CHAPTER 6

STRATEGIC ALIGNMENT IN SUPPLY CHAIN

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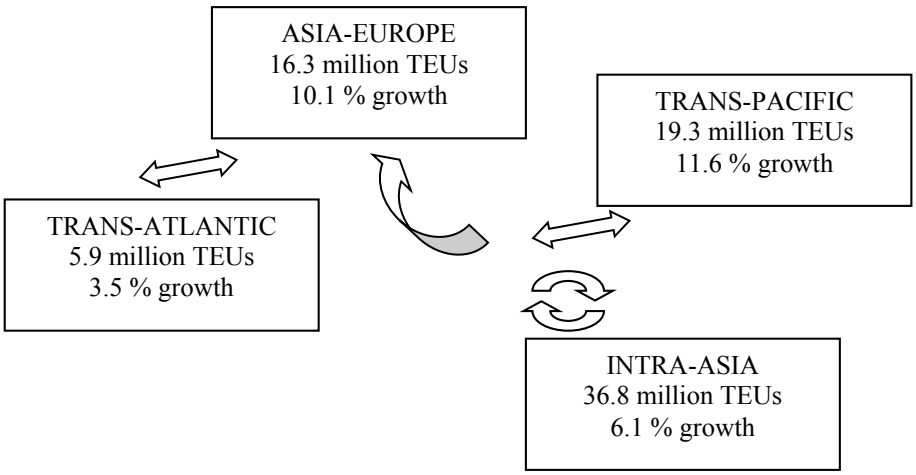
6.1. Strategic Alignement of Service Providers (3PL – Third Part Logistics)

6.1.1. Transport and Logistics in Europe

Transport Growth

The freight transport growth development in Europe shows a steadily increase, due to many causes. The main macrodrivers to be mentioned here are the worldwide globalization process and the European Union enlargement, which lead on the one hand side to economic growth and increasing trade within European countries and on the other hand to the increasing trade between Europe and especially Asia. The latter may not be underestimated, as the current and forecasted trade flows between Europe and other countries are growing faster and faster. Figure 6.1 depicts the major worldwide container trade flows in 2005. In the year 2005 Europe handled 16.3 million TEUs (twenty-foot equivalent unit), which is a 10.1% growth compared to 2004. Forecasts show that this development will even increase more in the next 20 years.

Figure 6.1 Major container trade flows in 2005,



Source: European Logistics Association

The resulting European economy and trade growth is closely associated with transport growth, which is so far not to be considered as a problem respectively challenge, as smooth transport

operations just enable the economic development and foster competition and thereby are an essential element in maintaining and increasing Europe's competitiveness.

External Effects

Although a major contributor to economic growth, transport also involves external costs. Transport has negative environmental, economic, health and social effects. These externalities can also be expressed in monetary terms, estimated by calculating direct, indirect and avoidance costs. Studies have placed the external costs of transport at 3-5% of GDP. Road and air have the highest external costs, and rail by far the lowest per transport unit. The European Commission assumes 1.1% of GDP for just environmental costs.

Externalities of freight transport include especially environmental effects (e.g. Pollution, Noise, CO2 Emission) and economical effects (e.g. Accidents, Congestion, Road Damages):

- *CO2 Emission:* engine exhaust from internal combustion engines contains harmful gases and particles. The main gaseous products are carbon dioxide (CO2) and water.
- *Noise:* high noise levels in the long term can cause health problems. The World Health Organization (WHO) therefore recommends certain limits to permanent noise levels. On roads with high traffic volumes these limits are often exceeded. A comparison between rail and road transport noise showed that road transport noise is subjectively perceived as more annoying.
- *Congestion:* congestion is hard to measure. In recent years the road network has improved do much that congestion is mainly a concern in urban areas and bottlenecks.
- *Accidents:* although the number of accidents overall decreases, one has to realize that there are still European wide differences. Especially Eastern European countries still have relatively high accident and fatalities rates.

Under-utilized Intermodal Transport

In the context transportation being a key sector responsible for a large and increasing share of environmental problems, the European Commission and other authorities address the division of market shares between traffic modes, also referred to as modal split. The major feature of the European Commission transport policy, e.g. forwarded in the White Paper (European Commission, 2001), is the promotion of rail and sea transport at the expense of the less sustainable road transport.

Each society encompassing trade of products needs a network-carrying traffic mode.

The major reasons for the rapid and well known growth of road transport are:

- Road haulage was first considered as supporting rail and not as a competitor;
- Giant road construction programs but inadequate investments in the railway systems;
- New industrial localization patterns facilitated by the supply of road transport;
- New transport demand structure that suits road transport: speed, higher value of cargo, smaller consignments, JIT, advanced logistics, flexibility, control, no damages etc.;
- Suitable sizes of vehicles;
- Very low entry barriers and effective market pricing in road transport.

As conclusions, the first point to note is that road transport is the dominant mode of transport in Europe. The second point is that the modal split across Europe (in percentage) has not been taken a positive development toward a less road intensive traffic in Europe and even earns more and more share. The third point is that the current trend of goods value increase will not slow down this development.

6.1.2. ECR Europe Projects

ECR – Efficient Consumer Response – is an initiative developed by manufacturers and retailers in Europe and is aimed at providing European consumers with the best possible value for products and services. This goal is achieved by a collaborative approach from all involved parties. *(ECR Europe Report, 1997)*

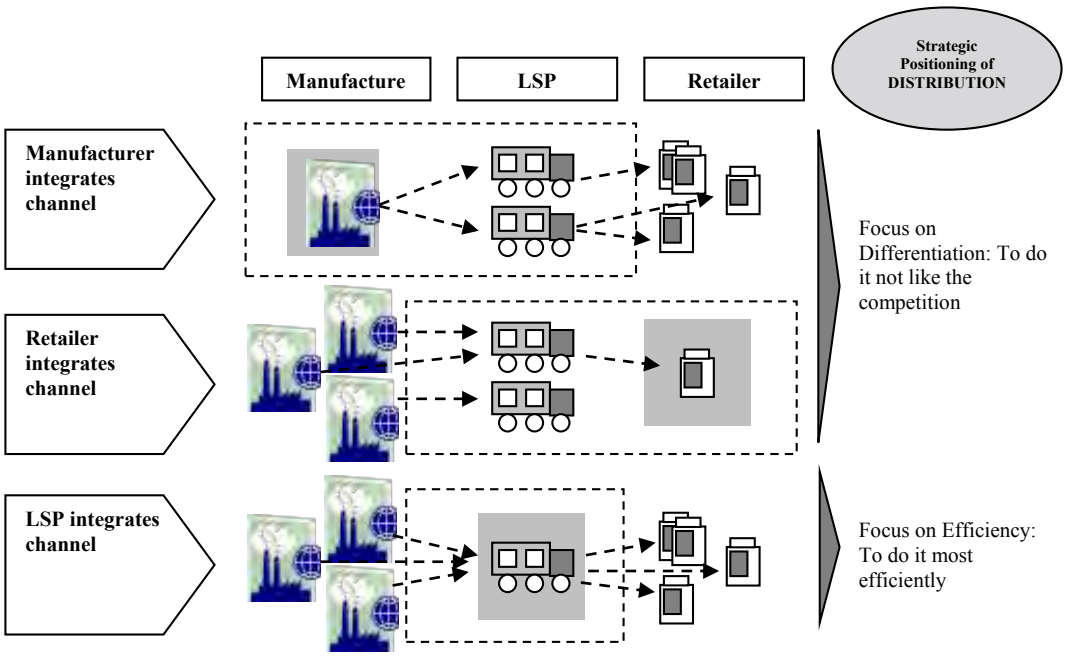
Phase II of the ECR Europe Efficient Replenishment project included the third party of the supply chain: the logistics service providers (LSP). A European survey by Codis, covering over 120 companies in the FMCG industry in Europe, shows that in the major European markets, total tonnage carried by LSPs varies from nearly 60% in Germany to over 80% in Spain. *(ECR Europe Report, 1999)*

Recognizing that in today's environment logistics service providers are an important partner in the supply chain, phase II aims at achieving further cost reductions and service improvements by extending the ECR core principles of improving co-operation, co-ordination and communication to all three main players in the supply chain: manufacturers, retailers and LSPs.

Supply Chain Integration

The integration of a supply chain concentrates on the links between and within companies linked in a supply chain. Two logistics dimensions describe the distribution process from manufacturer to retailer: along and across the supply chain.

Figure 6.2 Three basic models to achieve supply integration



Source: Roland Berger & Partner, ECR Europe Report, 1999

"Along the supply chain" means the physical and information flows along the value adding chain. The structure of (vertical) distribution through this chain is characterized by five possible stages in warehousing: factory warehouses, central warehouses, transshipment points (TSP), retailer's distribution centers (RDC) and the point-of-sale (POS).

Integration along and across the supply chain builds a network in which the costs become minimal. This requires co-operation between multiple manufacturers, multiple LSPs and multiple retailers.

Across the supply chain integration implies the co-operation of all parties involved in the supply chain. Nevertheless, to make the concept work one participant has to assume leadership in order to focus any integration project. There are three basic models to achieve further integration:

- Manufacturer leads integration

- Retailer leads integration
- LSP leads integration.

6.1.3. Sustainable Transport Challenges to Overcome

In response to both consumer pressures for continuous and convenient product availability at reasonable prices, and retail and supplier needs to optimize their investments and costs, service and quality trade-offs, a variety of stock management solutions are implemented (cross-docking, vendor managed inventory, just-in-time). However, some of these activities can be viewed as being in conflict with sustainable transport initiatives.

Challenges for Supply Chain Agility / Responsiveness (LEAN)

Supply Chain Processes Quality and Right First Time

Inaccurate information and poor quality product and processes drive wasteful transport activity into the supply chain, both in terms of outbound transport and reverse logistics.

Collaboration; "the simplest things can be the hardest"

Many opportunities to reduce transport related carbon emissions require the co-operation of trading partners. This often presents problems in gaining management buy-in at board and operational level, and is also a sensitive area in competition law. The lack of buy-in can present significant barriers to achieving benefits, sharing them and building critical mass.

Cube Utilization Trade Offs

The objective is to maximize the utilization of the given transport unit (whether in terms of the volume or the weight constraint, whichever is approached first); this can be constrained by the ability to double stack, the pallet height and weight.

Bio Fuels

A wide range of biomass products such as sugar cane, rapeseed, corn, straw, wood, animal and agriculture residues and waste can be transformed into fuels for transport, as an alternative to conventional mineral oil based fuel. Generally, a distinction is made between first generation biofuels (mainly produced from crops such as sugar beet and rapeseed) and second generation biofuels (from lingo-cellulosic or "woody" sources and via new technologies to convert biomass to liquid (BTL)). The two main first generation biofuels are bio-ethanol and bio-diesel. Brazil and the US are the main producers of bio-ethanol; the EU has the largest production of bio-diesel, with Germany, France, Sweden and Spain in the lead.

Global vs. local Sourcing

The trade-off between low-cost / all year production (global sourcing) and an increased transportation requirement in terms of distance, cost, resource availability and environment impact.

