CHAPTER 3

COLLABORATIVE BUSINESS PROCESS MANAGEMENT

Virgil Popa

3.1. Collaborative business management

Collaboration takes place when people from different organizations (or from units of organization) produce something together trough effort, resources and common decisional processes and share product or final service responsibility.

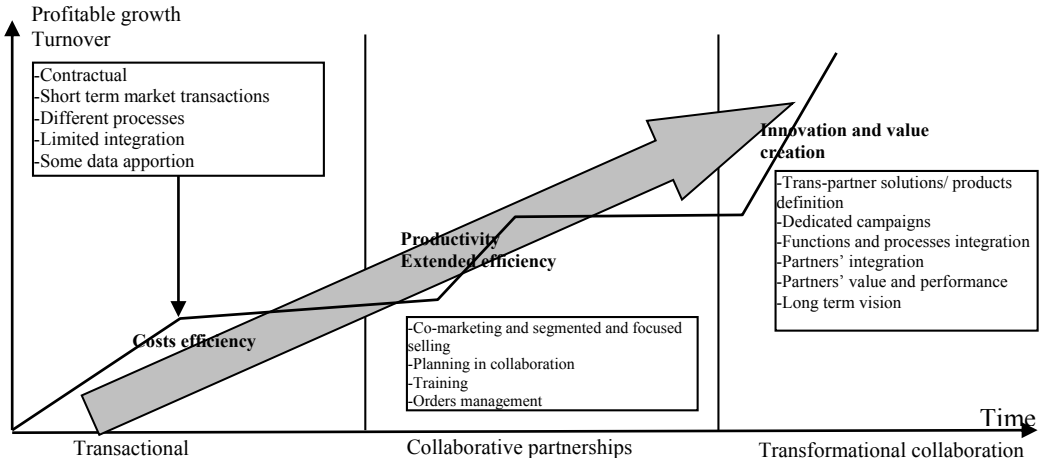
Phase 1 – Spreading of transactional relationships

This phase focuses on cost efficiency obtaining when consumer goods producers enter short term contracts, including transactional agreements. During this phase, business processes are distinct, having a limited integration between involved companies. The growing trend of outsourcing for business function, as IT, production and storage allows the companies to focus on their core business, obtain benefits from costs, and transform fix costs into variable costs in order to have greater control and flexibility for financial structure. There is a limited opportunity for adding value beyond price in transactional phase and having decreasing margins, reaching a profitable grows being a difficult process. This leads organizations beyond transactional relationships, in order to develop collaborative relationships to reaching mutual gain, productivity and extended capabilities.

Phase 2 – Collaborative relationships – partnerships

This phase is characterized by co-existence of transactional and collaborative relationships which focus on further improving of productivity and utilization of extended capabilities of knowledge, assets and resources. Relationships from this phase focus on common promoting, marketing and selling activities. This is the point where we could start to identify suppliers and customers as strategic partners.

Figure 3.1. Collaborative relationships-partnerships



Source: Thomson, Jennifer & Co., 2006

Phase 3 – Transformational collaboration vs. other business models

To consumer goods producers satisfying the demands of "new world thinking" needs developing of collaborative relationships which allow companies to grow with reduced costs, supplying in the same time a increasing

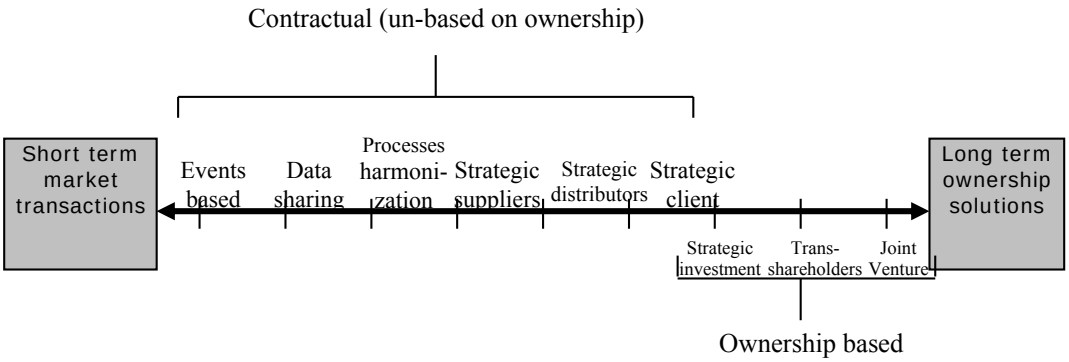
value for customers. The relationships from value chain which evolved in time either based on short term market transactions, or developed in long term proprietorship solutions.

Although there are some advantages connected to costs, those types of relations don't offer enough flexibility for a competitive environment of today. In an effort of transformation of adversity relationships into collaboration relationships, sharing knowledge, mutual assistance and business growing, consumer goods producers focus more and more on identifying and developing of strategic relations with suppliers, distributors and customers. Such of relationships tend to rely on smaller number of key partners which benefit from longer term contracts. *(Thompson, Jennifer & Co., 2006).*

Nowadays, the companies focus on developing of collaborative transformational innovating relationships [Figure 3.1] in order to obtain long term growth and profitability for everybody involved. These collaborative partnerships are based on the following ideals:

- Collaborative decision process and generation of new ideas.
- Bi-directional data, knowledge and experience exchange.
- Engagement in sharing the knowledge database and extension of thinking beyond organizational limits to accomplish a win-win scenario, which offers more value adding than every single partner may obtain separately.
- Development of *long term strategic plans (the collaboration is switching from operational level to strategic level)*. Need to switch from the easy of "price advantage" to the hard way of "value for customer" and seeing businesses combined from client perspective (Figure 3.2).

Figure 3.2. Partnerships classification in the chain of consumer goods



Source: Thomson, Jennifer & Co., 2006

Decrease transaction costs among firms resulted outsourcing in consumer goods value chain more and more the non-essential activities. The concept of traditional outsourcing is a call for proposals, followed by formal contract negotiations. Typically, cost savings may be a key factor for this type of transaction. Outsourcing may relate to achieving "pure transaction value" - meaning that a contract is put out to tender in order to find a company that will undertake the business process to a lower cost. However, traditional outsourcing has certain limitations, including:

- The focus on reducing costs may artificially limit the benefits - these relationships are usually characterized by adversity and focus on negotiating and cost effectiveness.
- Information flow is not bidirectional, but limited to a flow in one direction, from supplier to customer. The exchange of information occurs only when needed and, since the parameters are the exchange of information under the terms of the contract, it minimizes the flexibility while changing business conditions.
- It is created a culture where we can identify reluctance in sharing information, knowledge and experience. This is a very limited thinking beyond both the organization and the weak support of senior management, limiting this way the value that can be gained from the relationship. Relationship tends to be hierarchical structured, restricted by the terms of the contract while suppliers have an insignificant impact on overall business; the management team is focused on reducing costs vs. business growth; and management time and attention are diverted from pursuing new opportunities business.
- Planning cycles may be more difficult to manage because of conflicting or un aligned business goals and is usually an incremental approach to planning. Opportunities for suppliers outside the coverage of the agreement will be weak and the client company most likely will skip the possibilities of exploitation of the knowledge of suppliers,

losing new ideas and business opportunities. The collaboration between the two companies in such cases is only at the operational level and it never becomes strategic.

There are limitations of those types of relationships:

- Bargaining power of key partners could be difficult to administrate, and the prices and costs may constitute the core of negotiation.
- In some cases, those relations are seen as individualist and opportunist. In these cases, there won't be full benefits from sharing information, neither a fair, win-win situation for all parts. Figure 3.3 shows too industrial relationships based on property – these may take the form of strategic investments or joint ventures, although it may exist many aspects which have to be surpassed.
- The participant organizations could be trapped into structural and political aspects instead of focusing on the key goal of partnerships. That deviation from the initial goal is ustal.
- The companies may discover that they have to evaluate the external value to validity of entity. Advanced consumer goods producers recognized the limitations existent in typical partnership agreements and look to establishing new types of relationships which allow benefits and value resulting from collaboration. Ten years ago, collaboration agreements were based on buying and selling and the relationships were very transactional. Nevertheless, transformational relationships (and property ones) tended to limit the growth and reduce the field of agreement.

These collaborative transformational relations [Figure 3.3] are based on experience and established business models - from strategic relationships with suppliers and customers to strategic investments and cross-ownership. However, fundamental principles are changing. A partnership may start as an essential transactional relationship and then to evolve when appear shared goals and a common goal, and also a jointly process of creating value for both consumers and an increasing part of the wallet.

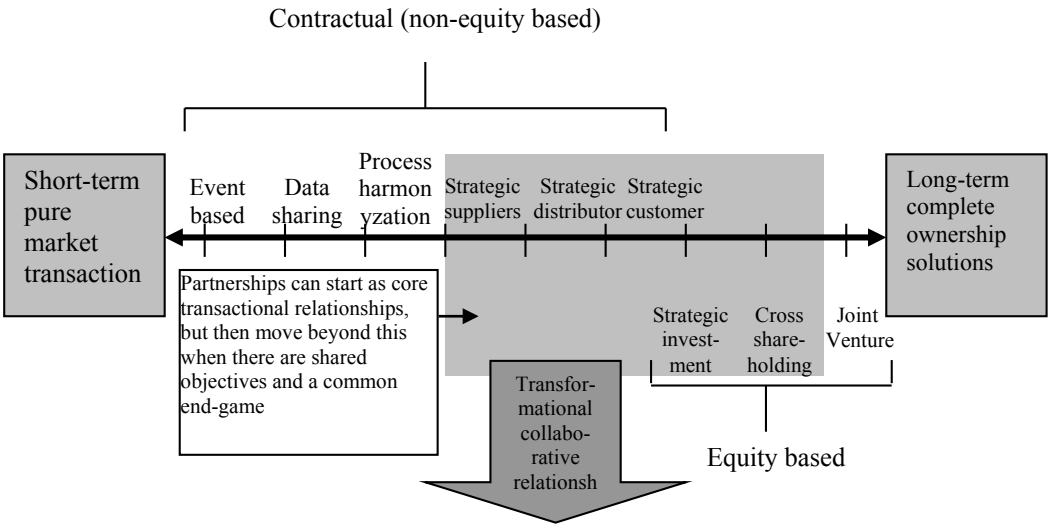
The collaboration benefits

The concept of collaborative excellence has different meanings for different companies. The empirical evidences confirm that the environment and importance of collaboration grow. The consumer goods producers, from different points of value chain, embrace collaboration, seldom from different reasons, although they are splitting the goal of permitting growth and obtaining of improved turnover.

In the chain of consumer goods value there could be identified three benefits or key motivations to forming collaborative relationships:

- Increased productivity and cost cutting
- Innovation (for products and client information)
- Growth.

Figure 3.3 Transformational Collaborative Relationships



For: Joint Customer Value Creation for Increased Share of Wallet

Source: Thomson, Jennifer & Co., 2006

3.1.1. Collaborative excellence - improved productivity and growth

Retailers. For retail organizations, the current agenda focuses on the benefits derived from the supply chain optimization and the collaboration for productivity and operational improvements. As a final organization to customers, the retailer wants transparency and operational efficiency in the supply chain in order to generate growth, sales and customer satisfaction will increase. If retailers can optimize replenishment cycles to obtain a reduction of stocks and stock breaks through providing feedback in real time data on customer purchases of supply chain partners.

Improving business processes. This involves optimizing the activities to improve business processes so that the partners access the available data. Networking providers. This requires creating a "network providers" with a higher level of information transparency and flow separation for the demand side and supply side. A transparent exchange of information in the supply side means that they can work together to reduce costs and expenses for both suppliers and producers.

3.1.2. Collaborative Management Based on Data from POS (Point of Sale) - ECR-Europe approach

Steps

1.Defining objectives and strategies for collaboration.

Strategies of cooperation is the initial step of any cross-business collaboration and must be based on a solid understanding of the current situation of the company's business. The size of any data exchange is also influenced by these strategic decisions.

2.Detailing tactics after ECR concepts

ECR provides scope for POS data in the Global ECR Scorecard. POS Data Management is recognized as a mediator for each concept ECR. Such an approach is not singular, but a fundamental platform for working together. In practice, the design concepts are sometimes realized out of ECR explicit concepts, although the use of industry-standard approach and evidence provides surely a forward step to collaboration.

3.Aligning elements for operations execution excellence

The operational excellence determines the success of initiatives POS data as much as an innovative strategy for utilizing information. Six key parameters for operational excellence are data quality, data quantity, standards, technology, organization and legality.

4.Review benefits and continuous improvement

The frequent review with case studies and monitor the benefits achieved from the expectations provide focus and continuous improvement at all stages of the framework. Adopting a system of feedback control can result in

incremental benefits. POS Data Management is an evolution from "process to process", with increased levels of collaboration. *(ECR-Europe, 1999)*

Defining objectives and strategies for collaboration

At the beginning of any POS data sharing initiatives, makers partners must meet and discuss the vision and strategic direction on how better serve the consumer. This will help ensure alignment of expectations and may reveal any conflict of interest in time.

It is imperative to first gain a solid understanding of the current position of the undertaking collaborative initiative, and expectations around opportunity. Once the opportunity was identified, ECR concepts of guidance can be allowed(such as efficient assortment, effective promotion, etc.) and the corresponding data set.

Key recommendations for the objectives and strategy of cooperation

- Evaluate areas of improvement of the company.
- Provide derivation of the relevant cooperation strategy.
- Ensure a common understanding of both the definition and categories' role, or a common understanding of the articles / products covered by the initiative of cooperation.
- Define the goals and common area of the project.
- Provide a common definition of the measurable key performance indicators.
- Agree on the case study.

The strategic importance of collaborative work

This section reviews the strategic direction of many suppliers and retailers, plus the importance of working together in response to these challenges and opportunities.

The main elements include:

- In addition to enter new markets and acquisitions, European retailers will become more focused on strategy "distinguish yourself or die!" To achieve growth in the next decade.
- In contrast, EU suppliers will put even greater emphasis on strategies "Strengthen and Simplify" to cut costs while continuing to develop its services.
- Many elements of the strategy can be pursued by suppliers and distributors of actions taken by their trading partners.
- However, there are critical elements that are common for both partners.
- Where the tactics pursued today by distributors or suppliers may be in direct conflict with the strategic needs of their trading partners.
- Working together, companies not only can avoid these conflicts, but can open also new opportunities to add real value to consumers, thereby enhancing the performance of both companies.

3.1.3. JAG (Jointly Agreed Growth) model of collaborative growth

JAG is a more rational framework for negotiation which permits a bigger growth on the market *(ECR Europe Report, 2008). The current approach, common from collaborative management point of view is:*

- Less time for agreeing about growing actions
- Growing actions less efficient
- Narrowed growth
- Bigger financing need
- More time spent with bargaining
- Less time for gathering data
- Focus on finance problems.

