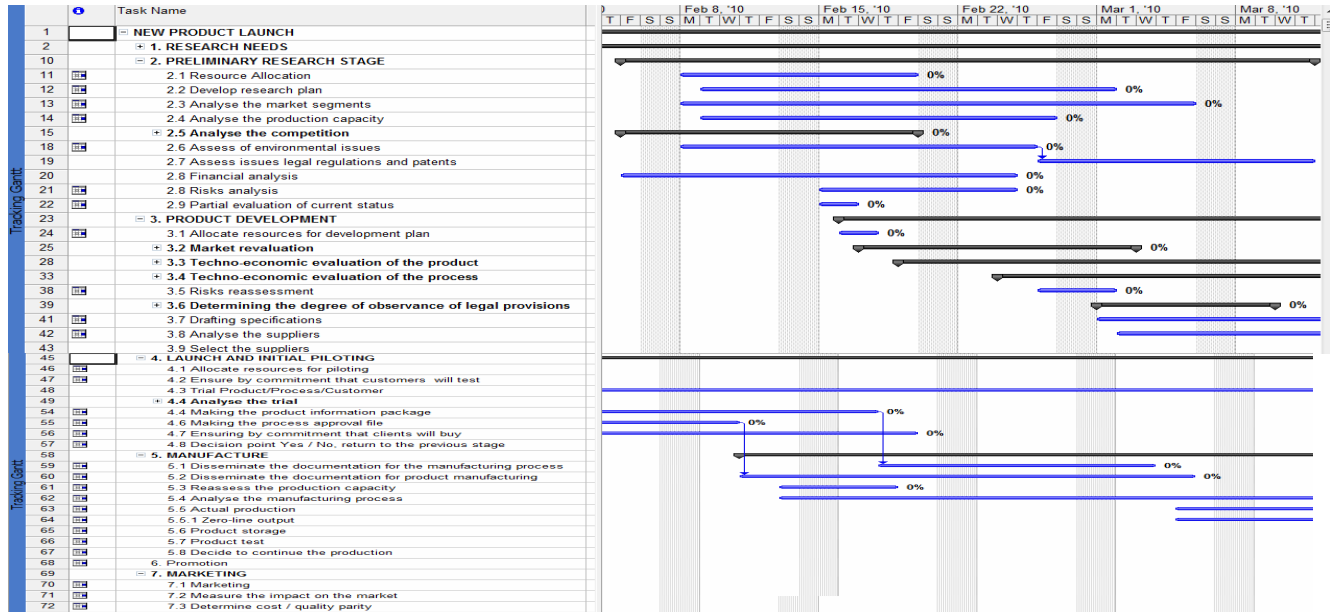
References:

- [1] www.stevens.edu/cce/NEW/PDFs/FuzzyFrontEnd_Old.pdf;
- [2] Witt, Christian (2006), „Interorganizational New Product Launch Management”, Dissertation of the University of St. Gallen;
- [3] Markides, C. Constantinos (2008), „Game-Changing Strategies”, Jossey-Bass, San Francisco;
- [4] Schmidt, Regina & Co. (2006), „Organising innovation – factors that drive success”, Executive Outlook, Volume 6, Number 4, December, Bruxelles;
- [5] www-935.ibm.com/.../us/.../ibv-perfect-product-ge510-6281-00.pdf

Note:

We have used Microsoft Project in order to offer a more significant picture of all processes used in the new product launch and we have attached images of Tracking Gantt and WBS Chart Pro. (Appendix 1 and Appendix 2).

APPENDIX 1



APPENDIX 2