Infrastructure Capacity

Rail, short-sea and inland waterways are often seen as *the* solution to achieve more sustainable transport. However, the capacity of these alternative modes is limited and requires expansion to allow these modes to take a larger market share. The challenges faced require political decisions at country and European level regarding construction, financing and environmental impacts.

Legal Constraints: Taxation and Incentive Policies

Consumers have an expectation for process to remain competitive. However manufacturers and retailers are faced with the ongoing challenge of increasing costs of taxation of road transport.

Legal Constraints: European and National Policy Harmonization

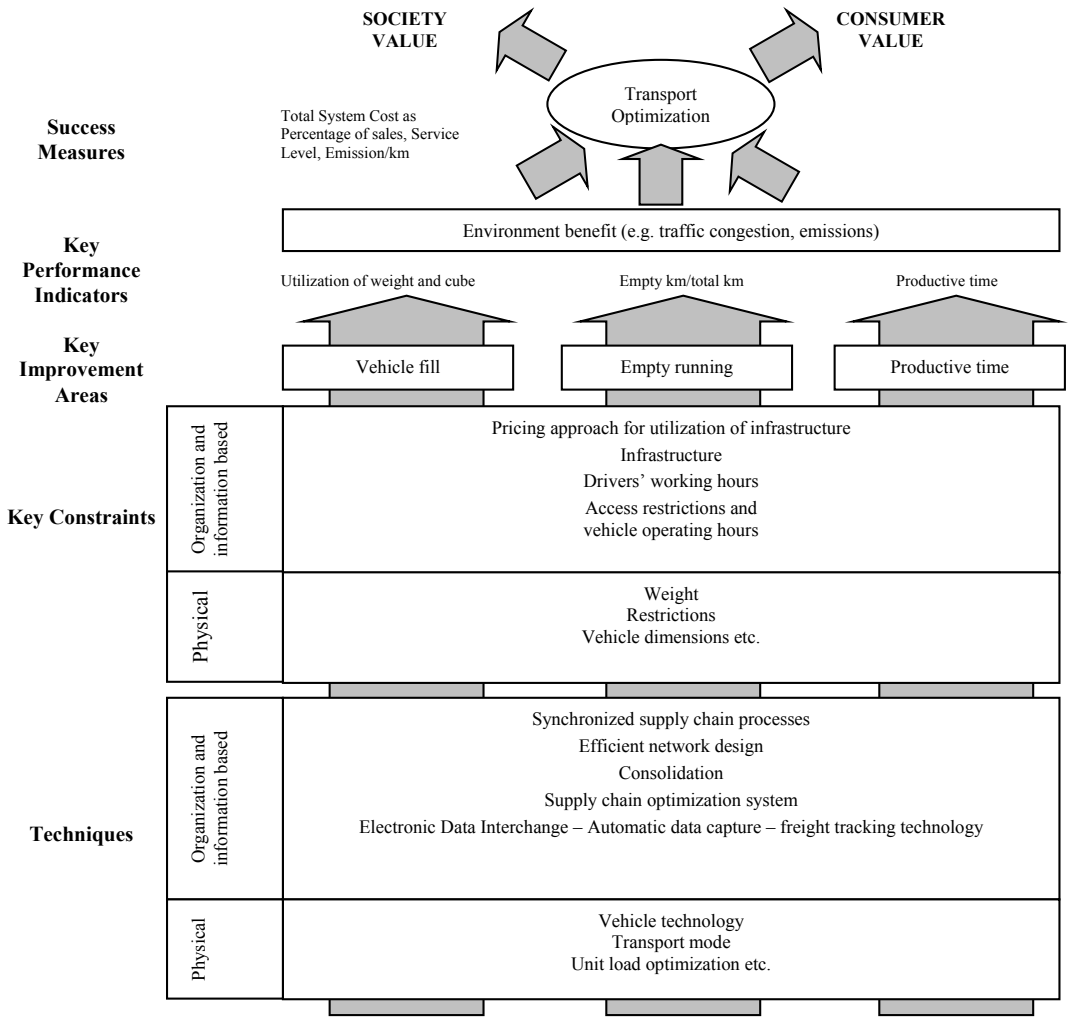
The lack of European and national policy harmonization is slowing the global process towards sustainable transport.

6.1.4. Transport Optimization Guidelines

Building on the work of the ECR Europe Efficient Unit Loads and Efficient Replenishment II projects, the Transport Optimization Project establishes best practice guidelines for the optimal use of transport capacities and for optimal transport management. The figure above illustrates the methodology used in this project.

Techniques for optimizing transport have been categorized as "physical", dealing with the physical aspects of vehicle utilization such as truck fill and vehicle design, and "organization and information based", dealing with process aspects such as network design and routing and scheduling.

Figure 6.3 Methodology of the Transport optimization



Source: ECR Europe Report, 2000

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Key Improvement Areas

Vehicle Fill

There are many reasons for poor vehicle fill, some of which are imposed by physical and organizational constraints, while others are a consequence of poor practice:

- Lack of harmonization of weight limitations.
- Lack of adherence to efficient unit load principles (modularity, pallet dimensions, load heights etc.).
- Poor load building practices.
- Carrying capacity lost to (tertiary) transport items (pallets and roll cages occupy space and use up weight, but are not payload).
- Replenishment practices creating inefficient loads (e.g. small order quantities with individual SKUs separated by "sandwich" pallets).
- Lack of available product volume to fill the vehicle.
- Restrictive service requirements (delivery schedule requirements can be inconsistent with maximizing vehicle fill);
- Lack of synchronization between demand and supply side activities (e.g. promotional agreements may not take account of transport constraints);
- Distribution network design (e.g. location of warehouses, production sites).

Empty Running

In the last year only about 10% of vehicles are running completely full, while between 30 % and 40 % are running completely empty, resulting in an average vehicle utilization of 50%. Whilst improving Vehicle Fill addresses improving the use of partially filled vehicles, reducing Empty Running focuses on minimizing the number of vehicle trips travelled completely empty through organization of information-based techniques like consolidation of deliveries, network optimization and the use of routing and scheduling software to build transport "circuits".

Productive Time

Transport assets (vehicles, rolling stock etc.) are expensive items of equipment and, like any other item of capital plant or machinery, need to generate a return on investment. Productive use of these assets over time is essential for maintaining reasonable returns, keeping transport costs down and minimizing the amount of spare capacity required.

A survey by Heriot Watt University in Edinburgh shows that as much as 60% of available trailer time is non-productive.

There are many reasons for loss of productive time:

- Poor planning of routes and delivery schedules
- Access restrictions in certain areas (city centers, towns)
- Limitations on operating hours (e.g. weekend and night driving bans)
- Limitations on available delivery windows
- Delays in loading and unloading
- Time required for vehicle maintenance
- Traffic congestion.

It is important to distinguish between productive use of vehicle trailers and productive use of tractor units. Trailers are productive if they are moving goods but also if they provide a storage buffer function between production output and consumer demand. For example, "drop trailers" are often used to achieve the optimum mix of efficient use of driver and tractor time, effective load building and efficient goods dispatch and receiving operations. Tractor units can only be productive if they are moving.

6.1.5. The ECR Model for Sustainable Transport Road Map

Using the sustainable transport road map

- Internally
- Collaboratively
- Build a plan for improvements

Figure 6.4.a A graphical assessment of where the organization stands

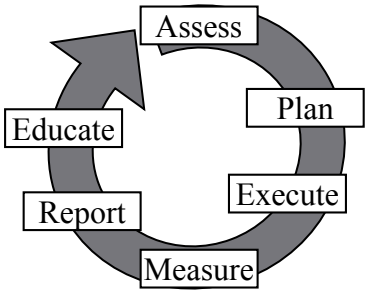


Figure 6.4.b The benefits of molecular standards

Source: ECR Sustainable Transport Project, 2009

Example: Route Planning

Figure 6 indicates the organization is at level 1. To get to the next level the organization will need to ensure:

- Drivers are provided with a set of generic route cards periodically giving them the lowest mileage route for principal journeys.
- There is some measurement and monitoring of actual miles run vs. minimum possible mileage by transport route with performance management by exception.
- Load planning is a combination of manual process and transport planning software which attempts to optimize drop sequence and appointment times to minimize miles run.

6.1.6. ECR Europe Project on "Sustainable Transport – Working Together to Deliver to Consumers Whilst Minimizing Environmental Impact"

Background

The European transport environment is characterized by an increasing number of economic, environmental, social and regulatory trends and constraints: rising fuel/energy prices, capacity shortages, environmental concerns, road user charges, urban access restrictions, reduction of driving hours, week-end traffic bans and increase in retail formats/channels.

Road is the main means of transport for intra-European movements, accounting for 44% of general freight transport, and is expected to grow by 50% between 2000 and 2001. For the FMCG community the share of road transport for customer delivery is nearly double – the ECR Europe Transport Optimization report estimates it at 80% *(ECR Europe, 2000)*.

The economic and regulatory context is putting strong pressure on manufacturers and retailers to become more efficient and effective and is leading to a substantial increase of transport costs.

The Global Commerce Initiative (GCI), in its 2016 vision paper, identified integrated logistics and sharing of logistics facilities and assets (transport, warehousing) as an important step in leveraging future opportunities in the value chain.

ECR Europe should set up a project team to address the challenges outlined above, in particular:

- How to make more efficient and effective use of transport and other logistics assets within current constraints (and based on current distribution strategies);
- How the current distribution model affects our ability to rise to the challenge and make paradigm shifts in physical distribution of goods.

6.2. Techniques and Tools in Logistics Services

6.2.1. Techniques and Enablers

Bar-coding

Bar-coding is the use of bar codes for identification of shipment units (pallets, cases) at all stages of the supply chain by all parties involved. Bar-coding allows one communication interface for all participants and guarantees the quality of information. With bar-coding, information processes can be automated and handled electronically, e.g. proof of collection, report of errors, proof of transfer, tracking & tracing, proof of delivery.

Supply Chain Planning (SCP)

SCP is defined as an integrated planning procedure, in which all processes are detailed without redundancies and fragmentation. The individual planning processes, such as order processing, demand planning, sales planning, production planning, capacity planning and transport planning are linked together to enable the logical consolidation process.

Electronic Data Interchange (EDI) and Information Technology (IT)

Electronic data interchange is the computer-to-computer exchange of structured data, sent in a format that allows for automated processing with no manual intervention.

Achieving efficiency in the management of the supply chain relies on achieving fast, accurate and timely information about production, distribution and consumption. The need for a highly responsive supply chain is driving forward the development of communication techniques. EDI is the technology for this communication.

Reusable Transport Items (RTI)

RTI are all means to assemble goods for transportation, storage, handling and product protection in the supply chain which are returned for further usage, including for example pallets as well as all forms of reusable crates, trays, boxes, roll pallets, barrels, trolleys, pallet collars and lids with and without cash deposits. *(ECR Europe Report, 2000)*

The term RTI is usually allocated to secondary and tertiary packaging. But in certain circumstances also primary packaging may be considered as a form of RTI. Freight containers, trailers and other similar enclosed modules are not covered by the terminology.