Jointly Agreed Growth approach generates a considerable leap forward through:

- Common development of market context and trends' understanding
- Growth strategies commonly developed
- Implementing of a business plan focused on demand stimulation and growth engendering
- Offers a negotiation frame.

The new JAG model (Figure 3.4):

- A customer centric approach, regarding at business planning and negotiation.

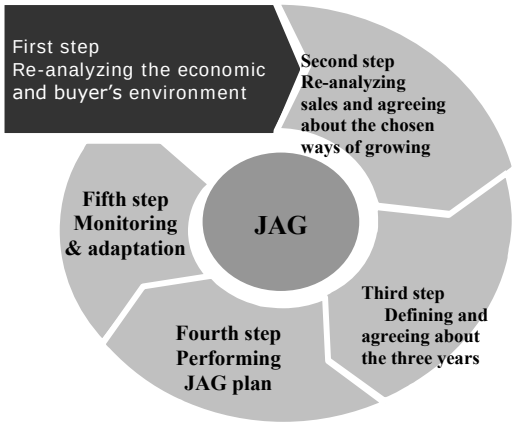
- A data based approach which allows the exact quantification of opportunities and selecting the objectives for growth targets.
- A co-generated growing plan in order to stimulate the demand by increased satisfaction for customers.
- A three years business plan with annual reviewing.

The success depends upon focusing on customer, common entrepreneurship and continuity.

The steps of the process in order to obtain a successful collaboration:

- A three years JAG plan
- Annual established objectives
- A program reviewed during the year
- A good relation seller-buyer for functional relations, planning coordination, agreement and follow-up after the execution
- Mix teams for analyzing and planning in order to sustain the buyer and the seller.

Figure 3.4. JAG Model – The steps for a common growth plan



Source: JAG – New ways of working together in Europe, ECR Europe Report

The advantages of organization which collaborate JAG:

Table 3.1 Growth on domains

Financial	Operational	Consumer/ Buyer
Value in € Investment return: *sales on location; *sales on square meter GRP (ROI of marketing) Market share	Shelves availability in % Shelf days (% ACV x days) Inventory days (rotation index) The quality of execution: *aligning with sales visibility point from Plano gram *aligning with the marketing support	Test & penetration % from the target customers enter in shops Satisfaction Multiple buying Loyalty The evolution of shopping basket Image improving (retail / brand, for different customers segments

The principles of collaborative growth in business:

- Develop the market in a sustainable, profitable and competitive way in order to assure the highest satisfaction for customers.
- Obtain commercial advantages for each side.
- Have eyes wide open to any company which brings new knowledge and capacities.
- Build a common process based on information about shared data and knowledge.
- Be devoted to a clear execution plan.

- Allocate the resources needed to execute the plan properly.
- Review the JAG process regularly. Respect the Confidentiality Agreement.
- Respect all legislation: regulating competition, health, environment and intellectual property.
- Try to involve top management into the process in order to ensure the 3 years framework needed by JAG.

3.2. Supply Chain Excellence through Practicing Collaborative Business Process Standards

3.2.1. Collaborative management

Collaborative excellence - the next dimension

The future evolution of collaborative excellence in the consumer products value chain will likely reside in the attainment of new growth structures founded on innovation. These will result in more rational profit and loss strategies based on shared models, which will be essential for achieving new value equations. In this context, the concept of collaborative excellence will extend to consumers / and value chain partners.

Consequently, consumer products organizations and retailers are turning their collaborative efforts towards creating a multidimensional environment.

The transition required from a one-to-one collaborative model to the creation of a one-to-many collaborative environment. If consumer products companies are able to achieve this, there is the possibility to create "collaborative-scale economies" for productivity enhancement that will enable organizations to develop, define, apply, and optimize a common set of collaborative best practices for multiple partners. One outcome of this will be that companies will realize further benefits through efficiency improvements, cost optimization, and resource allocation.
There is also the potential to create "collaborative scale of scope" for innovation and value creation, whereby consumer products companies can apply multidimensional collaborative schemes to pursue a high level of innovation through new product development and customer intimacy. Key to achieving enhanced collaborative excellence in the value chain is the ability to collectively pull together, analyze, and use real-time consumer demand information to create innovative products that meet consumer needs and add value. This allows companies to go beyond today's excellence in efficiency, productivity, and resource allocation to reach the next level of collaborative excellence in "continuous consumer value creation" (for increased share of wallet), which includes consumers in the collaborative scenario. This multi-dimensional perspective will add complexity but it has the potential to make collaborative partnerships and value advantage much more powerful. *(Thomson, J. & CO, 2006)*

Internal and External Strategic Integration

As supply chain members begin to work together, integration must occur between functions both *internal to* the organization (i.e., purchasing, engineering, manufacturing, marketing, *logistics,* accounting, etc.) and *external to* the organization (i.e., end customers, retailers, distributors, warehouses, transportation providers, suppliers, agents, financial institutions, etc.). *Internal strategic* integration that all company members, have access to an integrated information system, spanning multiple functions and locations. This is often accomplished through a company-wide ERP system which links internal groups via a single integrated system. *External integration refers* to the systems that link external suppliers and customers to the focal company. External integration allows supply chain members to share critical information such as forecast demand, actual orders, and inventory levels across the supply chain. Systems used to integrate supply chain members include advanced planning systems (API), internet linkages, network communications, and Electronic Data Interchange (EDI).

Collaboration with Suppliers and Customers

Strategic alliances are associations between more independent companies which choose to administrate a project or a particular activity trough coordinating of competencies, means and required resources instead of:
- Implementing the project or the activity in an autonomous manner, solely enduring the risk and solely confronting the competition.
- Merging with each other or proceeding to ceding or acquisition of activities.
- The partner companies remaining independent keep their own interests and objectives.

- They must agree with some common goals, more or less explicit, which are precisely the objectives the accomplishment of which caused the alliance forming. These common goals are more partial objectives for each partner and some time can get into conflict with their more fundamental interests.
- There are three main elements of collaborative strategies: formation, control and inter-organizational learning processes.

Beyond the alignment of internal business and service units, an enterprise can exploit additional alignment opportunities by formulating plans and scorecards that define relationship with it's board directors and external partners, such as customers, suppliers, and joint ventures. *(Kaplan, S. R., Norton, P. D., 2006)*

In the next stage of evolution, a campany must change the nature of its alignment and collaboration not only with first-tier customers and suppliers, but throughout its supply chain. In the future, the best supply chains will win and managers must be aware of the actions and requirements for critical customers and suppliers in the network. Accessing this information is difficult unless the scope and nature of relationships with key supply chain member organizations is established and maintained.

This is not to say that every relationship should be a "long-term strategic alliance." However, the relative importance of the supplier/customer on value and overall supply chain performance should be determined. This assessment should be a primary determinate of the type of organizational relationship that should be pursued for the organization in question. This means that one should have a basic understanding of the performance metrics for the key supply chain member, based on technology, potential for growth, and profitability. It means that the performance of key suppliers in terms of quality, delivery, and technology should be described in financial terms that directly relate bottom-line impact. It also means that key supply chain partners should be aligned with your organization's internal strategies in order to exploit their expertise and knowledge in creating value.

Finally, collaborative sharing of forecasting and demand information can better help plan long-term.

Managing alignment as a process

Each of the activities we have identified is an opportunity to create synergy and value. Most organizations attempt to create synergy, but in a fragmented, uncoordinated way. They do not view alignment as a management process. When no one is responsible for overall organization alignment, the opportunity to create value through synergy can be missed.

To create synergy, we require more than a concept and a strategy. The enterprise value proposition defines the strategy for value creation trough alignment, but do not describe how to achieve it. The alignment strategy must be completed with an *alignment process.* The alignment process, much like budgeting, should be part of the annual governance cycle. Whenever plans are changed at the enterprise or business unit level, executives likely need to *realign* the organization with the new direction.

Are the eight alignment checkpoints for corporate, business units, and support units of typical multi-business organizations to hit during the annual planning process:

1. *Enterprise value proposition:* The corporate office defines strategic guidelines to shape strategies al lower levels of the organization.
2. *Board and shareholder alignment:* The Cororation's board of directors' reviews, approves, and monitors the corporate strategy.
3. *Corporate office to corporate support unit:* The corporate strategy is translated into those corporate policies that will be administered by corporate support units.
4. *Corporate office to business units:* The corporate priorities are cascaded into business unit strategies.
5. *Business units to support units:* The strategic priorities of the business units are incorporated in the strategies of the functional support units.
6. *Business units to customers:* The priorities of the customer value proposition are communicated to target customers and reflected in specific customers feedback and measures.
7. *Business support units to suppliers and other external partners:* The shared priorities for suppliers, outsourcers, and alliance partners are reflected in business unit strategy.
8. *Corporate support:* The strategies of the local business support units reflect the *priorities* of the corporate unit support. (*Kaplan, S. R., Norton, P. D., 2006)*

3.2.2. SCM 4 ECR. Supply Chain Management for Efficient Consumer Response

Supply Chain – all the organizations and processes which refer to products and services from the view of buying organization.

Supply Chain Management (SCM): as defined by the Council of Supply Chain Management Professionals (CSCMP): "Supply Chain Management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies. Supply Chain Management is an integrating function with primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing business model. It includes all of the logistics management activities noted above, as well as manufacturing operations, and it drives coordination of processes and activities with and across marketing, sales, product design, finance and information technology."

ECR – Efficient Consumer Response: Working together to fulfill consumer wishes better, faster and at less cost (ECR Europe). Efficient Consumer Response (ECR) is a joint trade and industry body working towards making the grocery sector as a whole more responsive to consumer demand and promotes the removal of unnecessary costs from the supply chain.

The ECR movement beginning in the mid-nineties was characterized by the emergence of new principles of collaborative management along the supply chain. It was understood that companies can serve consumers better, faster and at less cost by working together with trading partners. The dramatic advances in information technology, growing competition, global business structures and consumer demand focused on better choice, service convenience, quality, freshness and safety, made it apparent that a fundamental reconsideration of the most effective way of delivering the right products to consumers at the right price was much needed. Non-standardized operational practices and the rigid separation of the traditional roles of manufacturer and retailer threatened to block the supply chain unnecessarily and failed to exploit the synergies that came from powerful new information technologies and planning tools. In other words, ECR allows companies to seek a competitive advantage by demonstrating their superior ability in working together with trading partners to add value to the consumer.

3.2.3. Through Business process Improvement to Business Process Management

Business Process Improvement (BPI) is a systematic approach to help any organization make significant changes in the way it does business. The organization may be a for-profit business, a non-profit organization, a government agency, or any other ongoing concern.

BPI works by:

- Defining the organization's strategic goals and purposes
- Determining the organization's customers (or stakeholders)
- Aligning the business processes to realize the organization’s goals

The goal of BPI is a radical change in the performance of an organization, rather than a series of incremental changes (compare TQM).

Every organization is defined by the many different business processes that describe the way it conducts its business. Some of the processes are mission critical and essential to the success of the organization and its competitive advantage. Others may not be mission critical, but still important for the stakeholders of the organization. These business processes are the nervous system of the organization. Like the human nervous system, business processes collect information about the status and needs of the internal employees and external customers of the organization and process it into meaningful actions that can satisfy these needs. The health of business processes is as vital to the success of an organization as the health of the nervous system is to the success of the human body. Speed of response and clarity of decision-making are the two most important measures of the health of business processes as well as the human nervous system.

Business process management (BPM) uses a fascinating technology designed specifically to manage business processes. These new BPM systems are rapidly coming to the forefront of business innovation because of the dramatic potential for improving the productivity and agility of organizations. BPM addresses the problems and challenges faced by every business person in every organization. Despite this broad applicability, BPM and its underlying technology is still shrouded in mystery.

Organizations have numerous business processes that involve people as well as automated systems. A business process can be simply defined as "a sequence of tasks that are performed in series or in parallel by two or more individuals or computer applications to reach a common goal." Common examples of business processes that are readily recognizable include:

- *Order processing* that dictates how customer orders will be received, entered, manufactured, shipped and invoiced;

- *Claims processing* that specifies how an insurance company will receive, review and process claims;
- *Performance renews* that define how, when and by whom employee performance will be reviewed;
- *Customer complaints processing* that describe the mechanisms for handling complaints issued by customers;
- *Loan processing* that defines how a bank will process loan applications and the rules and approvals that must be obtained;
- *Purchase Order processing* that lays out the rules and paperwork that must be processed in order to control the acquisition of goods and services. *(Jeston, J. & Nelis, J., 2006)*

Strategic alignment of the processes

Strategic alignment is defined as the tight linkage of organizational priorities and enterprise processes enabling continual and effective action to improve business performance. The five principle capability areas to be measured as part of an assessment of strategic alignment capabilities, as they relate to business process management. These capability areas reflect the average perceived importance weighing assigned by the experts:

1.A strategy-driven process improvement plan captures the organization's overall approach towards the BPM initiative. The process improvement plan is derived directly from the organization's strategy, and outlines how process improvement initiatives are going to meet strategically prioritized goals. The process improvement plan provides information related to the targets for the process improvement project, together with planned review and monitoring processes.

2.A core element of strategic alignment, in the context of BPM, is the entire bi-directional linkage between strategy and business processes.

3.An enterprise process architecture is the name given to the highest level abstraction of the actual hierarchy of value-driving and enabling business processes. Well-defined enterprise process architecture clearly depicts which major business processes exist, how the industry-company-specific value chain looks, and what major enabling processes support this value chain. Well-designed process architecture derives from a sound understanding of organizational structures from a process viewpoint. In addition, it serves as the main process landscape and provides the starting point for more detailed process analysis.

4.In order to be able to evaluate actual process performance, it is important to have a well-defined understanding of process outputs and related key performance indicators (KPIs). A hierarchy of cascading, process-oriented and cost-effectively measured KPIs provides a valuable source for translation of strategic objectives to process-specific goals, and facilitates effective process control. Relevant KPIs can be of differing nature, including financial, quantitative, qualitative or time-based, and may be dependent upon the strategic drivers for the specific enterprise process. Often equally important, but more difficult to measure, are KPIs related to characteristics of an entire process, such as flexibility or reliability.

5.Finally, we recognize that strategies are typically closely linked to individuals and influential stakeholder groups. Thus, how well BPM is aligned to the actual priorities of key customers and other stakeholders such as senior management, shareholders, and government bodies and so on should be evaluated. *(Jeston, J. & Nelis, J., 2006)*

Business Process Management (BPM) is the intersection between management and information technology, encompassing methods, techniques and tools to design, enact, control, and analyze operational business processes involving humans, organizations,
applications, documents and other sources of information.

The term operational business processes refers to repetitive business processes performed by organizations in the context of their day-to-day operations, as opposed to strategic decision-making processes which are performed by the top-level management of an organization.
BPM differs from business process reengineering, a management approach popular in the 1990s, in that it does not aim at one-off revolutionary changes to business processes, but at their continuous evolution. In addition, BPM usually combines management methods with information technology.
Process Management (PM) covers activities performed by organizations to manage and, if necessary, to improve their business processes. In short, Business Process Management is a management model that allows the organizations to manage their processes as any other assets and improve and manage them over the period of time.