The implementation of reusable or non-reusable transport items is based on the user's decision. Depending on individual situations, a RTI-application costs or a disposable packaging system may prove to be more cost efficient. If a RTI application is preferred, the IC-RTI can demonstrate how to do it efficiently. Relevant work items are:

- Defining relevant terminology
- Analyzing and describing business processes
- Specification of Enabling Technologies (identification with the EAN numbering systems of EAN.UCC, EDI with EANCOM®)
- Development of Key Performance Indicators (KPI) for a RTI use
- Evaluating the impact of new technologies (RFID)
- New business requirements (Tracking & Tracing).

There are two "main-streams" existing in managing RTI-systems:

- Directly exchanged RTI e.g. white pallet, food load carriers (FLC)
- Pool organization controlled.

Both applications should be tailored in the most efficient way, including identification of the RTI with a minimum of costs, respectively a maximum of performance. Therefore the EAN.UCC system for identification of RTI is used for each of the RTI-systems in its appropriate way.

Identification standards for RTI based on GS1 system

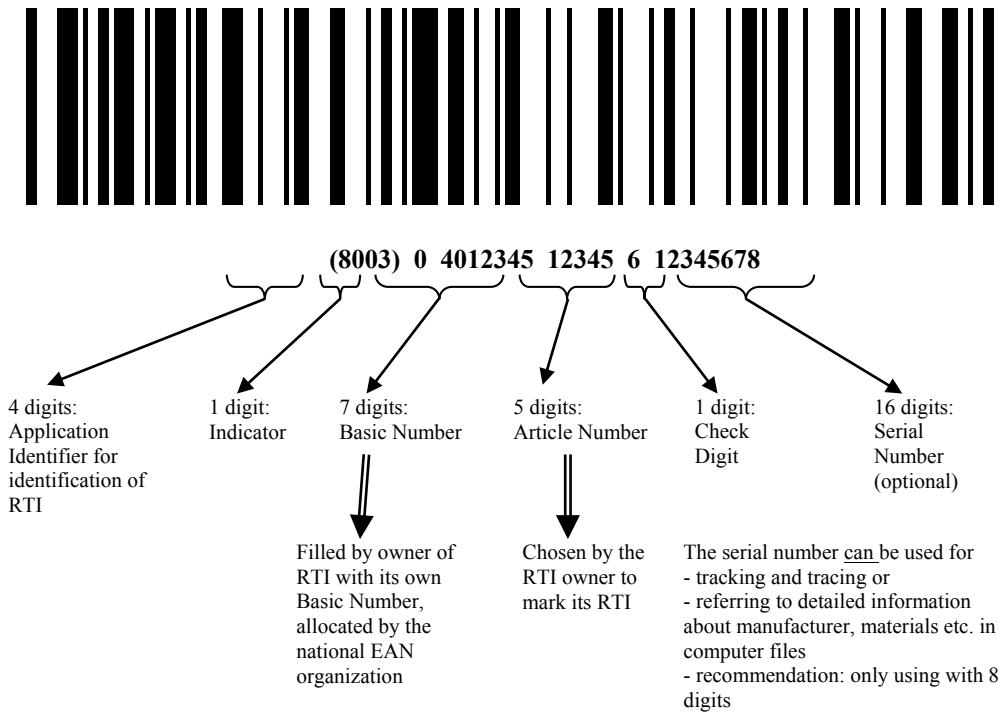
Global Returnable Asset Identifier (GRAI) and Global Trade Item Number (GTIN)

The identification of RTI depends on the application. In case of trading RTI, i.e. selling of a RTI to a buyer in connection with change of ownership, the RTI has to be identified by a GTIN. For RTI the GTIN is characterized as a virtual number used in Merchandise Information Systems but not labeled on or embed in the RTI. Relevant Processes are forecasting, ordering, buying, renting and reporting of inventories. Therefore the GTIN is used for the messages DELFOR, ORDERS, INVRPT. In case of tracking & tracing RTI, the RTI must be identified by a GRAI. Application Identifier AI 8003 (=GRAI) gives computer application systems the task to interpret the first 14 digits as the GTIN of the returnable asset. In EANCOM® an asset is broadly defined as anything that is owned and not traded. The GRAI (Figure 6.5) could be expanded by the addition of an optional serial number to enable a unique identification. The GRAI is physically labeled on or embedded in RTI and used for DESADV, INVRPT and RECADV.

The IC-RTI recommends: GRAI = 8003 + GTIN + serial number (optional). Although RTI and article information are different, the IC-RTI recommendation to use a GTIN allows storing the data in one database.

Bar-coding according to EAN 128 standard

Figure 6.5 Bar-coding of the GRAI



6.2.2. Efficient Unit Loads (EUL)

A unit load consists of a group of products put together to facilitate transport and handling. This includes secondary items such as cardboard boxes and plastic trays, which group or package primary products and tertiary items such as pallets and roll cages, which, in turn, group secondary items. Primary products are not considered here, except in the way they impact on secondary and tertiary item design. Unit loads represent a key cost driver since they impact on transport, storage, handling and packaging, estimated to account for 12-15% of retail sales price.

Efficient unit loads generate transport and storage savings.

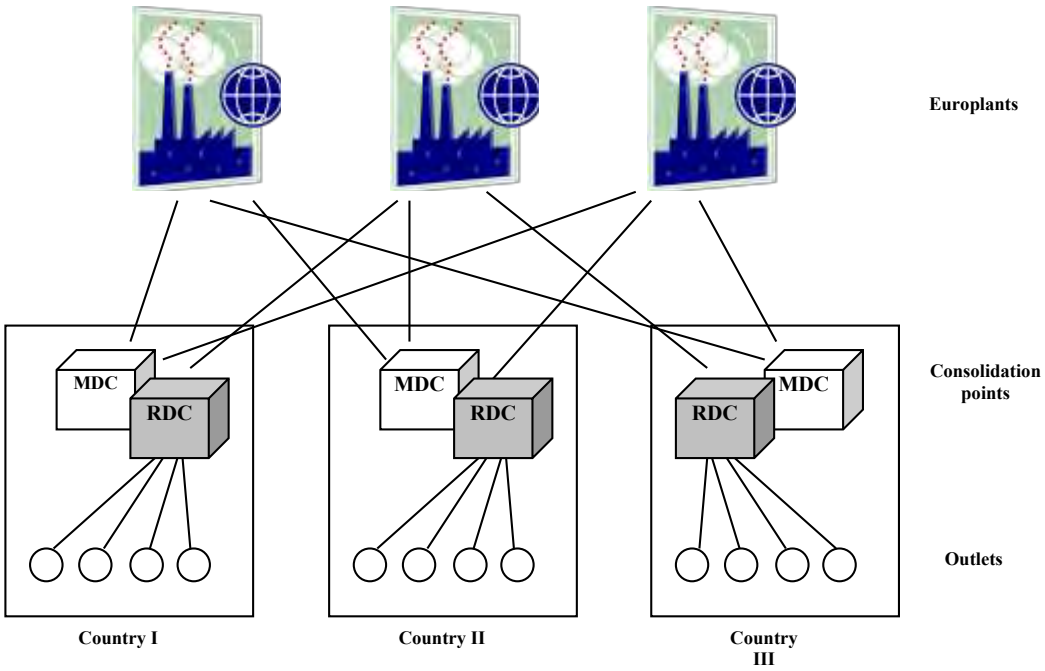
Unit loads are involved in every step of the supply chain, moving product from the production line through to the retail shelf and sometimes beyond into the consumer's home. Developments such as roll cages and more recently, dollies, have improved retail handling efficiency, and automation has improved handling efficiency in the factory.

With emerging "European" supply chains, unit loads proliferation is a major issue, also gaining further importance as the trade goes international.

To become more efficient, today's supply chains require further integration which will be driven by harmonizing unit loads.

Efficient Unit Loads are an important element in ECR and are essential to the successful application of Efficient Replenishment (ER) guidelines.

Figure 6.6 Pan-European factories supplying different markets



Source: ECR Europe Report, 2000

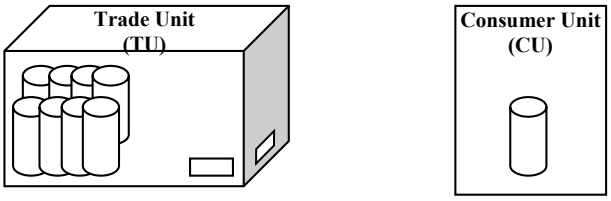
6.2.3. Unit Load Identification and Tracking (ULIT)

Unit Load Identification and Tracking is in many respects a continuation of previous ECR supply-side projects. The Efficient Replenishment projects showed the potential for collaborative logistics optimization among manufacturers, retailers and logistics service providers. The Efficient Unit Loads Project laid the foundation for efficient Unit Load management across the total supply chain. The Transport Optimization Project showed the impact of Unit Load Optimization on Transport Systems and thus on congestion, pollution and noise. Other projects focused on the Electronic Data Interchange and the Inter-Operability of Data Pools.

Definition and Numbering Structures of Trade Items

A *trade item* (Figure 6.7) is defined as any item (product or service) upon which there is a need to retrieve pre-defined information and that may be priced or ordered or invoiced at any point in any supply chain.

Figure 6.7 Trade unit and consumer unit



This definition covers raw materials through to end-user products and also includes services, all of them having pre-defined characteristics. Trade items can be found either in the form of consumer

units or trade units, the distinction being that the CU unlike the TU is always intended to cross a retail POS.

Each trade item, different in design and/or content, is allocated a unique identification number, which remains the same for as long as it is traded. The number that uniquely identifies a trade unit can be encoded in different numbering structures.

Table 6.1 Trade item numbering structures

EAN/UCC-8	An 8-digit numbering structure generally used for small consumer units with too little space for EAN-13 bar code symbology. EAN/UCC-8 identification numbers are available from numbering organizations
EAN/UCC-13	13-digit numbering structures are used for both consumer and trade units
EAN/UCC-12	12-digit numbering structure used in North America for consumer unit identification
EAN/UCC-14	14-digit numbering structure only used for trade units

Global Location Numbers (GLN) (ECR Europe Report, 2000)

EAN location numbers are reference keys to computer files used to direct entities (goods, paper based information, electronic information etc.) to locations (physical or functional) or parties. GLNs (Table 6.1) can identify any party or location which can be addressed, such as:

- *Legal entities:* whole companies, subsidiaries or divisions such as a supplier, customer, bank, forwarder etc..
- *Physical entities:* a particular room in a building, a warehouse or warehouse gate, delivery point, transmission point.
- *Functional entities:* a specific department within a legal entity (e.g. accounting department), a mailbox or a file within a computer.

In relation to the EAN numbering structures mentioned above, EAN GLNs have the following features:

- *Unique:* with a simple structure, facilitating secure processing and transmission of data.
- *Multi-sectoral:* the non-significant characteristic of the EAN GLNs allows any location to be identified and consequently any business regardless of its activity.
- *International:* EAN GLNs are unique world-wide.

EDI and DESADV

For exchanging data between partners in a reliable, fast and low-cost way, not relying on keying and re-keying, Electronic Data Interchange (EDI) is today's best technology.

In simple words, EDI is about doing business and carrying out transactions with your trade partners electronically. EDI covers most things that are done using paper-based communication. This includes placing orders with suppliers and carrying out financial transactions. More formally, EDI is the exchange of structured data between computers in a form that allows processing of data without manual intervention. This structured data equates to an unambiguous method of presenting the data content of a document, be it an invoice, order or any other type of document. The method of ensuring the correct interpretation of the information by the computer system is defined by the standard. In order to communicate all data commonly used and required in the supply chain, EAN International developed and maintains the EANCOM® language, a subset of the UN/EDIFACT language, for commerce and consumer goods.

The main benefits that EDI will offer to its users include:

- Faster trading cycle

- Reduced costs: paper and postage bills cut, reduction in money tied up in stock, manual processing costs (e.g. associated with verification)
- Avoidance of keying and re-keying in of documents and the cost of manual filing systems will be reduced
- Security and fewer errors
- Ability to adopt new business processes such as just-in-time techniques
- Information exchange independent from the physical exchange of goods.

6.3. Collaborative Project for New Product Development. Case Study

6.3.1. Introduction

Successful innovation

Successful innovation has become a key driver for revenue growth, competitive margins and, in some cases, even survival. The ability to bring this innovation to 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/process and 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 to bring product and services to market faster, smarter and cheaper (*Markides, C., 2008*).

Consequently, organizations now not only need to integrate internally, but also externally with suppliers and customers, creating end-to-end supply chain processes and capabilities which differentiate on product and customer requirements (*Crawford, M., Anthony, D.B., 2008*).

Voice of Customer (VoC) Research to Uncover New Opportunities

The customer probably has the next new product idea. Building in VoC work into new discovery stage helps to identify customer's problems, unmet needs and even unarticulated needs. There is no standard methodology here, but the research usually involves working closely with the customer, listening to their problems, and understanding their business or operation and its workflow. Big ideas are solutions to solve big problems. Thus one way to begin is by focusing on your customer's problems. When interviewing your customers, don't merely ask them to indicate what new products or new features, functionality and performance they want - you usually get the obvious answers. Customers are invariably constrained by their inability to think beyond current experience and practice (*Schmidt, Regina, (ed.), 2006*)

Companies need a well-structured, modular approach, so that they could combine rapid selection and decision-making with the ability to overcome internal barriers and preparedness to cooperate with value-added external parties and finally a proactive attitude in dealing with the competition's response.

One key objective for demand forecasting is not to predict the future. *"It is better to forecast "approximately correct" than "exactly wrong"*.

6.3.2 New Concept Development Model

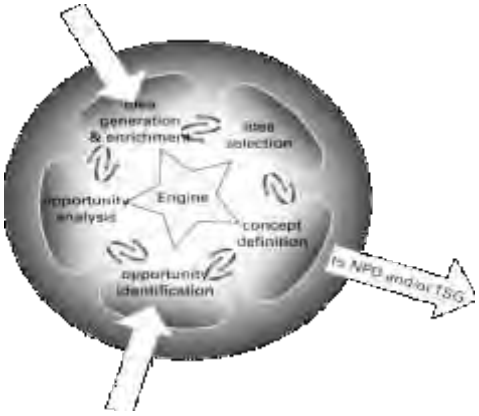
The NCD model consists of three key parts:

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. These influencing factors are relatively uncontrollable by the corporation.

The inner parts of the NCD 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 (*Koen & Co.*).

Figure 6.8. The new concept development (NCD) construct is a relationship model, not a linear process



The New Concept Development (NCD) construct is a relationship model, not linear process.

Influencing Factors

The factors are: the corporation's organizational capabilities, customer and competitor influences, the outside world's influences, and the depth and strength of enabling sciences and technology. Sustained successful product development can occur only when FFE activities can be accomplished with the company's organizational capabilities. Organizational capabilities determine whether and how opportunities are identified and analyzed, how ideas are selected and generated, and how concepts and technologies are developed. Organizational capabilities can also include organized or structured efforts in acquiring external technology. Enabling science and technology is also critical, since technology typically advances by building upon earlier achievements. "Enabling" is not the same as "mature", which is defined on a technology trend line or penetration curve. It is the point when the technology is development enough to build it into a manufactured product or regular service offering. Enabling technologies usually provide some degree of enhanced utility, cost avoidance, value, or quality improvement for the customer. The 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 (*Koen & Co.*).

The Engine (Leadership, Culture, and Business Strategy)

Leaders demonstrate in every decision and action that innovation is important to their company. Encouraging purposeful evolution and encouraging employees to try new things generating customer intimacy by encouraging their employees to interact closely with customers.
Engaging the whole organization in understanding that innovation is the fundamental way that the company brings value to its customers.

Continuing to value the individual and set an environment that is conductive 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. This element is typically driven by the business goals. 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. Overall opportunity identification defines the market or technology arena the company may want to participate in. 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

Business capability and competency are assessed in this element, and sponsorship for further work will be determined. However, despite all the effort, significant technology and market uncertainly will remain.

A typical analysis for a large-scale opportunity would include: *Strategic framing; Market segment assessment; Competitor analysis; 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 development 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. 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

Even when businesses are being downsized, there is no shortage of new ideas. The problem for most businesses is in selecting which ideas to pursue in order to achieve the most business value. Making a good selection is critical to the future health and success of the business. However, there is no single process that will guarantee a good selection. Most idea selection involves an iterative series of activities that are likely to include multiple passes through opportunity identification, opportunity analysis, and idea generation and enrichment, often with new insights from the influencing factors and new directives from the engine.

Selection may be as simple as an individual's choice among many self-generated options, as formalized as a prescribe portfolio management method, or as complex as a multistage business process. Financial analyses and estimates of future income for ideas at this early stage are often wild guesses. 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.

Concept Definition

Concept definition is the final element of the new concept development model. This element provides the only exit to the NPD or technology stage gate (TSG). In order to pass through the gate, the innovator must make a compelling case for investment in the business or technology proposition. Some organizations refer to this as a "win statement". Other calls it a "gate document". The investment case consists of both qualitative and quantitative information, which the gatekeepers use

to make a determination. Most companies specify guidelines for gatekeepers, who to make decisions at the outset of the development process. These may address:

- Fit of the concept with corporate and/or divisional strategies
- Size of opportunity, such as financial impact
- Market of customers needs and benefits
- A business plan that specifies a specific win/win value proposition for value chain participants
- Commercial and technical risk factors
- Environmental, health, and safety "showstoppers".

The process includes the integration of traditional new product introduction (product innovation, design and collaboration) with sourcing and procurement, supply chain planning and execution, and service - the entire product lifecycle. The importance of being first to market is discussed extensively in various sources. Other measurable benefits:

- Increased sales through longer sales life. The earlier the product reaches the market, relative to the competition, the longer its life can be.
- Increased margins. The more innovative the product the longer consumers will pay a premium purchase price.
- Increased product loyalty. Getting the first opportunity. To attract customers, especially early adopters, offers an advantage in terms of customer loyalty; customers will most likely upgrade, customize or purchase companion products.
- More resale opportunities. For components, commodities or products that other companies can private-label, being first to market can often help ensure sales in other channels.
- Greater market responsiveness. The faster companies can bring products to the market that satisfy new or changing customer needs, the greater the opportunity to capitalize on those products for margin lift and to increase brand recognition.
- A sustained leadership position - Unlike best selling fastest or other superlative market positions, first is the market position a competitor cannot take away.

Managers in these well-organized companies are able to assess the potential of each innovation during the entire creation process.

Three trends can be identified when we look at the historic development of applying a specific process for managing innovation in companies to date. Years ago, many companies in the fast moving consumer goods industry did not use a standard international innovation process.
This led to heterogenic decision-making criteria. In the course of time, companies identified problems with this innovation management and changed course, by making greater use of highly sophisticated and detailed innovation processes. Today a structured innovation process defined in detail in the following section-is used which combines management based on clear decision points with the freedom for openness within the process. This structured innovation process ensures speed-which is critical for success in this sector-by using parallel work streams.

6.3.3. Developed, collect and screen ideas

To prepare for the innovation's launch, above-the-line (ATL) and below-the-line (BTL) media need to be developed. Regardless of all the work that has gone on beforehand, this is the moment when the consumer sees the product for the first time either on store shelves or in an advertising campaign

The evolution of an industry is determined in part by the product launch decisions firms make. Firms must make two key decisions regarding new product launch: whether to enter a market with a new product and when to launch that product. On both of these questions, the theory and evidence are mixed on what drives these decisions. An extensive theoretical literature on the relationship between market structure and innovation contends that incumbent firms often face different incentives for innovation than do de novo entrants.

6.3.4. New Product Introduction (NPI) in food industry

The known trends in the food industry are:
consumer interest in convenient, fresh and healthy products; dominance of retailers in the value chain and - subsequently - retailers strongly; promoting and expanding private label lines; this power play results in price pressures and eroding margins for branded goods suppliers; growing importance of out-of-home distribution channels; shorter product life cycles and increasing number of new product introductions (*Kurt Salmon Associates, 1993*).

New product introductions can generally be put into one of these categories:
- A product produced before, but undergoing a modification
- A product not previously produced by the company, but a similar product exists in the market
- An existing product presented to a new market
- A totally new product to a new marketplace.

Participant's knowledge, network planning & forecasting in the food and FMCG industry

Although a relatively low quantity of all NPIs are related to totally new products this category has most impact on the product development processes themselves, to related project management and on the amount of money involved. Furthermore, the risk and hence failure rate is also much higher. For every seven new product ideas, only four make it to development and then only one is introduced *(Cooper, R., 2001).* After introduction, about 60 per cent of totally new products launched are actually a success and only a very small percentage is still on the shelves after three years. To increase the success rate many food manufacturers have transformed over the years from being technically driven developers towards more market and consumer oriented innovators.

Investigations show that companies which are considered as real innovators achieve a considerable percentage of their turnover coming from new products, especially in the PMCG industry. Also, these companies show that their revenue share of new products compared to R&D cost as a percentage of revenues is much higher than the global average.

Increasing competition

Retailers and discounters are fighting for a piece of the consumers' pie and use their scarce shelf space and private labels as a 'weapon'. The manufacturers are fighting for their spot or the shelf and are trying to get awareness from the retailers and, even more important, from the end consumer. By introducing innovative and exclusive new products, manufacturers try, in close competition with private label manufacturers who sometimes start their own innovations even faster than A-brands manufacturer, to create the best proposition.

Achieve profitable growth

Big retailers in particular have used their buying power in recent years to demand lower prices from the A-brand manufacturers who were forced into all kinds of (price) promotions to retain or even regain their shelf positions. In their turn, manufacturers used their buying power towards their ingredient and packaging suppliers to regain part of the lost margins.
However, the decreasing profit margins throughout the whole value chain resulted in cost-cutting actions and in reconsidering strategies about new product introductions.

Changing demand.