Process Mapping

*Pro*cess mapping is a fundamental tool for understanding supply chains. A processes defined *"as is"* a logical series of related transactions that converts input to results or output. The business process is a chain of logical connected repetitive activities that utilizes the enterprise's resources to refine or transform an object (physical or

mental) for the purpose *of achieving specified and measurable results or output* for internal or external customers. (Appendixes 1a-1e)

All business processes have a customer, either internal or external to the company. Examples of common business processes include:

- New product development
- New customer identification
- Procurement
- Inbound logistics
- Production planning and control
- Manufacturing and assembly
- Sales
- Customer order processing
- Outbound logistics
- Customer service and after-sales support
- Product research and development.

Improving business processes is at the very core of supply chain management. For one thing, the performance level of most processes tends to decrease overtime, unless forces are exerted to maintain it. In addition, if an organization does not improve its business processes, its competitors, surely will. Finally, today's customers are becoming more and more demanding. The quality of currently available products and services is improving. This causes customer expectations to rise.

Thus, what a customer might have considered quite satisfactory a few years ago, today may not meet his or her requirements. It is therefore irrelevant to discuss whether we *must* improve processes; the question is rather *how much* and *how fast* the improvement should be.

How do we go about improving processes? The process improvement cycle "plan, do, check, act" developed by W. Edward Deming provides an effective approach:

- In the "*plan*" phase, the firm identifies and analyzes the problem and plans activities to remedy it;
- In the "*do*" phase, the firm carries out the activities planned In the previous phase. The purpose is primarily to experiment with the solution;
- In the evaluation, or "*check*" phase, the firm measures whether the corrective activities had the desired effect on the problem;
- Finally, in the "*act*" phase, the firm modifies the process to fit the activities that were confirmed to give results.

After the firm has performed the four phases, the process is considered improved.

Deming noted that in the first phase of the process improvement activity, the firm must document the process. As a general rule, if you want to improve something, you must first determine current performance. If you do not truly understand the process and its current performance, it will be very difficult to know which improvement initiatives can be started and whether they will ever work at all.

Documenting the process should therefore always be the first step in any improvement activity. A key part of understanding and documenting a process is accomplished through the development of a "process map." Development of a process map serves several purposes:

- It creates a common understanding of the content of the process: its activities, results, and who performs its different steps.
- It defines the scope of the process, as well as the boundaries of the process relevant to adjacent processes.
- It provides a baseline against which to measure improvements in the future.

3.2.4. The redesign process project

Central to BPR is an objective overview of the processes to be redesigned. Whereas information needs to be obtained from the people directly involved in those processes it is never initiated by them. Even at its lowest level, BPR has a top-down approach and most BPR efforts, therefore, take the form of a major project. There are numerous methodologies proposed, but all share common elements. Typically, the project takes the form of seven phases:

1.Discover

This involves first identifying a problem or unacceptable outcome, followed by determining the desired outcome. This usually requires an assessment of the business need and will certainly include determining the processes involved, including the scope, identifying process customers and their requirements, and establishing effectiveness measurements.

2.Establish redesign team

Any organization, even a small company, is a complex system. There are customers, suppliers, employees, functions, processes, resources, partnerships, finances, etc. and many large organizations are incomprehensible - no one person can easily get a clear picture of all the separate components. Critical to the success of the redesign is the make-up of a redesign team.

The team should comprise as a minimum the following:

- Senior manager as sponsor
- Steering committee of senior managers to oversee overall
- Re-engineering strategy
- Process owner
- Team leader
- Redesign team members.

It is generally recommended that the redesign team have between five and ten people; represent the scope of the process; only work on one redesign at a time; and is made up of both insiders and outsiders. Insiders are people currently working within the process concerned who help gain credibility with co-workers. Outsiders are people from outside the organization who bring objectivity and can ask the searching questions necessary for the creative aspects of the redesign. Many companies use consultants for this purpose.

3. Analyze and document processes

Making visible the invisible, documenting the processes through mapping and/or flowcharting is the first crucial step that helps an organization see the way work really is done and not the way one thinks or believes it is done. Seeing the process as it is provides a baseline from which to measure, analyze, test and improve.

Collecting supporting process data, including benchmarking information and IT possibilities, allows people to weigh the value each task adds to the total process, to rank and select areas for the greatest improvement, and to spot unnecessary work and points of unclear responsibility. Clarifying the root causes of problems, particularly those that cross department lines, safeguards against quick-fix remedies and assures proper corrective action, including the establishment of the right control systems.

4. Innovate and rebuild

In this phase the teams rethink and redesign the new process, using the same process mapping techniques, in an iterative approach involving all the stakeholders, including senior management. A powerful method for challenging existing practices and generating breakthrough ideas is “assumption busting”- see later section.

5. Reorganize and retrain

This phase includes piloting the changes and validating their effectiveness. The new process structure and operation/system will probably lead to some reorganization, which may be necessary for reinforcement of the process strategy and to achieve the new levels of performance.

Training and/or retraining for the new technology and roles play a vital part in successful implementation. People need to be equipped to assess, re-engineer, and support - with the appropriate technology - the key processes that contribute to customer satisfaction and corporate objectives. Therefore, BPR efforts can involve substantial investment in training but they also require considerable top management support and commitment.

A very good instrument to use is Benchmarking, that can be used to improve the processes in the organization compared to the best-in-class or, where there is no information about it, the cmparation can be made to the closest competitor.

6. Measure performance

It is necessary to develop appropriate metrics for measuring the performance of the new processes, sub-processes, activities, and tasks. These must be meaningful in terms of the inputs and outputs of the processes, and in terms of the customers of and suppliers to the processes.

7. Continuous redesign and improvement

The project approach to BPR suggests a one-off approach. When project is over, the team is disbanded, and business returns to normal, albeit a radically different normal. It is generally recommended that an organization does not attempt to re-engineer more than one major process at a time, because of the disruption and stress caused. Therefore, in major re-engineering efforts of more than one process, as one team is disbanded, another is formed to redesign yet another process. Considering that Ford took five years to redesign its accounts payable process, BPR on a large scale is clearly a long-term commitment.

In a rapidly changing, ever more competitive business environment, it is becoming more likely that companies will re-engineer one process after another. Once a process has been redesigned, continuous improvement of the new process by the team of people working in the process should become the norm. *(Oakland, S., 2004)*

Business process maturity

Business process management is a complex management practice that many organizations find difficult to implement and progress to higher stages of maturity.

Maturity models are used as an evaluative and comparative basis for improvement, and in order to derive an informed approach for increasing the capability of a specific area within an organization. They have been designed to assess the maturity (i.e. competency, capability, level of sophistication) of a selected domain, based on a more or less comprehensive set of criteria. Therefore, a BPM maturity model is a tool that can assist organizations in becoming more successful with BPM, resulting in the achievement of greater operational and business performance benefits. In addition, the increased success of BPM adoptions will contribute to positioning BPM as an enduring management practice. In particular, maturity models can be used for three purposes:

1.As a descriptive tool enabling an "as-is" assessment of strengths and weaknesses;

2.As a prescriptive tool enabling the development of a roadmap for improvement;

3.As a comparative tool enabling benchmarking to assess against industry standards and other organizations.

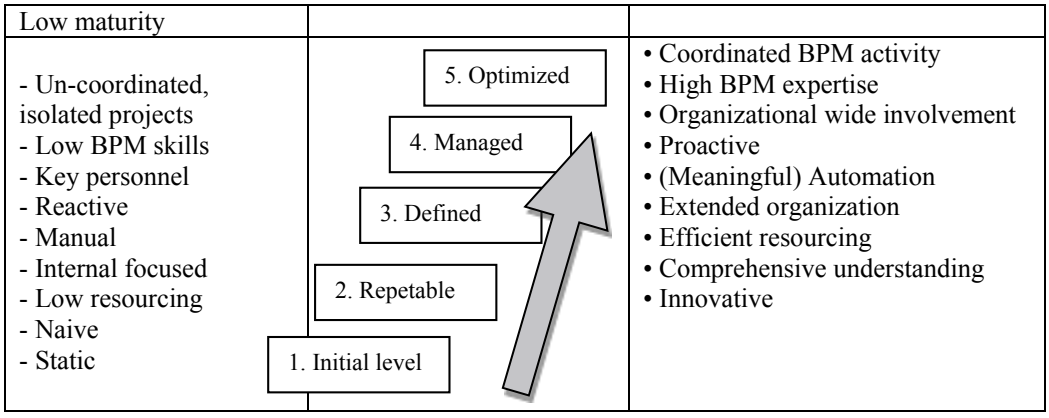
Unlike other existing models, the BPM maturity model discussed in the following sections has been developed to enable each of these three purposes.

The proposed BPM maturity model adopts the five maturity stages of The Compaibility Maturity Model (CMM) in an attempt to differentiate various levels of sophistication of a BPM initiative.

The Capability Maturity Model (CMM) describes an evolutionary improvement path from an ad-hoc, immature process to a mature, disciplined process. This model applies to new product development as well as software development. The five product development process CMM levels are:

Initial Level (ad-hoc, immature): At the initial level, the organization typically does not provide a stable environment for developing new products. When a organization lacks sound management practices, the benefits of good integrated product development practices are undermined by ineffective planning, reaction-driven commitment systems. Process short-cuts and their associated risks, late involvement of key disciplines, and little focus on optimizing the product for its life cycle. The development process is unpredictable and unstable because the process is constantly changed or modified as the work progresses opr varies from one project to another. Performance depends on the capabilities of individuals or teams and varies with their innate skills, knowledge, and motivations.

Figure 3.5. The Capability Maturity Model (CMM)



Source: Mutafelija, B., Stromberg, H.,(2003) Systematic Process Inprovement using ISO 9001:2000 and CMMI®, Artech House, Boston , London

Repeatable Level: At the repeatable level, policies for managing a development project and procedures to implement those policies are established. Effective management processes for development projects are institutionalized, which allow organizations to repeat successful practices developed on earlier projects, although the specific processes implemented by the projects may differ. An effective process can be characterized as practiced,

documented, enforced, trained, measured, and able to improve. Basic project and management controls have been installed. Realistic project commitments are based on the results observed on previous projects and on the requirements of the current project. The project managers and team leaders track New Product Development (NPD) costs, schedules, and requirements; problems in meeting commitments are identified when they arise. Product requirements and design documentation are controlled to prevent unauthorized changes. The team works with its subcontractors, if any, to establish a strong customer-supplier relationship.

Defined Level: At the defined level, the standard process for developing new products is documented, these processes are based on integrated product development practices, and these processes are integrated into a coherent whole. Processes are used to help the managers, team leaders, and development team members perform more effectively. An organization-wide training program is implemented to ensure that the staff and managers have the knowledge and skills required to fulfill their assigned roles. Projects tailor the organization's baseline development process to develop their tailored process which accounts for the unique characteristics of the project. A well-defined process can be characterized as including readiness criteria, inputs, standards and procedures for performing the work, verification mechanisms, outputs, and completion criteria. Roles and responsibilities are clearly defined and understood. Because the software process is well defined, management has good insight into technical progress on all projects. Project cost, schedule, and requirements are under control, and product quality is tracked.

Managed Level: At the managed level, the organization establishes metrics for products and processes and measures results. Projects achieve control over their products and processes by narrowing the variation in their process performance to fall within acceptable boundaries. Meaningful variations in process performance can be distinguished from random variation. The risks involved in moving new product technology, manufacturing processes and markets are known and carefully managed. The development process is predictable because the process is measured and operates within measurable limits. This level of process capability allows an organization to predict trends in process and product quality within the quantitative bounds of these limits. When these limits are exceeded, action is taken to correct the situation. As a result, products are of predictably high quality.

Optimized Level: At the optimized level, the entire organization is focused on continuous process improvement. The organization has the means to identify weaknesses and strengthen the process proactively, with the goal of preventing the occurrence of defects. Data on the effectiveness of the development process is used to perform cost benefit analyses of new development technologies and proposed changes to the organization's development process. Innovations that exploit the best integrated product development practices are identified and transferred throughout the organization. Product development teams analyze failures and defects to determine their causes. Development processes are evaluated to prevent known types of failures and defects from recurring, and lessons learned are disseminated to other projects. Improvement occurs because of both incremental advances in the existing process and by innovations using new technologies and methods.

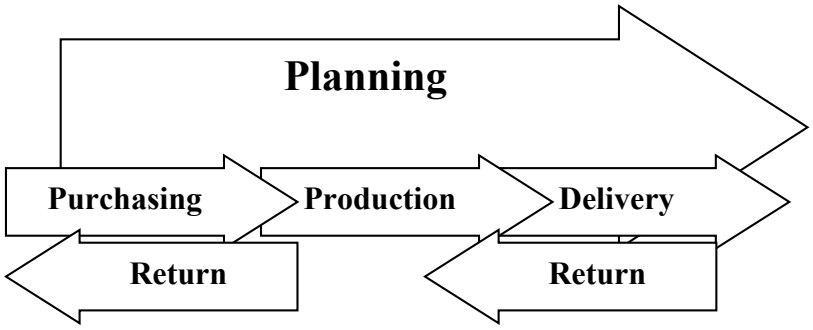
3.3. The Management of SCM Processes Using the SCOR Model

3.3.1. Description

The SCOR-model has been developed by Supply Chain Council to describe the business activities associated with all phases of satisfying a customer's demand.

The model contains several sections and is organized around five major management processes: planning, procurement, make, delivery and return. By describing supply chains (Figure 3.6.) using these processes, the model can be used to describe supply chains that are very simple or very complex using a common set of definitions. As a result, disparate industries can be linked to describe the depth and breadth of virtually every supply chain. The model could successfully describe and provide a basis for supply chain improvement for global and specific projects.