In the consumer market the strong move towards convenient, fresh, and healthy products clearly accelerates the introduction of new products. Also, the ingredient and packaging manufacturers experience the need for innovative solutions to accommodate these new products.

Increasing pressure on cost price

As already mentioned, the vigorous competition between A-brands and the increased importance of private labels negatively influenced the profit margins in the whole Value Chain. the price of private label brands is, on average, a third lower than manufacturer brands. Especially existing

products with many comparable alternatives from competitors are subject to strong price pressure. The A-brand manufacturers have to come up with better and cost-efficient ways such as using other, cheaper ingredients or other package sizes.

New Product Introduction: the challenges

The demand uncertainty of new product introductions presents new challenging aspects in managing time-to-market and time-to- volume but is at the same time critical for the bottom line result of a new product introduction. Aspects such as pipeline filling, phasing-in and phasing-out and up scaling of production capacity have to be handled well to make sure the competitive advantage of a new product introduction is not lost quickly. Master data has to be available, ERP systems should be set up, and planning of new products should be integrated within existing S&OP processes.

The ability of private label manufacturers in particular to quickly copy and introduce similar new A-brand products also puts pressure on the organization of an NPI process. Manufacturers have to adapt quickly and act as agilely as possible to upscale the production capacity at short notice. Due to the shortening product life cycles, the payback time for new product introductions should be very short. Forecasting of these new products is therefore very important and embedding new products in regular sales & operations planning (S&OP) processes is essential (*Ernst & Young, AC Nielsen, 1999*).

6.3.5. Managing The NPI Forecasting & Planning Process: Current Practices

Innovation funnel approach

Successfully managing new product introductions necessitates the use of a proven and common approach. Most companies have adopted the innovation funnel, also known as the stage-gate"' method introduced by Robert G. Cooper.

By defining different stages in the development process, the funnel is a tool that can be used as an effective blueprint for managing the entire new product process, from the initial idea to the launch of a product. Each stage consists of a set of cross-functional and parallel activities which must be successfully completed prior to obtaining management approval to proceed to the next stage.

The entrance to each stage is called a gate. Gates should have a common format in which deliverables, criteria, and output are clearly defined. Gates control the process and serve as: quality control points, readiness-checks, must-meet criteria and should-meet criteria; formal go/no-go decision moments; marker for action; plans and decisions for the next stage.
At the gates, decisions taken are closely related to planning & forecasting processes. Therefore the funnel needs to be extended with a formal evaluation stage.

NPI forecasting & planning

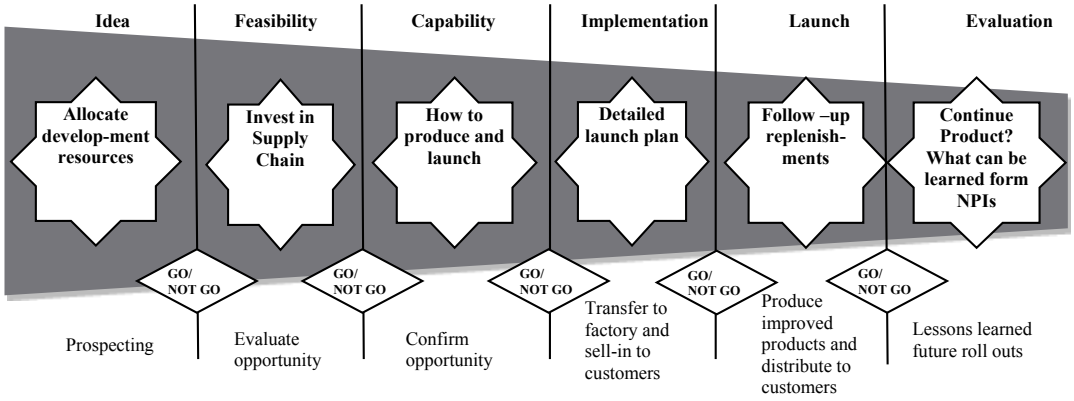
In each stage of the funnel, critical decisions like "how do we allocate recourses throughout the funnel" or "should we produce in a new supply chain" have to be taken and need to be addressed in time. Examples of such decisions are depicted in the funnel in Figure 6.9.
In each stage of the funnel, critical decisions like "how do we allocate recourses throughout the funnel" or "should we produce in a new supply chain" have to be taken and need to be addressed in time.

The planning and forecasting process must be arranged in such a way that relevant information can be shared rapidly, efficiently and transparently within the organization. Based on the model for a responsive forecasting and planning process (*Versteijnen, E. & Co., 2007)* the following section describes current practices in NPI forecasting and planning related to the aspects of transparency, efficiency, and speed.

The following key areas in NPI forecasting and planning will be discussed:

- Internal and external NPI collaboration
- Involvement of supply chain management
- NPI supporting tools
- NPI supporting key performance indicators.

Figure 6.9. Stage gate decision



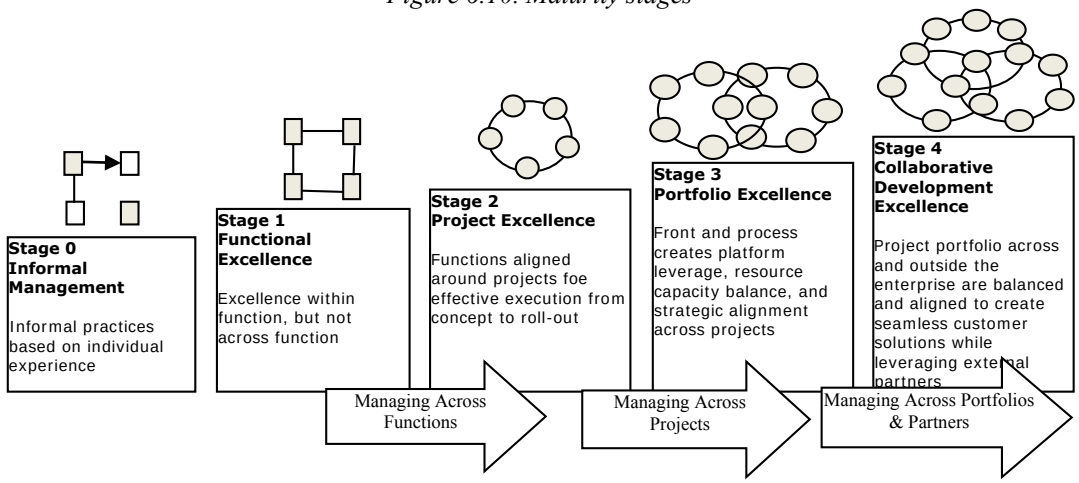
Source: Versteijnen, E. & Co., 2007

6.3.6. Internal and external NPI collaboration

Looking closer at the organization around new product introductions, a cross-functional product introductions, a cross-functional approach involving the most important business functions has proven to be the most effective (*Versteijnen, E. & Co., 2007).*

To describe the different stages of collaboration (internally as well as externally) the model of maturity stages in Figure 6.10 is used, indicating how far innovation is incorporated in the organizational framework. To ensure that the appropriate departments within the company are involved in the process, you should involve all relevant functional areas. These teams are often responsible on a project basis for all aspects of the project, from initial idea generation to final commercialization, usually reporting to higher management. Companies cannot afford mistakes in innovation and introduction of new products to the market. Not only is the innovation itself important but adequately managing the process leading to - eventually - a successful launch is also crucial.

Figure 6.10. Maturity stages



Source: Versteijnen, E. & Co., 2007

6.3.7. Involvement of supply chain management

According to the following five topics need dedicated focus of supply chain management co make new product introduction a success.

Production capacity

Anticipating is essential in this aspect. A good contingency plan should be available to overcome any hurdle. Abilities to outsource production before investing in expensive production capacity will help. Other aspects, like the effects of the channel loading plan of a new product on specific One capacity, the 'make-ability' of new products in the existing infrastructure, up scaling capacity (time-to- market and time-to-volume) and flexibility should be part of this contingency plan as well.

Supply chain set up to cope with uncertain. NPI sales

Setting up the supply chain and balancing between big lot sizes for mature products and initially smaller lots for new products is seen as a big challenge for many companies. The penetration degree of NPI is very relevant to this aspect and has to be monitored thoroughly to be able to set up an effective supply chain. Depending, for example, on the customers' requirements, the (initial) pipeline- fill will largely depend on the end-distribution concept. The set-up is different if the product is shipped to central warehouses or directly to points-of-sales. Also setting the right stock polices largely depends on the customers' ordering policies and furthermore depends on the frequency of replenishment.

S&OP in relation to channel loading & follow-up replenishment (ECR Journal, 2004).

The first pipeline fill is often treated as part of the project organization of launching new products. Companies in the food value chain cannot afford to miss out on the often predefined launch moments to retail.

Follow-up replenishments are much more difficult to predict. In this stage responsibilities are subsequently handed over to regular S&OP structures (from project to process). To manage follow-up replenishments effectively, avoiding stock-out situations, supply chain management should have early access to actual sales figures at point-of-sales and monitor forecast accuracy as closely as possible.

Phase-in & phase-out

While product life cycles are shortening and the integral supply chain costs need to be decreased, the balancing of time-to-market/time-to-volume and minimizing risk of obsolete stock is essential. When not managed well it has a direct bottom-line impact on working capital and profitability.

Actively managing of the brand's portfolio in the value chain has become a challenging new task in which SCM can bring added value. Earlier understanding of the product-life status of all SKUs is essential to pro-actively avoid out-of-stocks of fast movers and weed out the non/slow movers, avoiding obsoletes.

Sourcing

A new product can contain new raw materials. These may implicate introducing new sourcing activities that can have considerable lead times.

Engaging data between partners in the value chain has proves to be a difficult hurdle to overcome. Especially downstream - towards retailers – information sharing and data gathering is not commonly done. Another risk might be that the R&D department has used raw materials in the design which are almost impossible to source in the volumes required for ramped up production. The right choice of raw materials and suppliers is crucial for the profitability of new products and SCM should play a key role in this process.

NPI supporting tools

The common tools used to manage the process are: ERP, Spreadsheet, Workflow, Forecasting, CRM, other.

NPI supporting key performance indicators

Fifty-eight per cent of the participating food manufacturing companies indicated to actively use key performance indicators (KPIs) to manage the innovation process.
Some of the KPIs that were mentioned are: per cent on time launch; compliance to customer demand; attrition rate (per cent going to next stage in NPI process); payback time; forecast accuracy, specifically for NPIs; per cent sales from NPIs; service level for NPI; per cent obsolete for NPI.

Master data availability

From preliminary stages of the NPI process (idea stage) correct and consistent data is of crucial importance. Information about expected sales volume, ordering policies, minimum stock levels, and phase in/out should be (centrally) stored and distributed at an early stage.

New Product Policy Opportunities for Retailers

Assuming they've made their strategic decisions, store locations and optimized their supply chains, most wholesalers and retailers compete for customer support and loyalty at the level of advertising battles and price wars. One way of adding new value, however, is via product policy. Product policy covers a wide range of areas, from optimizing individual product attributes to the composition of a product line or portfolio. Channel intermediaries can influence product policy in many ways: our focus here is new products. A product is a bundle of attributes or characteristics that have the potential to serve future users or consumers in satisfying a category of immediate or latent demands.

While the bundling of attributes or characteristics is mostly seen as an activity performed by producers, it can also be an important field of activity for wholesale or retail organizations *(ECR Journal, 2004).*

Influencing product perceptions

By influencing product perceptions – via advertising, the store environment or the perception of the store relative to competing stores and even the segment of customers attracted by a particular outlet - wholesalers and retailers can have a significant influence on product policy without ever touching the product's objective product characteristics.
The retailer's brand strategy has another important influence on perceptions. A retail brand may be used on an otherwise objectively unchanged product sold in parallel in other outlets under a different name.

Manufacturers might be interested, particularly if such demand makes use of otherwise idle excess capacity. From the point of view of the customer, retail branding can make very good sense if signals sent by the retail brand reduce a buyer's uncertainty involved in the buying decision or if it offers a particular benefit, for instance the pride of having bought at a particular store.

Cooperation in New Product Development

This now leaves us with the case of cooperation in new product development. This can be of interest to channel intermediaries for various reasons. First, the profits based on the optimal bundle of characteristics as seen from the customer's point of view may be less than optimal as those seen from the channel's view. For instance, logistics or handling costs could lead to a different bundle of characteristics. This will happen only if the sales lost due to the divergence from the customer optimal bundle are less than the cost savings at the intermediaries levels. Also, these cost saving might have to be shared with the producer's since its organization suffers from the loss of sales as well. Since this is not a win-win situation for producers and channel intermediaries, these will hardly ever be invited by producers to cooperation. Only powerful intermediaries might initiate such cooperation *(ECR*

Journal, 2004). Second, a win-win situation might arise from a cooperation that leads to products more attractive to producers, channel intermediaries and customers for win-win-win.

Manufacturers will seek the cooperation not of average customers, but of so-called lead users which are able to voice a demand before the majority of the market discovers it. Similarly, lead retailers or lead wholesalers should be included. Well established lead user research techniques can be used, to find clues on how to identify such intermediaries (*Witt, C., 2006*).

For the intermediary to benefit from such participation however, the costs of cooperation must be very low, or else he needs to be reimbursed for his costs. This is not unusual in the phase of product testing, and it should not be unusual in phases of product development that precede the testing phase. Producers' creativity in reimbursing users for their ideas can certainly be applied to channel intermediaries as well. However, if the one-to-one relationship in the cooperation is broadened to a one-to- many or to a many-to-many relationship, conflicts are likely to arise.

But as consumer markets ease out of their high-growth phase and begin to mature, pressures appear to be mounting. On the one hand, local brands and retailers are re-emerging to become more competitive with multinationals. And although consumer incomes and appetite continue to expand, there is still a desire and expectation for 'everyday' low prices, which is putting pressure on margins for the foreseeable future. As retailers across the region strive to meet the increasing expectations of consumers, manufacturers and retailers are expected to offer more and bigger discounts and increased promotional activity.

Nevertheless, the market is still evolving and this means there are still many opportunities. Although the hypermarket format is starting to how signs of saturation and traditional formats are languishing, important segments are just starting to get off the ground. These include convenience, specialty and healthcare formats. This is expected to deliver a second wave of growth for both retailers and suppliers.

At the same time, consumers will be spending more as incomes rise and they will become increasingly willing to trade up as habits change and the inevitable tide of the consumer lifestyle continues to sweep across the region. As the market continues to evolve, a new set of challenges and opportunities are presenting themselves:

Availability - Being a partner in the supply chain will move well beyond price performance. With growing assortment comes shrinking shelf space. This-will put pressure on suppliers to be quicker and more flexible.

Collaboration - Leveraging existing best practice while developing new ways of working together will be essential for achieving profitable growth. One-sided cost- cutting exercises will cease to be value adding for the extended supply chain over the longer term.

Distribution - As retailers continue to leverage their scale, modem logistic infrastructure will become increasingly centralized. Suppliers will have to adjust, implying higher returns from investments in logistics and value-added providers versus traditional distributors.

Innovation - While product life cycles continue to shrink across consumer segments, niche players are beginning to fill the gaps in the market and local brands are making a companies are increasingly thinking and acting locally.

Value - Current market conditions are starting to favor local and regional brands as restructuring has improved their quality and prices remain low, and private label brands grow in popularity, particularly in the food and beverage sector.

Retailers as Product Developers

Commonly accepted product success factors include:

1. Relative perceived benefit of the innovative product to the consumer or user;
2. Compatibility of the innovative product with values, experiences, wants of potential users or consumers;
3. Complexity reduction. It's easy to understand and use the innovation;
4. Experimental use. It's easy to try out the innovation and learn about its promised benefits;

5. High visibility of the innovation, including high levels of word-of-mouth communication. Retailers can do a lot to new products that they choose to offer by changing products' original bundles of characteristics in many ways *(ECR Journal, 2004)*.

The following services are particularly important:

1. Information services, providing more information than that given by the manufacturer on a new product, for instance by personal consultation;
2. Risk-reduction: reducing the perceived risk of buying an innovative product by extending a warranty, for example;
3. Home services: e.g. home delivery or home installation;
4. Order services: e.g. offering various alternatives for ordering items;
5. Payment services: e.g. offering alternative means of payment, discounts;
6. Purchase facilitation, which makes it easier or more pleasant to shop *(ECR Journal, 2004)*.

The New Product Introduction strategy provides the opportunity for distributor and consumer involvement much earlier in the process. As with the tree other Efficient Consumer Response strategies, a prerequisite to gain much of the benefits is that distributor and supplier/broker are working together as allies whit a mutual commitment to focus on what the two parties can do together to provide greater consumer value.

More products will get tested but at a much lower cost per test, enabling suppliers to put more resources into probable winners and less into weaker products. A typical joint project is shown in Figure 6.11. The financial benefits to suppliers will vary widely depending on the category and on the supplier's level of spending on new product development. For some dry grocery suppliers the potential cost benefits are as high as 2-3% of sales, while for others they will be below 1% of sales.

The consumer is the final, but by no means the least, beneficiary of the New Product Introduction Strategy. Consumers will see more genuinely new and innovative products and less me-too products of marginal benefit.

Figure 6.11. Typical joint project

Distributor and Supplier Select Item to Test	Distributor and supplier/broker managers meet regularly to review consumer trends, consumer research, research and development projects
Test Preparations	The distributor selects appropriate test stores based on target consumer demographics. The supplier prepares test quantities of the product
Test implementation	The distributor arranges for the product to be cut into the test stores and for promotional materials to be sent to members of its Frequent Customer program. The supplier ships test product directly to the test stores (and not through the warehouse) for both the initial order and for replenishment orders.
Evaluation	Distributor, supplier and broker monitor POS transaction data to see who has bought the product, the effectiveness of different promotional offers (if several were tested), and the past purchase history of consumers who purchased the product.
Decisions	Distributor arranges for follow-up phone interviews (paid for by the supplier) with consumers who purchased the product to determinate product evaluation and future purchase probability. The distributor, supplier, and broker review results and decide the: a) Drop the product, or b) Modify product or marketing mix and re-test, or c) Bring product into full

Source: *Kurt Salmon Associates, 1993*

Thousands of new items are introduced each year as companies seek ways to gain competitive advantage and grow. If we look at the different clusters defined in the model (Figure

6.12), failure is particularly common among the me-toos – the largest group of new products. But even among the more innovative product introductions, the failure rate is 47%.

EPI project scope and methodology

The six project level categories span high, medium and low degrees of innovation. *Classically innovative* products are defined as breakthrough products that appear to the consumer to bring true innovation to a category, or alternatively create a new category. *Equity transfer* products are introduced by an established name or franchise, are new to the category, but are recognized by the customer.

Line extensions are the first medium innovation category. These are a new version of a product within the same category but feature a new or slightly different flavor, form or size. *Me-too* products are also a medium innovation classification.

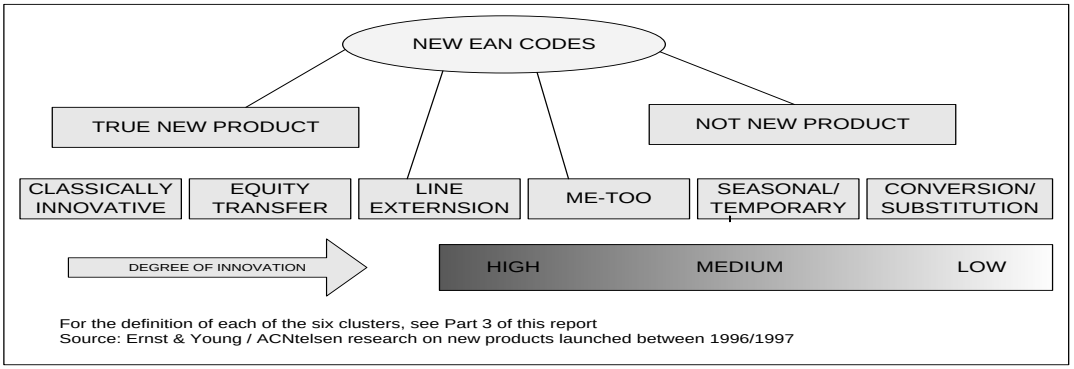
They are essentially the same as existing products within the category, and do not deliver any new value proposition to the consumer. Me-toos include "clones" and store brand items. The first of the low innovation categories are *seasonal/ temporary* products. These are products with a short life cycle. They are either introduced for a specific date event, reappear every season or enjoy the majority of their sales at certain periods (but have a shelf presence throughout the year). The final category is *conversion/ substitute*. These are replacement products for those already marketed *(Ernst & Young/ACNielsen, 1999)* include "clones" and store brand items.

6.3.8. Money being lost on new product introductions

The cost of failures is high. We distinguish two types:

- *"Minimum costs":* this is money that must be spent on any product introduction. Regardless of the type of product or size of company, certain minimum activities will have to be performed. Most costs incurred by retailers result from these minimum activities, e.g., discussions with manufacturers about pricing and in-store activities.
- *"Additional costs*": On top of these minimum activities, companies may choose to invest in additional activities. Many of the costs thus incurred involve money spent on communicating to the consumer, including advertising and promotion. For manufacturers such costs normally represent a major share of the total cost in new product introduction

Figure 6.12. The Innovation Based Clustering Model



Source: Ernst & Young/AC Nielson, 1999

6.3.9. The long-term value argument

We have seen that there are considerable costs associated with failed new products introductions. The positive attraction of new product introductions in the short term is of course that they can increase sales volume. But, while this is desirable, the ultimate goal is to build long-term brand and/or category value. By introducing innovative products efficiently, companies increase consumer satisfaction, which ultimately helps to build brand and category equity. These last goals are less tangible than volume, but they are vital factors in creating sustainable competitive advantage. This is what makes new product introductions central to any company's strategy for long-term survival and business growth (*Ernst & Young/AC Nielson, 1999).*

The components of brand and category value

Long-term brand and category value is strongly inter-related with consumer value, retailer value and manufacturer value. This is one of the fundamental premises of ECR. Taking new product introductions as an example: it is crucial to reach the market in a fast and effective way in order to win battle for the customer and offer consumer value.