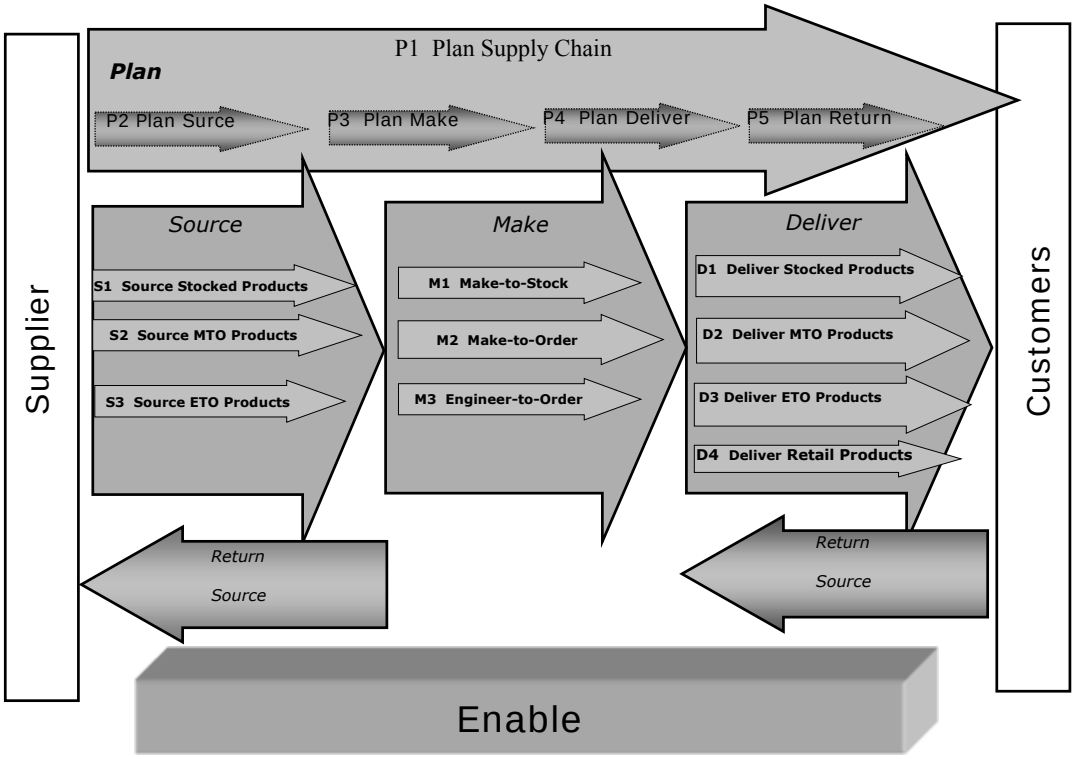
Figure 3.6. The 5 processes of the SCOR model



Source: Supply Chain Operations Reference – Model 6.1

Covers: all customer interactions (from order registration to bill payment), all physical transactions (from the supplier's supplier to the customer's customer, including equipment, materials, spare parts, bulk product, software and so on) and all market interactions (from the understanding of aggregate demand to satisfy each order). Does not try to describe all processes or business activities.

Figure 3.7. The three streams of distribution: stock delivery, order delivery and launching a new product



Source: Supply Chain Operations Reference –Model 6.1

To note, does not cover: sales and marketing (demand generation), product development, research and development and some elements of post-delivery customer service. These are treated by CSCMP (Council of Supply Chain Management Professionals) to a new process "SUPPORT" (ENABLE),.

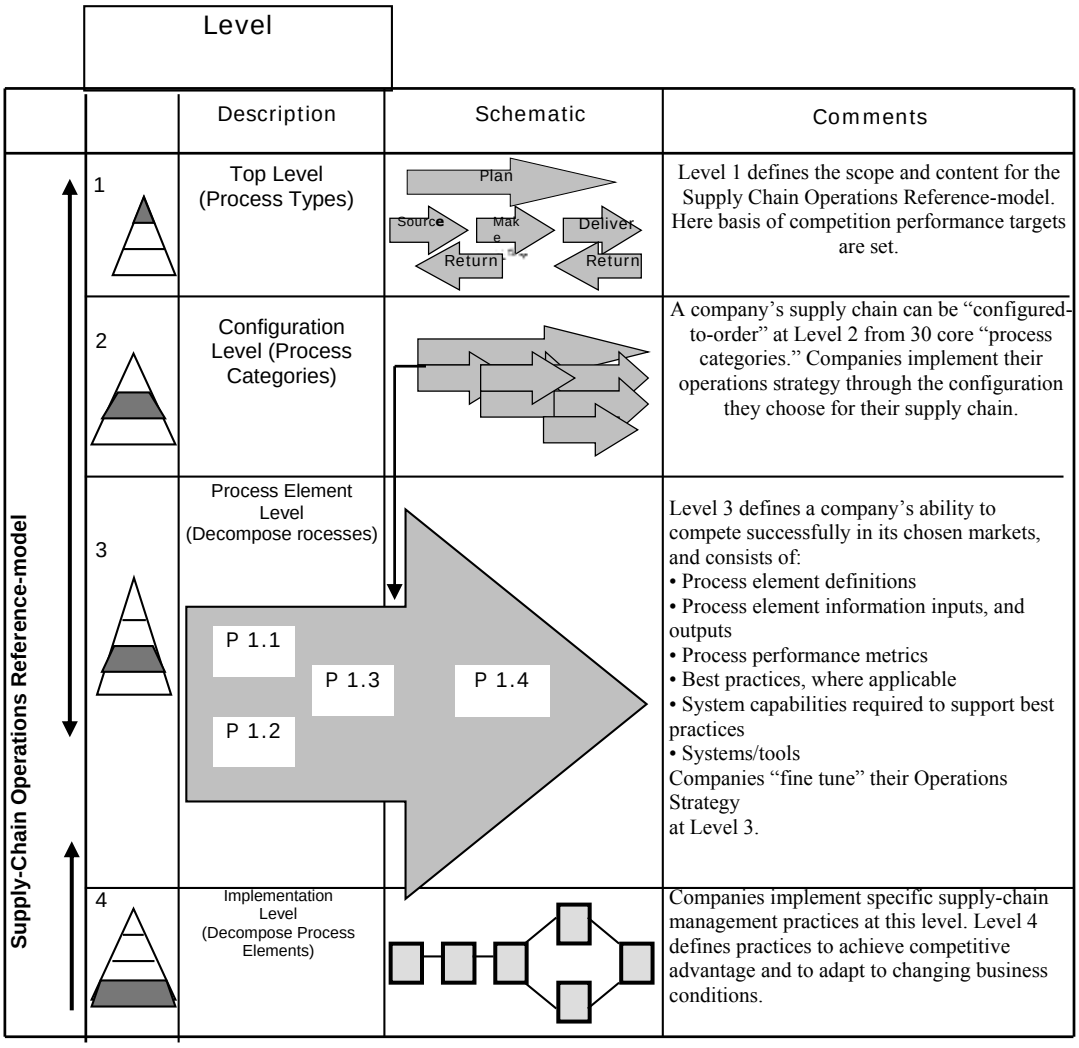
It should be noted that refining the model has changed and is expected to change based on the requirements of the Council members. With the introduction of return, the model was expanded in the post-delivery services for customers (though not including all activities in that area).

The model is designed and maintained to support supply chains of various complexities and from multiple industries.

The council focused on three levels of processes (Figure 3.7) and does not attempt to prescribe how an organization must adapt their business systems/ information flows. Every organization that implements supply chain improvements using the SCOR model, must extend the model, at least to level 4, using the processes, systems and practices specific to them.

SCOR model is a reference model of business processes. It is a model that correlates the elements, indicators, best practices and processes attributes associated to the execution of a supply chain in a unique format. The uniqueness and power of the model and its successful implementation is derived mainly from the use of these four elements together.

Figure 3.8. Processes details for each level



Source: Supply Chain Operations Reference – Model 6.1

It is important to note that this model describes processes, not functions. In other words, the model focuses on the work involved, not per person or organizational element carrying out the work.

3.3.2. SCOR Model structure

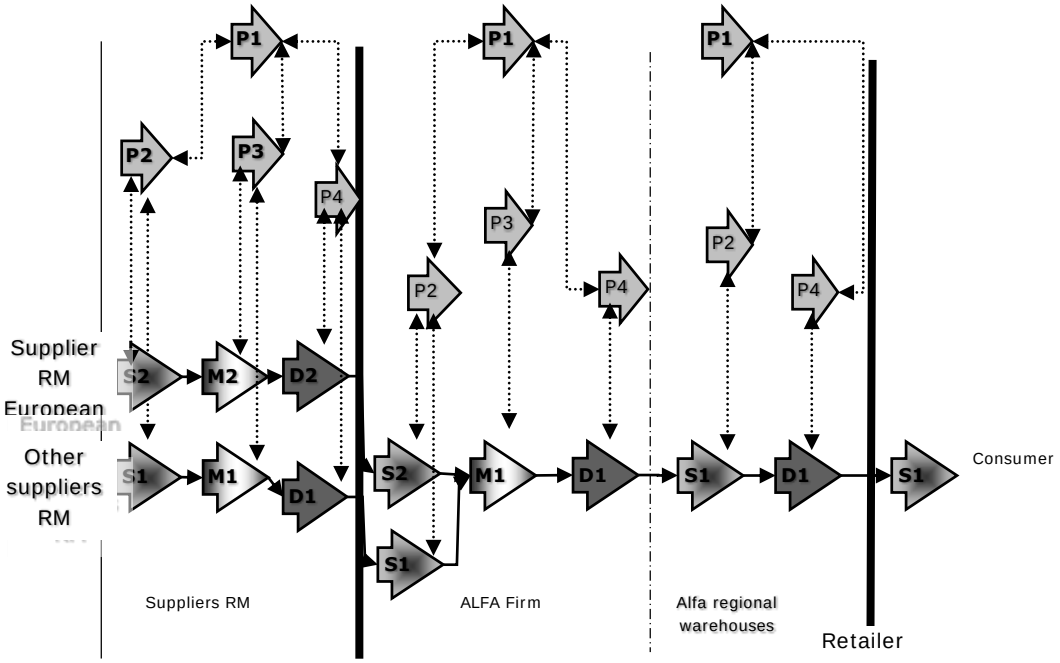
Besides the five basic management processes (Plan, Source, Make, Deliver & Return) that provide the organizational structure of the SCOR Model, it is useful to distinguish between these three process types: Planning; Execution; Enable (formerly Infrastructure).

A Planning element is a process that aligns expected resources to meet expected demand requirements. Planning processes balance aggregated demand across a consistent planning horizon. Planning processes generally occur at regular intervals and can contribute to supply-chain response time.

Execution processes are triggered by planned or actual demand that changes the state of products. They include scheduling and sequencing, transforming materials and services, and moving product. Enable processes prepare, maintain, and manage information or relationships upon which planning and execution processes rely.

A set of standard notation is used in the model. P describes planning elements (P-Plan), S Supply elements (S-Sourcing), M manufacturing (M-Make) Delivery D (D-Delivery) and return R (R-Return).

Figure 3.9. Mapping the execution process



Surce: Supply Chain Operations Reference – Model 6.1

3.3.3. Performance attributes and level indicators

Level 1 indicators are primary indicators of high level, which may cross multiple SCOR processes. Level 1 indicators are not necessarily tied to a SCOR Level 1 process (planning, sourcing, production, delivery, returns).

Performance attributes are characteristics of the supply chain that enable to be analyzed and evaluated against other supply chains with competing strategies. Exactly as a physical object is described such as a piece of wood, using standard features (height, width, depth), a supply chain requires standard characteristics to be described. Without these features is very difficult to compare an organization that chooses to be low-cost provider against an organization that chooses to compete in reliability and performance.

Associated with performance attributes are indicators of level 1. These are the calculations by which an organization can measure how they implement success in achieving the desired positioning in the competitive market space.

First time users of the model must take care that the indicators from model are hierarchical - just as process elements are hierarchical. Level 1 indicators are created from lower level calculations.

Calculation at lower level (level 2 indicators) are generally associated with a narrower subset of processes. For example, delivery performance is calculated as the total number of products delivered on time and on a complete

data set. In addition, indicators and lower level (diagnostics) are used to diagnose variations in performance against plan. For example, an organization may wish to examine the correlation between the required time and date set.

First 3 levels of the SCOR Model

SCOR model has four levels of detail, first the three of them - processes, subprocesses and activities - as described in the model. Processes, or level 4 are tasks detailed at the workflow level and are always customized for strategy and specific requirements of the organization.

Starting with level 1 and ending with Level 3 the content of SCOR model can be used to translate business strategy into supply chain architecture designed to achieve specific business objectives. The exact order in which the SCOR model uses different levels will depend on the specific needs of the business and starting point. *(Cohen, S. & Russell, J., 2004)*

SCOR Level 1

Level 1 focuses on the five major supply chain processes (plan, source, make, deliver, and return). Using these processes, the alignment between process and organizational domains can be established to describe where processes must be standardized across entities.

Tabel 3.2. Processes definition - level 1

SCOR Is Based on Five Core Management Processes	
Plan	Processes that balance aggregate demand and supply to develop a course of action which best meets sourcing, production and delivery requirements
Source	Processes that procure goods and services to meet planned or actual demand
Make	Processes that transform product to a finished state to meet planned or actual demand
Deliver	Processes that provide finished goods and services to meet planned or actual demand, typically including order management, transportation management, and distribution management
Return	Processes associated with returning or receiving returned products for any reason. These processes extend into post-delivery customer support

Choices at level 1 run costs of information systems as different processes at the level of business usually involves multiple applications and associated costs of implementation and maintenance.

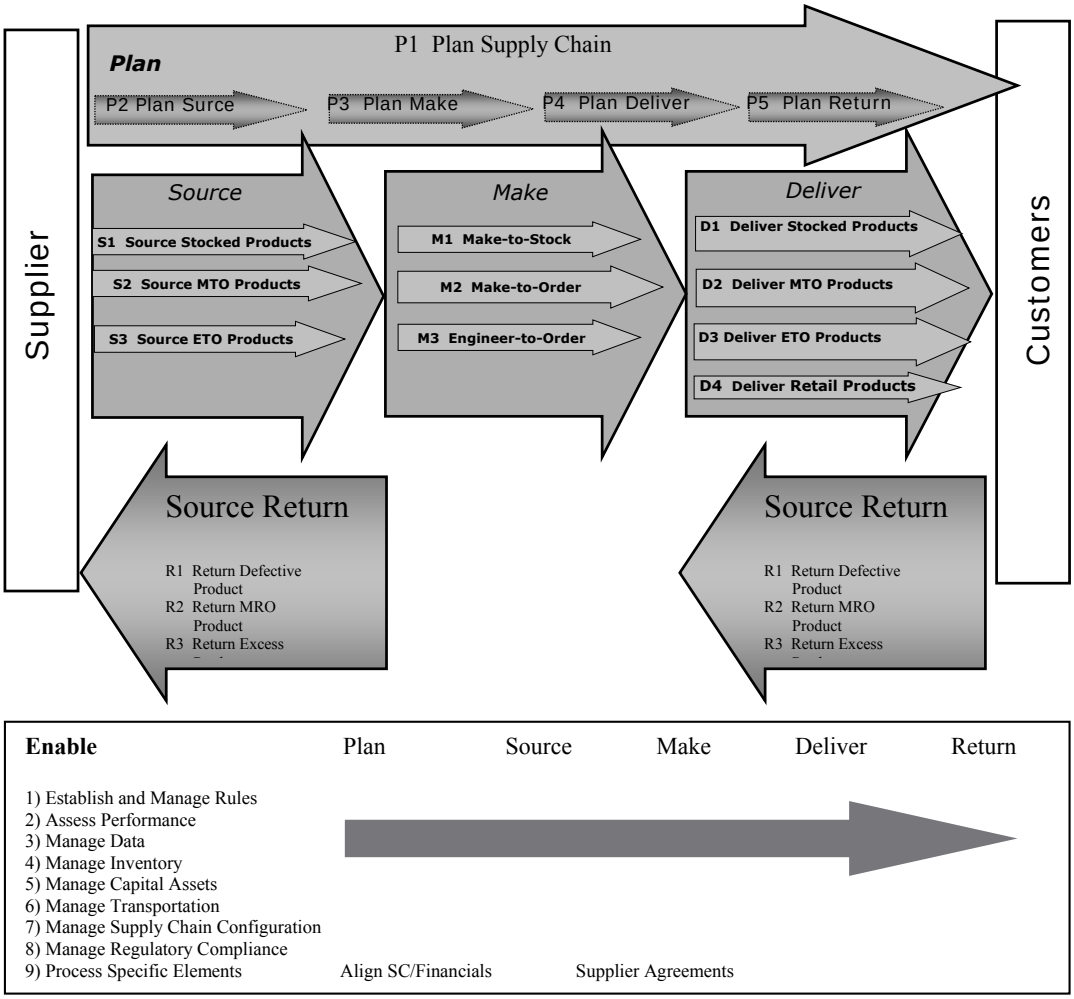
In addition, level 1 decision also will determine whether an organization will be able to implement certain business practices. For example, does the source process need to be standardized between two business units or are differences justified? If the goal is to consolidate volume across multiple business units to gain leverage with suppliers, standardization of a good part of the source process will be needed.

Once business processes and organizational domains are aligned, setting performance targets for these key process areas is an important next step. The SCOR model provides a supply chain scorecard for setting and managing supply chain performance targets across the organization.

This step is one of the most critical - and difficult - in the design of supply chain activities because of the need to gain internal consensus about goals and priorities.

SCOR level 2 (Figure 3.10)

Figure 3.10. Subprocesses definition –level 2



Source: Supply Chain Operations Reference – Model 6.1

Also called the configurationlevel, level 2 involves developing and evaluating options for high-level architecture of supply chain processes by choosing the "flavor" of planning, sourcing, production, delivery and return.

This is done by selecting the relevant subprocesses - or categories of processes - based on supply chain strategy. Selection of product categories will lead the design level 3 because each requires detailed activities varied.

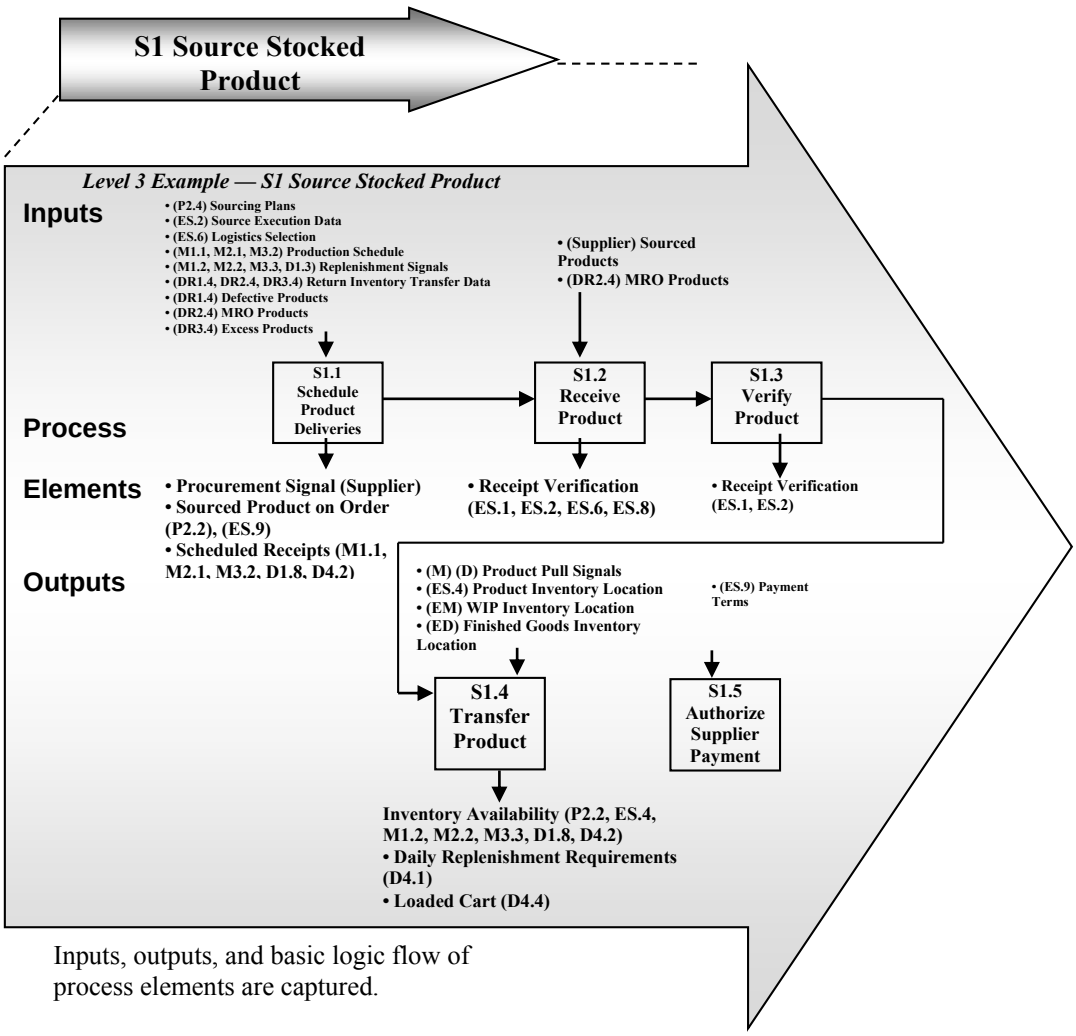
This is done by selecting the relevant subprocesses - or categories of processes - based on supply chain strategy. Selection of product categories will lead the design level 3 because each requires detailed activities varied.

Figure 3.11. Activities definition

SCOR Level 3

Presents Detailed Process Element Information for Each Level 2 Process Category

- Process flow
- Inputs and outputs
- Source of inputs
- Output destination



Source: Supply Chain Operations Reference – Model 6.1

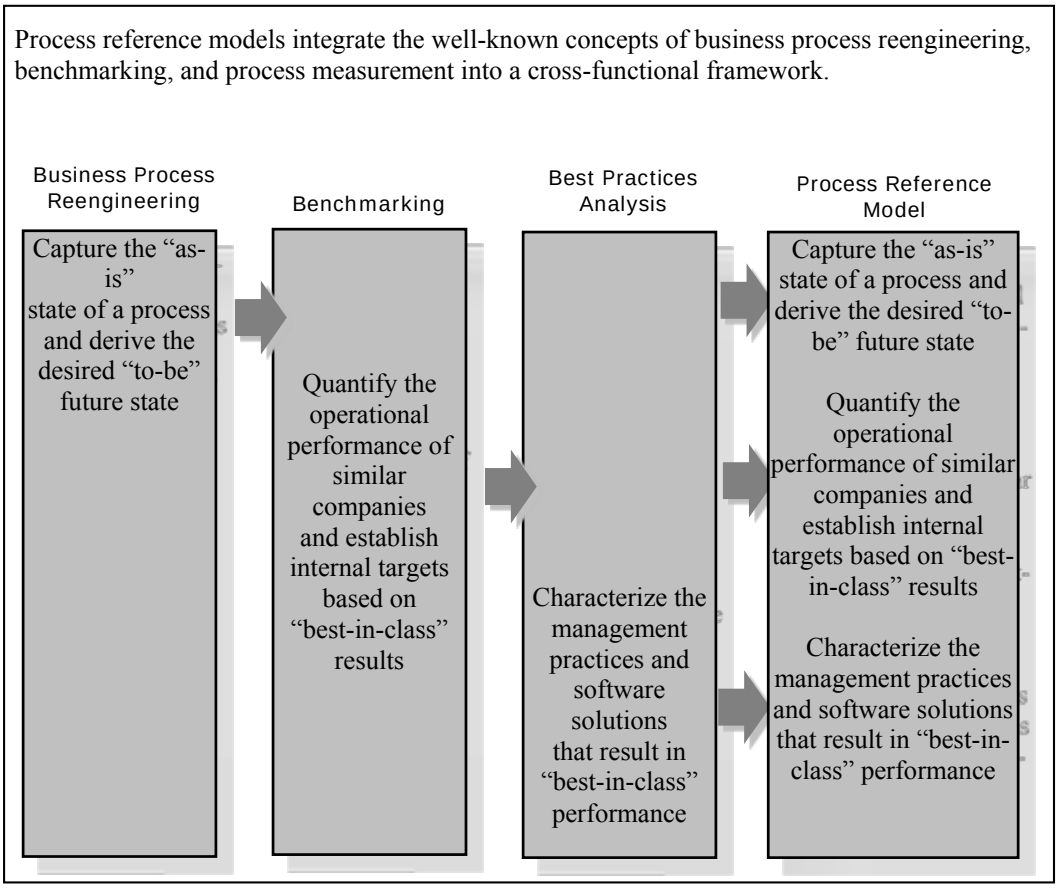
For example, manufacturing companies have a number of options in how they produce their products. To build in anticipation of customer orders (production per stock), build only after a firm order is received from a customer (custom manufacturing), build up to a half-finalized and finish after an order is received (custom configuration) or build the product based on the customer's unique specifications and thus require detailed engagement before starting work (custom design).

Once the process categories are chosen, they are used to describe the configuration of existing supply chains. These usually take the form of maps showing where customers, suppliers, warehouses, factories and other office processes using categories to describe major physical flows and information. In essence, it is like inventory processes in use today and where they occur.

SCOR Level 3 is called is also called the level of process elements, here you can complete supply chain architecture by adding operational details to SCOR Level 2 design. In SCOR Level 3 are specific business practices, associated indicators and guidance on information systems needed to support the process - in terms of functionality and data support.

By applying lean principles, analysis of Level 3 "what is" (Figure 3.12.) may reveal a number of opportunities for improvement determined by the configuration, including reducing the complexity of processes and information systems, creating better links between end-customer demand and final production, eliminating similar activities conducted in multiple locations and reduce waiting time and associated inventory and customer response times.

Figure 3.12. Philosophy of modeling supply chain process by the SCOR model



Source: Supply Chain Operations Reference – Model 6.1

Besides analyzing the pattern as a whole, best practices may be taken into account, applications, indicators and organizational models as part of the design thet "will be". By analyzing current capabilities versus the "will be" design will mean the implications for existing processes and information systems.

Implications for information systems typically include gaps in the system, missing data and insufficient integration between information systems. Then evaluate each "will be"option based on business criteria set out in SCOR Level 1 and choose the one that is developed at the operable level (level 4) of detail needed for a truly functional solution.

As you develop your own architecture of supply chain processes you will need to make sure that each process is integrated not only with other processes in the supply chain, but also with other business processes, such as technology, product and service development, marketing and sales, customer support and finance.

Plan

Each supply chain process has inputs and outputs. Planning input is given by the information about demand, supply and supply chain resources. This information allows better decision making and guides all supply chain activities related to the execution processes - supply, production, delivery and return. Each of the roduction processes is an element of planning. For example, supply planning and production planning outlines the necessary raw materials source and quantities of inventory items. Delivery planning provides the necessary information for commitment to customer orders. Return planning provides the information necessary for programming returns and replacement orders.

Tabel 3.3. Plan process

Demand/Supply Planning and Management:
- Balance resources with requirements and establish/communicate plans for the whole supply chain, including Return, and the execution processes of Source, Make, and Deliver. - Management of business rules, supply chain performance, data collection, inventory, capital assets, transportation, planning configuration, and regulatory requirements and compliance. - Align the supply chain unit plan with the financial plan.

Planning excellence contributes to superior performance of the business by ensuring that decisions are timely and well prepared and that their implications are understood, agreed and feasible. Planning excellence has five key principles:

- *The use of timely, accurate informations.* On the demand side, this means real-time information about customer demand and market, based on factors such as end-user consumption, the downstream inventories, economic and market information. It uses data from key customers when possible. On the supply side, it means understanding the critical internal and external resources to satisfy demand, such as labor, inventory, production capacity, suppliers and warehouses. To develop a complete vision of resources, it is necessary to obtain information from each running process - sourcing, make, delivery and return. Because supply and demand are dynamic, what is exact today probably will not be tomorrow. Therefore, timely information is so critical.
- *Focusing the resources on business priorities*. Supply chain planning is the process that balances internal objectives (inventory, cost and use of resource) with external objectives (level, volume flexibility, etc.). Ensuring that decisions support the priorities of customers and market segments.
- *It aims for simplicity.* Planning processes are as simple as possible. Realistic and executable outputs usually ask for taking into account the different visions of demand (country, market segment, product, brand and so on). In addition, different resources (material, capacity, employment, etc..) from multiple locations (multiple domestic factories, partners etc locations.) should be considered. Note, however, that the optimization of all resources from the supply chain can become unmanageable. It requires a focus on critical resources or "narrow places".
- *Integration of all supply chain requirements.* Source, make, delivery and return processes are all interrelated, so it is formulated an integrated plan for their individual requirements and execution resources, a plan that stretches "from the client of the client to the supplier of the supplier". Otherwise, it will cause imbalances, adding costs and blocking inventory in the supply chain. For example, if you buy (supply) more material than needed manufacturing (production) it ends with material excess.
- *It creates explicit actions and responsibilities*. The planning process should create internal agreed courses of action - operations, sales, marketing and all other stakeholders internal - and external suppliers and key customers. Performance against these action plans should be visible to all involved and measured as part of an ongoing effort to improve quality planning.

To achieve the company's business objectives, integration of planning to with other business processes of the enterprise is ensured. For example, it is integrated with marketing and sales processes for the best view of customer demand to get input on customer and market priorities and to assess the need and impact of promotional activities. It integrates with technology development processes, products and services to ensure that key programs have the necessary resources. It will also improve time to market and time to volume of new products and services. Financial planning is integrated with the process to ensure the quality of financial information. Revenue projections should be based on the most reliable information possible, and all debts in the supply chain - internal and external - must be recognized and reported in accordance with company and regulatory requirements.

Source

Using the general plan of supply planning (Table 3.4.), supply chain process procures all materials and services required, achieving operational activities of purchasing, scheduling, reception, inspection and approval of provider payment. Supply activity also involves the selection of suppliers and their relationship management.

Tabel 3.4. Source process

Sourcing Stocked, Make-to-Order, and Engineer-to-Order Product

- Schedule deliveries; receive, verify, and transfer product; and authorize supplier payments.
- Identify and select supply sources when not predetermined, as for engineer-to-order product.
- Manage business rules, assess supplier performance, and maintain data.
- Manage inventory, capital assets, incoming product, supplier network, import/export requirements, and supplier agreements.