Opportunities to develop value-creating relationships

Today, some manufacturers and retailers have already started to work more closely together to improve the process of new product introductions, but there is still some way to go. Understandably, manufacturers in general are very much focused on brand value – especially being fist on market and achieving short-term results - while retailers tend to put their energy into category value. With limited alignment between the two strategies, there is a risk that they operate counter-productively and fail to maximize consumer value.

There are many reasons, apart from traditional manufacturer-retailer rivalry, for the inability or reluctance to share information and work together. These include organizational, cultural and technological factors. Further, co-operation between retailers and manufacturers depends on a degree of trust which is hard to build up, especially when many retailers are playing the part of manufacturers by launching their own private label products.

Figure 6.16. Activities linked to new product introductions - example

Main phases	Main Activities/Costs	Minimum activities	Additional activities
DEVELOP	Market potential analysis	X	
	Develop prototype for testing Market concept test/ Product positioning Refined market potential analysis / Financial assessment	X X X	
	Marketing plan / Trade marketing plan / Merchandising plan Pilot production run and quality testing Financial assessment	X X X	
	Discuss high level category plan elements		X
LAUNCH	Presentation of new product and internal validations Discuss and agree on new product introduction elements - Pricing, Distribution, Advertising - Determinate joint promotional plan	 X X	
	Implement coding within systems (EAN) In store handling activities Store visits	X x	 X
	Advertising & promotion development Actual advertising Actual promotion Actual sampling, etc.		X X X X
EVALUATE	Assess new product launch (internal) Discuss evaluation	X	 X

Source: EPI, 1999

6.3.10 Global Commerce Initiative

Process scenarios

1. The failure rate for new products is high and the group believes that improved information sharing would reduce this failure rate substantially for the benefit of all parties.

2. The current effort involved in launching new products is considerable and represents a lot of wasted effort and operational inefficiency. Many product launches are not supported appropriately, with many information gaps across the value chain and often a lack of coordinated support for new product launches across all parties in the supply chain.

3. Failed new products contribute to consumer skepticism that can damage the industry over the long term.

4. The new product development and introduction scenario covers an end-to-end process that involves the entire value chain.

Figure 6.14 is a high-level overview of the new product development and introduction scenario.

For each step in the six-step process, the we looked at these issues:

This covers both data and information that is available today and future data and information sources that the group envisioned being available by 2018.

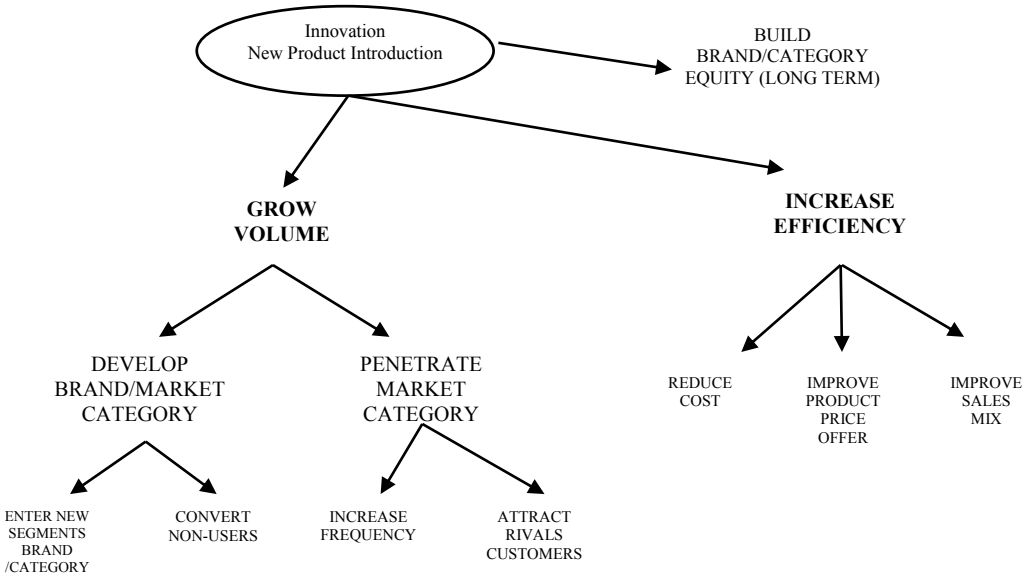
Step 1: Research consumer needs, technology development and business environment

Raw material and packaging suppliers might bring research to consumer goods companies for their consideration, but the potential exists to exploit information sources from across the value chain.

Step 2: Develop product concept

Developing the product concept is a creative and iterative process in which a product concept is created that fulfills the unmet consumer need identified in Step 1. Failing to take advantage of ideas from multiple sources can result in a product concept that is insufficiently robust or fails to meet consumer requirements.

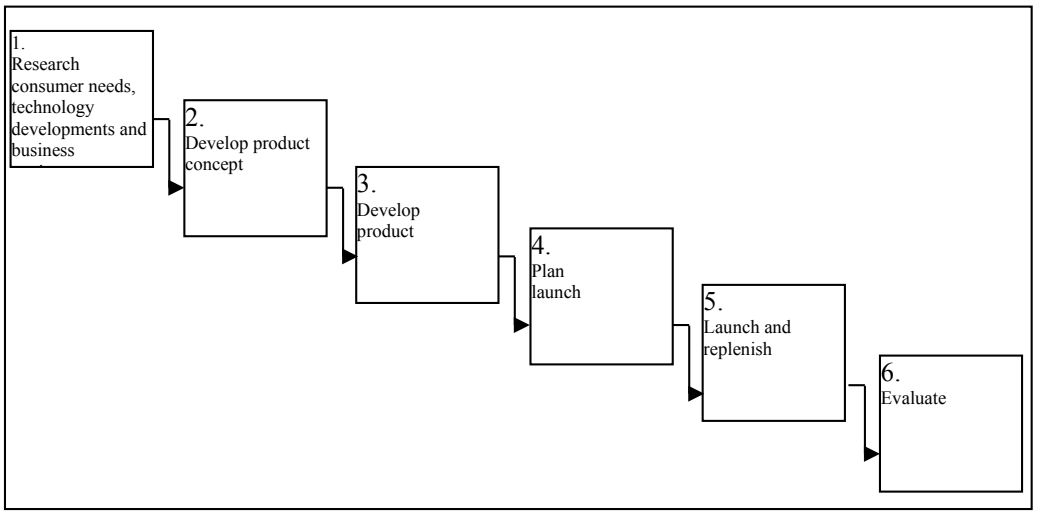
Figure 6.14. Brand/category value generation



Step 3: Develop product

At this step , the product concept is developed into a proposal for a physical product that can be produced. The product must be tested with all stakeholders and refined to the point where it can be launched with a good chance of success. (Figure 6.19)

Figure 6.15. Process for developing and planning new products



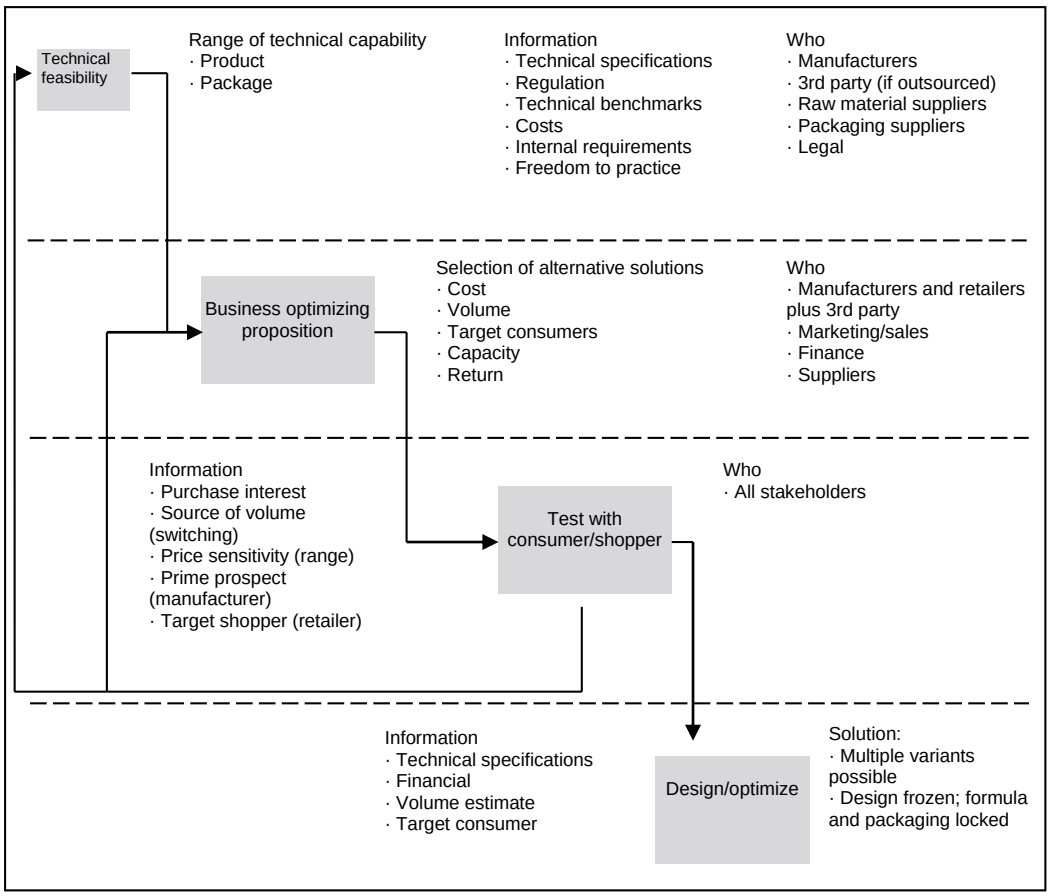
Source: GCI & IBM, 2009

Step 4: Plan launch
Once a robust product is created, we need to carry out a detailed plan of the product launch. A successful launch requires the collaboration all parties in the value chain as well as external agencies. This step (Figure 18) requires the extensive exchange of planning information. That information is very often exchanged in today's trading relationships, but there are few standards governing the exchange process and launch plans vary greatly.

Step 5: Launch and replenish
In this step the initial shipment is sent to retailers and the product is prepared for launch. No matter how detailed the plans, there is always an element of guesswork regarding how the product will sell. Therefore, sales levels must be quickly identified and forecasts and replenishment plans updated. While retailers routinely place replenishment orders there is no agreed-upon standard or process for exchanging point-of-sale (POS) data

Step 6: Evaluate
Without an evaluation, we cannot tell what worked well and what did not. We would not be able to improve the next launch. Evaluation must be based on data collected by all parties and shared.
Again, standards exist for the identification of the product and for the product master data. But there is no standard for the extensive set of information required to evaluate the success of a product launch.

Figure 6.16. Develop the product



Source: GCI Information Sharing Report

Sharing information more readily and freely means the best way to manage increasing complexity is through openness and transparency. However, it requires that businesses are connected through common goals, common measures (e.g., key performance indicators (KPIs) that measure shopper satisfaction, not simply brand benefit) and a common language.

Designing organizational structures and work processes:

- Around consumer needs and drivers.
- Building new knowledge, skill and capability sets to develop insights into shoppers' needs and wants.
- Building new attitudes, beliefs and behaviors oriented toward joint development.
- You get what you measure. Transform people performance incentives that reward collaborating with vertical trading partners and long-term planning (for example, direct linkage to KPIs and a balance of long- and short-term focus).

More data is available at every stage of the chain. Those companies that learn how to use that data, how to turn it into information by shaping it, organizing it, and putting it into its business context, will derive new insights that will help them better meet consumers' needs. We must have a clear understanding of the concepts behind "Information Sharing." (*GCI & IBM, 2009*)

6.3.11 NPI Process Management Project – The Engineer-to-Order Process (SCOR Model)

Project: A project is a temporary endeavor, having a defined beginning and end (usually constrained by date, but can be by funding or deliverables), undertaken to meet unique goals and objectives, usually to bring about beneficial change or added value. The temporary nature of projects stands in contrast to business as usual (or operations), which are repetitive, permanent or semi-permanent functional work to produce products or services. In practice, the management of these two systems is often found to be quite different, and as such requires the development of distinct technical skills and the adoption of separate management. Process management is the application of knowledge, skills, tools, techniques and systems to define, visualize, measure, control, report and improve processes with the goal to meet customer requirements profitably. In project management, process management is the use of a repeatable process to improve the outcome of the project.ISO 9001 promotes the adoption of a process approach when developing, implementing and improving the effectiveness of a quality management system, to enhance customer satisfaction by meeting customer requirements.

In today's competitive, tight-margin business world, organizations have to move and respond quickly to opportunity. Many companies have moved from a functional environment (that is, organization by function) to an organization or management by projects.

An organization that uses projects to drive the company forward is using the *Management by projects* approach. These project-centric entities could manage any level of their work as a project. These organizations, however, apply general business skills to each project to determine their value, efficiency and, ultimately, their return of investment (*Phillips, J., 2004*).

The *Work Breakdown Structure* *(WBS)* is an organized collection of the project-deliverable components to be created by project work. The WBS will offer major input into planning, estimating, and scheduling processes throughout the project (*Project Management Institute, 1997*).

The Gantt chart (or bar chart) is a graphic display of schedule-related information. In the typical bar chart, activities or other project elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars (*Project Management Manual, 1997*).

Figure 6.19. Work Breakdown Structure of a NPI

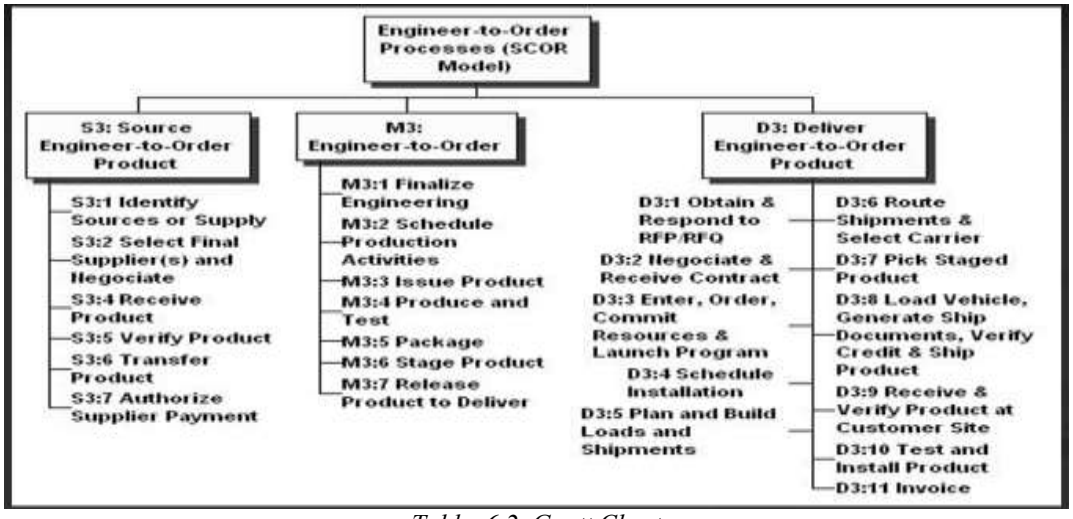
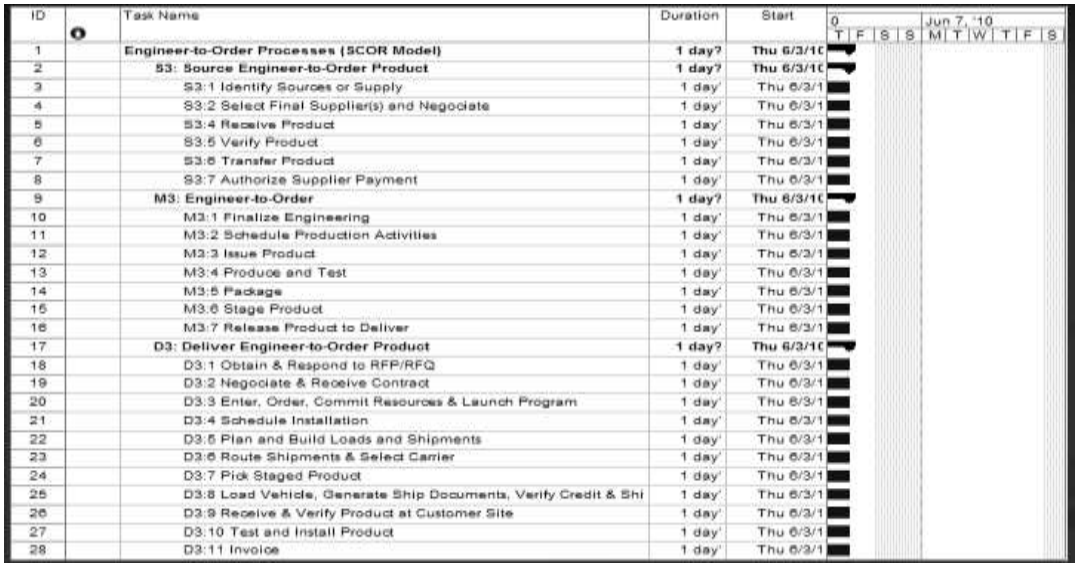


Table 6.2. Gantt Chart



ID	Task Name	Duration	Start
1	**Engineer-to-Order Processes (SCOR Model)**	1 day?	Thu 6/3/10
2	**S3: Source Engineer-to-Order Product**	1 day?	Thu 6/3/10
3	S3:1 Identify Sources or Supply	1 day?	Thu 6/3/1
4	S3:2 Select Final Supplier(s) and Negociate	1 day?	Thu 6/3/1
5	S3:4 Receive Product	1 day?	Thu 6/3/1
6	S3:5 Verify Product	1 day?	Thu 6/3/1
7	S3:6 Transfer Product	1 day?	Thu 6/3/1
8	S3:7 Authorize Supplier Payment	1 day?	Thu 6/3/1
9	**M3: Engineer-to-Order**	1 day?	Thu 6/3/10
10	M3:1 Finalize Engineering	1 day?	Thu 6/3/1
11	M3:2 Schedule Production Activities	1 day?	Thu 6/3/1
12	M3:3 Issue Product	1 day?	Thu 6/3/1
13	M3:4 Produce and Test	1 day?	Thu 6/3/1
14	M3:5 Package	1 day?	Thu 6/3/1
15	M3:6 Stage Product	1 day?	Thu 6/3/1
16	M3:7 Release Product to Deliver	1 day?	Thu 6/3/1
17	**D3: Deliver Engineer-to-Order Product**	1 day?	Thu 6/3/10
18	D3:1 Obtain & Respond to RFP/RFQ	1 day?	Thu 6/3/1
19	D3:2 Negociate & Receive Contract	1 day?	Thu 6/3/1
20	D3:3 Enter, Order, Commit Resources & Launch Program	1 day?	Thu 6/3/1
21	D3:4 Schedule Installation	1 day?	Thu 6/3/1
22	D3:5 Plan and Build Loads and Shipments	1 day?	Thu 6/3/1
23	D3:6 Route Shipments & Select Carrier	1 day?	Thu 6/3/1
24	D3:7 Pick Staged Product	1 day?	Thu 6/3/1
25	D3:8 Load Vehicle, Generate Ship Documents, Verify Credit & Shi	1 day?	Thu 6/3/1
26	D3:9 Receive & Verify Product at Customer Site	1 day?	Thu 6/3/1
27	D3:10 Test and Install Product	1 day?	Thu 6/3/1
28	D3:11 Invoice	1 day?	Thu 6/3/1

Table 6.3. Benchmarking of a NPI process

Processes	Processes Hierarhy	Activity	Activity Hierarhy	Analitical Hierarhy Process(AH	SCORECARD						
					0%	25%	50%	75%	100%		
S3. Source Engineer-to-Order Product											
		S3.1 Identify Sources of Supply									
		S3.2 Select Final Supplier(s) and Negociate									
		S3.3 Shedule Product Deliveries									
		S3.4 Verify Product									
		S3.5 Receive Product									
		S3.6 Transfer Product									
		S3.7 Authorize Supplier Payment									
M3. Engineer-to-Order											
		M3.1 Finalize Engineering									
		M3.2 Shedule Production Activities									
		M3.3 Issue Product									
		M3.4 Produce and Test									
		M3.5 Package									
		M3.6 Stage Product									
		M3.7 Release product to Deliver									
D3. Deliver Engineer-to-Order Product											
		D3.1 Obtain & Respond to RFP/RFQ									
		D3.2 Negociate & Receive Contract									
		D3.3 Enter, order, Commit Resources & Lunch Program									
		D3.4 Shedule Installation									
		D3.5 Plan and Buid Loads and Shipments									
		D3.6 Route Shipments & select Carrier									
		D3.7 Pick Staged Product									
		D3.8 Load Vehcle, Generate Ship Documents, Verify Credit & Ship Product									
		D3.9 Receive & Verify Product at Customer Site									
		D3.10 Test and Install Product									
		D3.11 Invoice									
	1000			**1000**							

A responsive forecasting planning process is a key success factor for profitable new product introductions (NPIs). The demand uncertainty of NPIs presents challenges in managing both time-to-

market and time-to- volume but is at the same time critical for the bottom line result. This puts a great deal of pressure on the ability of companies to align their processes towards the launch of new products. However, collaboration on NPIs with suppliers and customers is no common practice. Moreover, supply chain management is not always involved in the earlier stages of the innovation process and tools to support the NPI process are only limitedly available and often unsatisfactory. Furthermore, having up-to-date NPI data available is already difficult within companies but is even more of a hurdle to overcome between partners. All guiding principles to challenge the pitfalls are described in this paper, which will help to provide companies in the FMCG industry with a well-stocked survival kit of profitable new product introductions.

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
- Using project management instruments to launch a product for achieving excellence in the perspective of cost, quality, time.