Excellence in source processes is based on 5 key principles:

- *It aims at the lowest cost of owning (Total Cost of Ownership - TCO).* Getting the lowest purchase price for a service or good is less important than getting the lowest TCO. A cheaper vehicle, for example, is not convenient if it frequently fails or has a lower lifetime. It must be taken into account the direct and indirect costs to determine the value of a purchase or contract. Many supply chain costs - such as ordering from the supplier, inspection, payment and keeping inventory - are driven by practices, quality and capability of the provider.
- *To reduce TCO, targets for costs improvement are set, not only for the product or service, but also the total cost of the supply chain.* The company is working with suppliers to redefine processes to reduce or eliminate activities that increase costs. For example, the products "ready for use" (in stock) are eliminating the need for inspection or training. Another way to decrease costs is to automate manual paper-based transactions, such as purchase orders and replacing them with more efficient practices, such as setting the automatic replenishment orders to deal with buying in bulk.
- *Sourcing strategies are established depending on the category.* Supply strategies set the limits of the agreements with the providers, competitive contracts and global supply agreements based on the need for robust movement in the global supply network. Different categories have different complexity of the supply market and business impacts. Furthermore, activities, organization and supply instruments should be differentiated based on these strategies. For example, for standard products where cost is the main selection criteria, we bease the decision on the management and global supply base techniques, such as online bidding, while more strategic products will require partnership management and collaborative working places.
- *Maintaining a focus on the enterprise as a whole.* This means choosing suppliers that can assist the organization in all its different locations and strengthening the company's volume purchases, where possible, for a higher power with suppliers. Requires also supply base management at the enterprise level using standard specifications, common tools (profiles, ratings and evaluation criteria) and appropriate organizational structures, such as managers and teams for global goods. Global supply base management ensures that suppliers use best practices - those that reduce costs and increase flexibility - wherever possible and that processes are standardized for a more efficient and robust supply chain. Expenditure management is also a critical part of supply excellence, ensuring that the company tracks expenses, uses only approved suppliers and standards (list of approved vendors, catalogs etc.) and has delegation of authority processes to approve purchases.
- *Measuring and managing performance.* objectives category are not know and reached unless supply performance is persued. For example, the visibility of expenditure at all locations (on volumes purchased from suppliers and the terms and conditions applied) is required for enforcing contracts. In addition, explicit review points of performance should be established in contracts with suppliers and based on standard scorecards with suppliers. This should include key performance indicators needed to help achieve mutually agreed TCO. In addition to reviews, visibility in both directions of Scorecard performance indicators must support daily management of performance.

For supply chain to operate effectively, ensure that supply integration is achieved with planning, delivery, production and return processes in the organization and with suppliers. Integration points with suppliers are multiple because the the supply of a company integrates with the delivery process of the provider for many activities (ordering, receiving goods and payment). Working with suppliers to design an optimized, integrated flow, of these inputs and outputs, can significantly lower TCO.

To achieve the business objectives of the company, supplies integrate with other core business processes. For example, the integration of technology development processes, products and services, can ensure that suppliers apply design for manufacturing and design for supply chain practices. These practices improve quality, optimize production, testing and packaging and take new products to market faster.

Make

The Make process (Table 3.5) of the supply chain transformes the resources procured in goods and services according to agreed specifications and regulatory requirements. To increase flexibility, minimize costs and increase asset utilization, more and more companies use external partners to execute all or part of their production activities such as production, testing, certifying and packaging. This requires sharing of performance objectives and processes in this extensive network.

Tabel 3.5. Make process

Make-to-Stock, Make-to-Order, and Engineer-to-Order Production Execution
- Schedule production activities, issue product, produce and test, package, stage product, and release product to deliver. - Finalize engineering for engineer-to-order product. - Manage rules, performance, data, in-process products (WIP), equipment and facilities, transportation, production network, and regulatory compliance for production.

There are 4 principles for excellence in production processes:

- *Focus on business priorities.* All production scheduling decisions must integrate priorities of customers and the market. Business managers must deliver these priorities as formally defined business rules. Priority is given to key accounts and products with higher margins when when resources and capacity are limited (use Paretto tool).
- *It aims for speed and flexibility, not just low cost.* This reduces cycle times and inventory levels by pulling demand and other lean manufacturing techniques. For example, when time or cost do not allow custom product manufacturing, product are finalized to a generic level and are finazised only after the receipt of a customer order. Speed and flexibility require near real-time visibility. Timely and accurate information about key areas such as order status, output production line stoppages, quality performance and inventory levels are needed to support rapid adjustment of production schedule.
- *Establish and monitor quality standards*. Capturing and reviewing quality information at every step of the production process based on standards. Timely data quality should be accessible to everyone involved in the production and then analyzed using a structured approach such as Six Sigma. This focus on quality has to cover the entire product life cycle. Products must be traceable to the lot and unit to ensure that the origin of quality problems can be identified and corrected.
- *Synchronize all production activities.* It provides information on production programs, consumption and inventory levels and monitor suppliers to better meet demand. Rules are defined and aggregated to guide replenishment decision-making for suppliers. To ensure that production schedules are feasible and accurate, production rules, information and performance data should be used, it requires defining and maintaining processes and internal formalized responsibilities with supplier partners.

For supply chain to operate efficiently, production must be integrated with planning, supply, delivery and return processes. For example, production planning provides a production plan with the quantity of products manufactured. Supply provides information about when and what materials will be received from suppliers and what inventory is available for production. Production provides information on the use of materials, which determines how big is the order from suppliers. For companies using the strategy available to promise, production provides information on planned production to use in promising delivery orders.

Production integrates with other business processes of the enterprise. Integration with developing technology, products and services on the market rushes the time by implementing engineering changes faster. Integrating production with marketing and sales process ensures that market priorities, customers and products lead production scheduling.

Deliver

Delivery process (Table 3.6.) begins with receiving customer order and includes all activities necessary to complete the order, from the delivery of the price to collecting the payment from the customer.

Tabel 3.6. Deliver process

Order, Warehouse, Transportation, and Installation Management for Stocked, Make-to-Order, and Engineer-to-Order Product

- All order management steps from processing customer inquiries and quotes to routing shipments and selecting carriers.
- Warehouse management from receiving and picking product to load and ship product.
- Receive and verify product at customer site and install, if necessary.
- Invoicing customer.
- Manage Deliver business rules, performance, information, finished product inventories, capital assets, transportation, product life cycle, and import/export requirements.

Delivery makes the order visible for supply and production for execution, ensuring that customer requirements are clearly communicated. Delivery also includes all activities of storage, transport and distribution.

Here are 4 principles recommended for the excellence of delivery process:

- *It balances the service with the cost of serving*. Some customers are more profitable - and more desirable - than others. These are customers that should be taken care of with priority. Start by clearly defining customer segments and then differentiate delivery processes, business rules and appropriate services. For example, it provides customers with higher value multiple orders management options, limiting other customers to autoservice and other ordering channel at lower cost. It can prioritize your best customers to allocate inventory in times of shortage of the product.
- *Reduce costs and time by direct processing.* Sending order information to all relevant functions - credit approval, manufacturing (for custom manufacturing), storage, transportation and billing so that, when it is possible, execution activities can be done simultaneously rather than sequentially, and all aspects of delivery can be organized for easy and fast processing. Same as information flows, physical flows of delivery are projected for direct processing to minimize the waiting time without adding value. Choose the physical network - production, storage and transportation - with an eye toward the total costs and delivery time.
- *Determine the identification and traceability of end-to-end.* Status of all orders and deliveries to customers, from the notice of the order to collecting the cash must be visible throughout the delivery process. For example, customers should be able to see where their orders are and key account managers to have access to full information about their orders for each account. Moreover, supply chain risk management, such as terrorism, counterfeiting, theft and damage requires the ability to seal and track deliveries from point of production to point of delivery.
- *Continuous administration adatelor for accuracy and oportunity.* Good delivery performance depends on excellent data management. Creation and management of customer orders require a wide range of information, including product attributes, technical configurations, prices and addresses of customers. All this information must be kept current to avoid errors. Otherwise, orders and invoices will and rejected and redone, adding time, cost and cash and blocking the supply chain. In most companies, the creation and maintenance of data is a challenge, involving many departments. The challenge is still greater beyond the enterprise, requiring data standards and processes between customers, suppliers and partners - each can have different structures, definitions and data warehouses.

You can not follow these principles without delivery integration with other key business processes. For example, data management requires obtaining data on products from processes of technology, products and services development. Customizing supply chain processes as part of collaboration with customers will require adjustments to sales and marketing processes for customer contracts to systematically take into account logistics. Moreover, marketing and sales processes must provide pricing information delivery, customer-specific terms and conditions and clear guidance on customers priorities, must balance the cost of services and serving.

To meet delivery commitments from consistent customers, delivery will be integrated with other processes from the supply chain of the company. Planning depends on the delivery process with information about - based on the history of orders and deliveries to clients - in planning income and resources. In addition, the creation of collaborative business models and adapting the delivery process may have significant implications on planning, supply and production. For example, production processes and planning gives to delivery the inventory data and production scheduling required to promise the customer orders. Depending on the chosen collaborative model, type of information required and the frequency of transactions may change significantly.

Return

Return process (Table 3.7.) ensures that the products sold before are supported, collected and disposed according to business policies and agreements with customers and covers all activities: from thethe authorization of the return to financial regulation. Primary factors behind return varie by industry, but generally include the return of defective products, errors or unsatisfactory maintenance, repair and overhaul services based on agreements; returns of

excess inventory in the channel and recycling/refurbishment/reuse. Various activities can be associated with each of these "types" of returns.

Return is a reverse supply chain process and has specific requirements and characteristics which differ from forward supply chain. For example, recall involves capturing data at the point of the article from the point of return, tracking a product from elimination and managing insurance management for the entire product life cycle. Requires also capturing a range of analytical indicators including returns causes, locations of origin, costs and credits.

In addition, physical network of return presents particular challenges. For example, returns need usually small volumes of many different items with irregular frequency. Companies must find a way to collect, sort and distribute them as efficiently and economically as possible. Often central collection points provide a way of aggregating volumes in an effective cost manner.

Tabel 3.7. Return process

Return of Raw Materials and Receipt of Returns of Finished Goods
- All Return Defective Product steps from source – identify product condition, disposition product, request product return authorization, schedule product shipment, and return defective product – and deliver – authorized product return, schedule return receipt, receive product, and transfer defective product. - All Return Maintenance, Repair, and Overhaul product steps from source – identify product condition, disposition product, request product return authorization, schedule product shipment, and return MRO product – and deliver – authorize product return, schedule return receipt, receive product, and transfer MRO product. - All Return Excess Product steps from source – identify product condition, disposition product, request product return authorization, schedule product shipment, and return excess product – and deliver – authorize product return, schedule return receipt, receive product, and transfer excess product. - Manage Return business rules, performance, data collection, return inventory, capital assets, transportation, network configuration, and regulatory requirements and compliance.

For return process excellence, follow these 4 key principles:

- *Create a separate supply chain for return*, such as deciding whether a product may be returned, it will be removed and how they will manage suppliers or customers credits and other financial transactions. Return requires a separate supply chain with its end-to-end processes, information systems, performance scorecards and organizational responsibilities.
- *The information on return are transmitted back quickly*. It provides timely information about returns to guide preventive action and elimination. For example, the purchase will adequately deal with suppliers based on information return. Production, design and logistics will learn the information return and use them to take corrective action in their fields. Managers of returns will use cost data, credits and income to manage the reverse supply chain operations.
- *Return policies are based on the total cost of returns.* It establishes an explicit policy of return for each sold item or produced internally or purchased for resale. It is necessary to use an external specialist on returns depending on the nature of return, its total cost - including assessment, collection, sorting and disposal - and return the existing capability of the company.
- *Maximize revenue opportunities*. Define processes and company return policies with an eye toward improving income. Identify multiple revenue generating ways to eliminate, including resale, return to supplier for credit, recycling, bidding, etc. For purchased items disposal policies should integrate default business rules for providers.

To be effective, the return of the company must be integrated with other supply chain processes. For example, by integration with the planning process, return ensures that the resources it needs are available. By integrating the procurement and production processes, the return can provide information about faults and errors to ensure quality of supply and production. Return also provides high information to product delivery to pick up from customers and to the reverse supply chain. For MRO items, return provides information for supply, production and delivery activities necessary for returns processing according to the agreements with customers.

An efficient return process requires integration with other key business processes. For example, return integration with the development of technology, products and services ensures that misunderstood information about

product defects and product attributes are used to improve existing products and develop new products better. Integration with marketing and sales processes ensures that return policies are consistent with the terms and conditions of the customers.

3.4. The Redesign of Logistic Chain Processes

The redesign of operational processes (ROP) of the organization

Reengineering business processes is based on the article published in the July-August 1990 in "Harvard Business Review" by Michael Hammer, professor of computer science at MIT (Massachusetts Institute of Technology), who became an advisor and published the article " Reengineering: Don't Automate, Obligerate ".

Reengineering business processes became another stage: the reorganization of key processes, analisis of work processes, improving processes. After another period, ROP has become synonymous with the restructuring, reorganization, reduction of hierarchical levels. TQM is a new vision for the redesign coverig the refocusing of core activities, operational improvement.

Hammer stated that we need to review in a systematic maner and with a critical eye the main business processes, thus exploiting the fundamental elements and their application in operational practices.

The objective of process redesign: Client satisfaction improvement

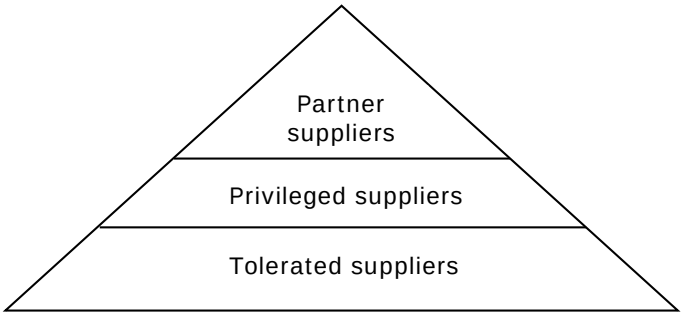
The redesign of order making processes may allow a sensible increas in the levels of customer satisfaction, but at the same time, can eliminate necessary resources in activities with a high proportion of workers whose labor costs are taxed in a very tough regime. Tax hardness is given not only by their size, but legislation now requires to be paid almost immediately, which amputates the cash flow. Second, it has to be noted that although wages are low, high labor costs are specific in services and trade, areas where technological endowment is not high and productivity is very low. Laws regarding the income taxes do not, of course, distinguish between sectors that produce raw value that can cover these costs in terms of return of at least 0.5%. Area affected by the myriad of small and family associations is unable to support the legality and fairness of business.

Companies that have built their processes by eliminating unnecessary things and the ones not generating added value have identified on this occasion that they can get rid of old methods that are making you wait and to waste time in customer service.

Numerous processes reengineering give more time to serve customers. By releasing the routine things that do not bring value to customers / consumers, they can better respond to customer expectations. In this way they deliver value and the receiver feels a considerable increase and thus increases their delight.

Obtaining participation of suppliers requires more effort compared to the previous stages. To facilitate this phase of improvement of supply chain, it ussualy should be considered with the responsible for the supply pyramid of suppliers (Figure 3.13.).

Figure 3.13. Piramyd of the importance of suppliers



This pyramid (the number of suppliers) of course must not be compared with the "pyramid" resulting from the analysis of 20/80.

According to this pyramid, the company has generally downwards providers.Suppliers tolerated are those which, although have a certain age in relation to our company, have a low to medium volume business. Regarding improvement of the chain, they can be ignored.

Privileged providers are classified in the group that matters in terms of quality (quality system that we have and that is related to processes / our services). They meet minimum quality specifications as required by the buyer and does not require additional costs and risks regarding control of their deliveries. In this group are selected those who will and can move to a higher level of relationship in the partnership.

At the top there is a small part of suppliers, but has a major impact on supply costs and the production / sales company. They shall be selected from those who have a real impact on costs and predictable performance.

3.4.1. Proactive action with selected clients

Action of identification and growth of customer performance for the organization starts with suppliers of parts or products from complex assortment.

The objective genuine of the partnership with customers is the most accurate determination of the best possible way to meet market needs.

A company that uses advanced partnering can use resources available on a supplier-manufacturer network to satisfy the relationship with selected customers.

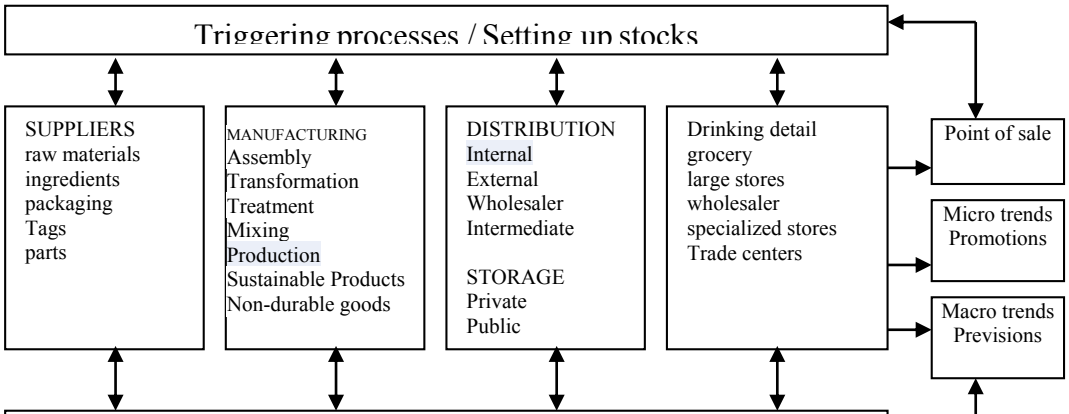
3.4.2. The advanced partnership can be made using some techniques:

- *Sharing technical and intellectual resources focused on projects that provide commercial benefits clearly defined.* This sharing can start from conventional electronic links to computer-aided systems of EPOS. In this partnership are jointly identified development projects and improvement by jointly allocating resource of the highest level to achieve high performance.
- *Organizing joint seminars for staff training led by an expert, usually neutral for both partners*. Solving the problem is made regarding operational planning, the use of logistic capabilities. Training costs are spread over several participants, and the one that monitors the training action aims to develop interactive skills leading to a joint project from the perspective of strategic business units (SBU - Strategic Business Unit or CAS - Centre d'Activité Strategique) .
- *Meetings of the management of the partnership involved in the project has to be at the highest level*, to make known and recognized the best practices. Briefings can provide information and can be decided to apply innovative concepts.
- *Although most of the times there is a tendency to not make pilot studies,* it is recommended that an advanced partnership to generate a test to identify the genuine advantages of this approach. Test or pilot model can provide information on the real potential of a solution and serves as evidence for the expansion project. Strengths and weaknesses identified may support the joint team to successfully pilot the project to achieve key performance indicators set as objectives.
- *Common investments in technology are means of capitalization or advanced partnership.*
- *Experiences of the third company, qualified, can be used to test new technologies or new systems.* If the chain actors are seeking, for example, most effective electronic techniques, partnership agreements allow the supplier or the customer to call third parties who have material, software, knowledge and ability to apply the project, with organization and drawn material .

For exact deployment of effective partnership process and not have too many returns nor reproaches, should be generated a list of activities that can be improved through a joint effort. *(Poirer, Charles & co., 2001)*

An example is the model "Order - Payment" (Figure 3.14.).

Figure 3.14. Network of enterprises in supply chain



Source: *Poirer,Charles & co.; 2001*

3.4.3. Experiencing a complete supply chain

After identifying a group of partners, after a preliminary analysis, it is suggested to proceed to experience a complete supply chain to test collaboration and partnership techniques throughout the network chain. Using a model, organisations and more customers are starting to follow the flow - traceability of raw materials and other basic supplies are extended from production to distribution and sales point is reached where the final consumer shops.

Based on the model of an organization's SAP production organization we have:

A. The industry of fast moving consumer goods (FMCG)

In this case, supply chain management (SCM) involves subprocesses and activities:

1.Planning Supply Chain (Supply Chain Planning)Depending on the strategy of buying decisions, funding long-term planning and process engineering substantiation may result from a variety of resources and capacity controls. If the project is completed grid, supply chain optimization follows. Supply chain planning (supply) is:

- Making or buying technology support
- Foundation of long-term plans
- Foundation engineering process
- Supply network design
- VMI decisions
- Supply chain optimization
- Simulation scenarios
- Preparation decision rules.

2.Forecast demand (Demand Forecasting)

It is one of the most important processes of the supply chain for consumer products companies. It can analyze deviations and may be adjusted periodically fro supply and production plans.

Forecast demand involves the following activities:

- Long-term prognosis
- Short-term forecast
- SKU versus category
- Integrate promotion
- Analysis of deviations
- Periodic adjustment
- Multiple forecast models.

3.Procurement (Procurement)

Based on key performance indicators such as price, quality and volume production based on profit, you can select sellers (suppliers) and can analyze their performance. Then you can run as planned procurement of supply, driving purchasing processes, goods received and inventories. The solution provides automatic inventory replenishment and inventory transparency returned by EDI and B2B capabilities guaranteed and enforced by undertaking and information between providers.

Purchase consists of the following phases:

- Identify the profile and select vendor (supplier)
- Supply and contract management
- Execute supply plan
- Purchase order management
- Exchange of information
- Inventory management and property received (reception)

- Invoice verification
- Vendor performance
- Co-packing.

4.Production (Manufacturing)

Production processes can be improved by controlling the levels of multiple workshops, workforce management, resources management functions. Quality management is fully integrated into the production process. It helps the company to provide "health" and safety regulations and quality standards of operations as well as management procedures.

This milestone in SCM involves:

- Production planning
- Recipes
- Scheduling production / maintenance
- Optimization
- Control of shop floor
- Process vs. discrete / repetitive
- Quality control
- Multiple key performance indicators
- Regulation compliance.

5.Distribution (Distribution)

This involves designing pallets for transport support, selection, choice of transport providers (selection, load scheduling, routing) and optimization of transport (such as cargo transportation constraints analysis) and full monitoring of the transport process.

This stage involves phases:

- Simulation
- Availability control
- Storage
- Radio frequency
- Return cargo
- Transport sources
- Transport optimization
- Implementation and monitoring
- Key performance indicators.

We can use these subprocesses and activities to design a benchmarking (Appendix 2) which can be used to show maturity in relation to best practice from another organization. *(Popa, V., 2004).*

B. DISTRIBUTION INDUSTRY CONSUMER GOODS, The SAP (Appendix 3 and 4) has supply chain management (SCM) subprocesses and activities:

1.Planning of distribution (distribution planning) optimizes the distribution and helps to evaluate different alternatives for storage and distribution. Supports internal and external management optimization chain resources at different levels.

Consists of:

- Distribution network design and planning
- Strategies to keep stocks
- Group decision rules in network optimization
- Identify operational expenses.

2.Inventory Management (Inventory Management) is one of the key elements in locating storage and specific evaluation, the total stock and the items are used in inventory management.

Consists of:

- Evaluating marketing methods and costs
- Stock management
- Physical inventory.

3.Management of storage (Warehouse Management) Locating a warehouse sometimes requires more complex and sophisticated solutions for optimization. Consists of:

- Planning and goods receipt processing
- Trans-storage and direct flow
- Heavy work schedule and weather

- Storage management
- Connections (connections) possible
- Automatic control
- Management intermediate transport units.

4.Shipping and transport (shipping & unloading) covers all processes that involve goods, from selection and packing to loading and transport. Effective transport planning and processing functions provide the shipping charges and must be analyzed in order to minimize costs. This dynamic dispatch and transport costs provide competitive price and the product.

It consists of the following steps:

- Transport planning and optimization
- Route planning
- Supervision of shipments
- Management "kilometers" (distance)
- The delivery and towing
- Selecting and packaging.

5.Replenishment (Replenishment) replenishment strategies relate to sales and inventory data. In both cases the prognosis and very flexible technique offers sellers VMI replenishment capabilities to plan their product to the retailer.

Replenishment is the process:

- Planning with inventory and safety stock quantity of presentation
- Frequency of replenishment planning
- Optimize the cycle
- Cooperation and VMI replenishment. (Appendix 5)

SCM with Customer Relationship Management (CRM), Category Management (CM), Buying and Execution Channel helps:

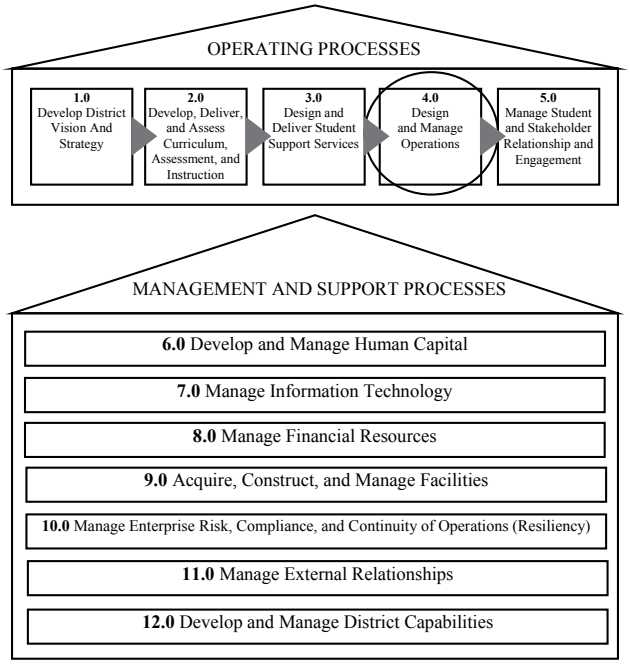
- Maximizing return on investment indicator (ROI)
- Improving cycle times and transiting goods through the distribution center
- Supporting supply chains based on the seller partnerships and continuous replenishment programs
- Reduce inventory as a result of forecast accuracy and cross-docking
- Sources chain optimization and route planning
- Reduce occurrence in out-of-stock throughout the entire supply chain.

3.4.4. The APQC Process Classification Frameworksm

The Process Classification Framework was developed by APQC and its member companies as an open standard to facilitate improvement through process management and benchmarking, regardless of industry, size, or geography. The PCF organizes operating and management processes into 12 enterprise level categories, including process groups and over 1,000 processes and associated activities. The PCF and associated measures and benchmarking surveys are available for download and completion at no charge from the Open Standards Benchmarking Collaborative

Understanding the Numbering Scheme

Figure 3.15. The Process Classification Framework



Source: APQC (American Productivity and Quality Center)

Beginning with Version 5.0.0, the PCF uses a numbering scheme that differs from previous versions. The cross-industry framework and the industry-specific frameworks collectively form a library of process elements for the OSBC. Each process element is referred to by two numbers: a number used to locate the content within that particular framework (in the format 1.2.3.4) and a serial number used to uniquely identify the process element across all of the various OSBC frameworks (beginning with 10000).
INTERPRETING THE PCF
Category: The highest level within the PCF is indicated by whole numbers .
Process Group: Items with one decimal numbering are considered a process group.
Process: Items with two decimal numberings are considered processes.
Activity: Items with three decimal numbering are considered activities within a process.

From the 12 processes for SCM the most important and and closest to the SCOR model is 4.0 process, Deliver Products and Services

4.0 Deliver Products and Services

4.1 Plan for and acquire necessary resources (Supply Chain Planning)

4.1.1 Develop production and materials strategies
- 4.1.1.1 Define manufacturing goals
- 4.1.1.2 Define labor and materials policies
- 4.1.1.3 Define outsourcing policies
- 4.1.1.4 Define manufacturing capital expense policies
- 4.1.1.5 Define capacities
- 4.1.1.6 Define production network and supply constraints
- 4.1.1.7 Define production process
- 4.1.1.8 Define production workplace layout and infrastructure

4.1.2 Manage demand for products and services
- 4.1.2.1 Develop baseline forecasts
- 4.1.2.2 Collaborate with customers
- 4.1.2.3 Develop consensus forecast
- 4.1.2.4 Allocate available to promise
- 4.1.2.5 Monitor activity against forecast and revise forecast

4.1.2.6 Evaluate and revise forecasting approach
4.1.2.7 Measure forecast accuracy
4.1.3 Create materials plan
4.1.3.1 Create unconstrained plan
4.1.3.2 Collaborate with supplier and contract manufacturers
4.1.3.3 Identify critical materials and supplier capacity
4.1.3.4 Monitor material specifications
4.1.3.5 Generate constrained plan
4.1.3.6 Define production balance and control
4.1.4 Create and manage master production schedule
4.1.4.1 Generate site-level plan
4.1.4.2 Manage work-in-progress inventory
4.1.4.3 Collaborate with suppliers
4.1.4.4 Generate and execute site schedule
4.1.5 Plan distribution requirements
4.1.5.1 Allocate available to promise
4.1.5.2 Maintain master data
4.1.5.3 Determine finished goods inventory requirements at destination
4.1.5.4 Calculate requirements at destination
4.1.5.5 Calculate consolidation at source
4.1.5.6 Manage collaborative replenishment planning
4.1.5.7 Manage requirements for partners
4.1.5.8 Calculate destination dispatch plan
4.1.5.9 Manage dispatch plan attainment
4.1.5.10 Calculate destination load plans
4.1.5.11 Manage partner load plan
4.1.5.12 Manage cost of supply
4.1.5.13 Manage capacity utilization
4.1.6 Establish distribution planning constraints
4.1.6.1 Establish distribution center layout constraints
4.1.6.2 Establish inventory management constraints
4.1.6.3 Establish transportation management constraints
4.1.7 Review distribution planning policies
4.1.7.1 Review distribution network
4.1.7.2 Establish sourcing relationships
4.1.7.3 Establish dynamic deployment policies
4.1.8 Assess distribution planning performance
4.1.8.1 Establish appropriate performance indicators (metrics)
4.1.8.2 Establish monitoring frequency
4.1.8.3 Calculate performance measures
4.1.8.4 Identify performance trends
4.1.8.5 Analyze performance benchmark gaps
4.1.8.6 Prepare appropriate reports
4.1.8.7 Develop performance improvement plan
4.1.9 Develop quality standards and procedures
4.1.9.1 Establish quality targets
4.1.9.2 Develop standard testing procedures
4.1.9.3 Communicate quality specifications

4.2 Procure materials and services
4.2.1 Develop sourcing strategies
4.2.1.1 Develop procurement plan
4.2.1.2 Clarify purchasing requirements
4.2.1.3 Develop inventory strategy
4.2.1.4 Match needs to supply capabilities
4.2.1.5 Analyze company’s spend profile

4.2.1.6 Seek opportunities to improve efficiency and value
4.2.1.7 Collaborate with suppliers to identify sourcing opportunities
4.2.2 Select suppliers and develop/maintain contracts
4.2.2.1 Select suppliers
4.2.2.2 Certify and validate suppliers
4.2.2.3 Negotiate contracts
4.2.2.4 Manage contracts
4.2.3 Order materials and services
4.2.3.1 Process/Review requisitions
4.2.3.2 Approve requisitions
4.2.3.3 Solicit/Track vendor quotes (
4.2.3.4 Create/Distribute purchase orders
4.2.3.5 Expedite orders and satisfy inquiries
4.2.3.6 Record receipt of goods
4.2.3.7 Research/Resolve exceptions
4.2.4 Appraise and develop suppliers
4.2.4.1 Monitor/Manage supplier information
4.2.4.2 Prepare/Analyze procurement and vendor performance
4.2.4.3 Support inventory and production processes
4.2.4.4 Monitor quality of product delivered

4.3 Produce/Manufacture/Deliver product
4.3.1 Schedule production
4.3.1.1 Generate line level plan
4.3.1.2 Generate detailed schedule
4.3.1.3 Schedule production orders and create lots
4.3.1.4 Release production orders and create lots
4.3.2 Produce product
4.3.2.1 Manage raw material inventory
4.3.2.2 Execute detailed line schedule
4.3.2.3 Rerun defective items
4.3.2.4 Assess production performance
4.3.3 Schedule and perform maintenance
4.3.3.1 Determine process for preventive (planned) maintenance (Preventive Maintenance Orders)
4.3.3.2 Determine process for requested (unplanned) maintenance (Work Order Cycle)
4.3.3.3 Execute maintenance
4.3.3.4 Calibrate test equipment
4.3.3.5 Report maintenance issues
4.3.4 Perform quality testing
4.3.4.1 Perform testing using the standard testing procedure
4.3.4.2 Record test results
4.3.5 Maintain production records and manage lot traceability
4.3.5.1 Determine lot numbering system
4.3.5.2 Determine lot usage

4.4 Deliver service to customer
4.4.1 Confirm specific service requirements for individual customer
4.4.1.1 Process customer request
4.4.1.2 Create customer profile
4.4.1.3 Generate service order
4.4.2 Identify and schedule resources to meet service requirements
4.4.2.1 Create resourcing plan and schedule
4.4.2.2 Create service order fulfillment schedule
4.4.2.3 Develop service order
4.4.3 Provide service to specific customers
4.4.3.1 Organize daily service order fulfillment schedule

4.4.3.2 Dispatch resources
4.4.3.3 Manage order fulfillment progress
4.4.3.4 Validate order fulfillment block completion
4.4.4 Ensure quality of service
4.4.4.1 Identify completed orders for feedback
4.4.4.2 Identify incomplete orders and service failures
4.4.4.3 Solicit customer feedback on services delivered
4.4.4.4 Process customer feedback on services delivered

4.5 Manage logistics and warehousing
4.5.1 Define logistics strategy
4.5.1.1 Translate customer service requirements into logistics requirements
4.5.1.2 Design logistics network
4.5.1.3 Communicate outsourcing needs
4.5.1.4 Develop and maintain delivery service policy
4.5.1.5 Optimize transportation schedules and costs
4.5.1.6 Define key performance measures
4.5.2 Plan inbound material flow
4.5.2.1 Plan inbound material receipts
4.5.2.2 Manage inbound material flow
4.5.2.3 Monitor inbound delivery performance
4.5.2.4 Manage flow of returned products
4.5.3 Operate warehousing
4.5.3.1 Track inventory deployment
4.5.3.2 Receive, inspect, and store inbound deliveries
4.5.3.3 Track product availability
4.5.3.4 Pick, pack, and ship product for delivery
4.5.3.5 Track inventory accuracy
4.5.3.6 Track third-party logistics storage and shipping performance
4.5.3.7 Manage physical finished goods inventory
4.5.4 Operate outbound transportation
4.5.4.1 Plan, transport, and deliver outbound product
4.5.4.2 Track carrier delivery performance
4.5.4.3 Manage transportation fleet
4.5.4.4 Process and audit carrier invoices and documents
4.5.5 Manage returns; manage reverse logistics
4.5.5.1 Authorize and process returns
4.5.5.2 Perform reverse logistics
4.5.5.3 Perform salvage activities
4.5.5.4 Manage and process warranty claims
4.5.5.5 Manage repair/refurbishment and return to customer/stock

3.5. Continuous Replenishment (CRP) and Logistic Chain Management

Introduction

Why undertake an ECR strategy? And why implement a continuous replenishment program (CRP) to facilitate the ECR strategy?

ECR and continuous replenishment are the result of the opportunity to eliminate supply chain inefficiencies, strengthen ties with trade partners and to become highly competitive.

Nowadays, any inefficiency in the supply chain is important and seriously affects the competitive capabilities of firms. Any manufacturer or any retailer who is truly committed to providing competitive pricing, you must be interested in ECR and continuous replenishment.

Very large stores defy food retailers with their strategy "everyday low price" (EDLP) and superiority in supply chain management and information systems. The large stores are able to sell their products in a more efficient

way, with lower inventory levels in the supply chain. They sell more effectively and attract many consumers to warehouse-stores.

3.5.1. Changing relationship between trading partners

Continuous replenishment can radically alter the relationship between trading partners. The importance of these partnerships will occur especially when stocks are limited. Similarly, providers will be able to deliver product where really required.

Top management must recognize that business objective is not to acquire or to move inventory, but to sell to the final consumer product.

By increasing the speed of each product distribution network, partners can share their cost savings because they will spend less capital to produce a higher turnover. This means that merchandising programs will be based on consumer purchases rather than on what dealers buy.

A customer with large stocks may be loyal by necessity, but a loyal customer does not translate necessarily by a final consumer loyalty. Fidelity is worthed, not bought. This is a key message to be found at all levels. Management will play an important role to raise awareness of this reality for intermediaries, especially when stocks bought by therm will be sold and short therm sales will decrease temporarily.

The advantages of continuous replenishment

Short therm advantages

The main objective of ECR is to reduce supply chain costs. In the context of continuous replenishment, replenishment of inventories is determined by demand rather than the supply. In well managed situations, here are some of the savings and improvements that can be achieved even in the next year following the implementation of continuous replenishment:

- Stock rotation increases considerably with improved yield.
- There is a reduction in tight spots in storage, which reduces maintenance costs, storage.
- In some cases, savings in transport occur on account of better visibility in planning and shipping schedules increased stability.
- Stock breaks can be reduce at store level.

When critical mass is reached, we find other advantages. It was established that the critical mass is between 40 and 60% of turnover generated by continuous replenishment. *(Roland Berger & Partners, 1996)*

The main advantages that manufacturers can expect once reached critical mass, are:

- Significant reduction in sales forecasting errors, allowing manufacturers to maintain safety stocks lower.
- Manufacturing program that responds to consumer demand rather than based on special programs designed to fill products distribution network.
- Manufacturing program aligned with consumer demand will lead to a reduction of stocks of raw materials and unfinished production.

Once the quantities of stocks will be reduced by an appreciable manner, other methods of physical flow may be used as needed, such as cross docking.

Continuous replenishment allows to use different management techniques as bulk shipments, improved assembly techniques, the use of conveyors and pre-stored shelves. To succeed, you need to have a facility for efficient flow rather than efficient storage products.

Long-term benefits

Over time, and in relation to partners with expertise in continuous replenishment, reducing inventory levels and demand fluctuations will reduce assets.

The objective is to improve cash flow and reduce all assets, producing thus a greater return on the asset.

In the future, as far as point of sale systems will be more precise and their use will be distributed for replenishment, there will be observed in the store inventory reductions, improved service and better product quality.

All these advantages can be achieved by improving service and quality product to the end consumer. Sales and purchasing staff can focus on customer needs rather than paperwork and administrative processes.

ECR processes and activities

Better availability of product, less damage, better storage duration and fresher products - all these things are possible with a closer cooperation between the partners of the distribution network and integrated information systems.

The FMCG industry is a business model that divides the 4 Summary ECR strategies in 17 key activities that can be influenced by the ECR (Table 3.9). *(Joint Industry Project, 1994)*

3.5.2. ECR Proceses

To estimate cost reductions at the activity level for the entire grocery industry requires the ECR concept assessment and benchmarking models from the "Best Practices".

The method recommended for the ECR concept assessments can be developed in a Benchmarking, starting from the essential processes from ECR Model (New products; Marketing of products, Promoting products – from Demand Side; Products Replenishment – Suppy Side) described below.

Tabel 3.9. The food industry activity model

Comercial procedure	Main activities
1. New products	1.1. Conduct basic research
	1.2. Develop new products
2. Marketing of products	2.1. Manage product categories
	2.2. Manage store operations
	2.3. Serve customers
3. Promoting products	3.1. Manage customer advertising
	3.2. Manage store advertising
	3.3. Manage Consumer promotion
	3.4. Manage in-store promotion
	3.5. Manage Customer Deals
4. Products Replenishment	4.1. Manage Store Orders
	4.2. Manage customer orders
	4.3. Procure Materials
	4.4. Produce Products
	4.5. Store and stage products
	4.6. deliver products
	4.7. Manage Invoices

Again, activities are defined to another level, by segmenting the 17 main activities in approx. 70 support activities. Table 3.10. provides a detailed distribution of effective replenishment.

Tabel 3.10. Efficient replenishment detailed activities

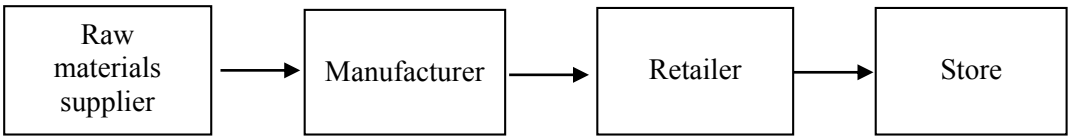
Primary activities	**Supporting activities**
4.1. Manage Store orders	4.1.1. Monitor In-Store Inventory Levels
	4.1.2. Place Store Orders
	4.1.3. Plan & Monitor OrderDelivery
	4.1.4. Receive Products at Store
	4.1.5. Stock Products on Shelves
4.2. Manage customer orders	4.2.1. Receive Customer Orders
	4.2.2. Determine Product Availability
	4.2.3. Plan & Monitor Produce Delivery
	4.2.4. Plan & Issue Orders for Production
	4.2.5. Manage Returned Products
4.3. Procure materials	4.3.1. Manage Supplier Relationships
	4.3.2. Plan Material Requirements
	4.3.3. Manage Material Inventory
	4.3.4. Order Ingredients & Packaging
	4.3.5. Receive & Store Materials

4.4. Produce products	4.4.1. Schedule & Control Production
	4.4.2. Formulate Products
	4.4.3. Package Products
	4.4.4. Test/Inspect Products
	4.4.5. Transpor Products to DCs
	4.4.6. Management Plant Operations
4.5. Store products	4.5.1. Manage DC Inventories
	4.5.2. Receive and Store Products at DC
	4.5.3. Receive Order Shipment Instruction
4.6. Deliver Products	4.6.1. Pick and Prepare Orders
	4.6.2. Prepare Shipping Documents
	4.6.3. Transport Products to Customers
4.7. Manage Invoices	4.7.1. Assemble Receivables Information
	4.7.2. Issue Invoices to Customers
	4.7.3. Assemble Payables Information
	4.7.4. Issue Payments for Products/Services
	4.7.5. Resolve Disputes/Adjustments

3.5.3. Continuous replenishment (CRP)

When you design a continuous replenishment program you must start with recreating the image distribution network entirely from raw materials suppliers to the store shelf. One of the main objectives of continuous replenishment is moving uncertainty at each stage of the distribution network to its actual source because, in reality, it exists only at the final point of sale, or store shelf.

Figure 3.16. Continous replenishment chain



Due to appropriate planning tools, we can calculate the demand for each unit of supply chain based on a forecast based on point of sale. An ideal continuous replenishment process will provide a range of integrated orders calendars from store to raw material suppliers. These calendars aim to minimizing inventory and supply terms for all members of the distribution network, while maximizing service level and transport efficiency. The replenishment is triggered by transaction in store point of sale (POS): This must be the ultimate goal of the industry. The current operation does not allow taking immediate and accurate information at the point of sale. However, this should not prevent us from taking advantage of the benefits offered by continuous replenishment. A relationship from RDC (Retail Distribution Center), based on shipments to the warehouse, can provide an immediate benefit for the partners of continuous replenishment. Therefore, it is a great starting point. Unfortunately, in most cases, most of the stocks from the grid are in stores rather than distribution centers.

Accurate data on stock levels and sales in stores will become essential as continuous replenishment programs will progress. Retailers and distributors, which will have accurate data on stock levels and sales in stores, are the ones who will certainly have a competitive advantage in the food industry.

Replenishment administered by the distributor-retailer

In this RDC scenario, distributors and retailers are responsible for their own sales forecasts and their functions of replenishment orders. A dealer or retailer transmits sales forecast or a stock unit authorizing the provider using the EAN-UCC EDI transactions with a weekly or more frequent pace. Supplier approves the receipt and sends a notice of acceptance of purchase order EDI EAN-UCC.

Advantages and disadvantages of replenishment managed by distributors, retailers

From the point of view of the dealer or retailer, this approach may require a considerable investment in systems and training. From the point of view of the supplier, is a relief.

It is prefered the transition from a Vendor Managed Inventory replenishment to a distributor-retailer-led one, if the ECR vision becoming a reality is something really desired. In fact, this transaction is already designed in the network with very large areas with rapid response early promoters (Quick Response).

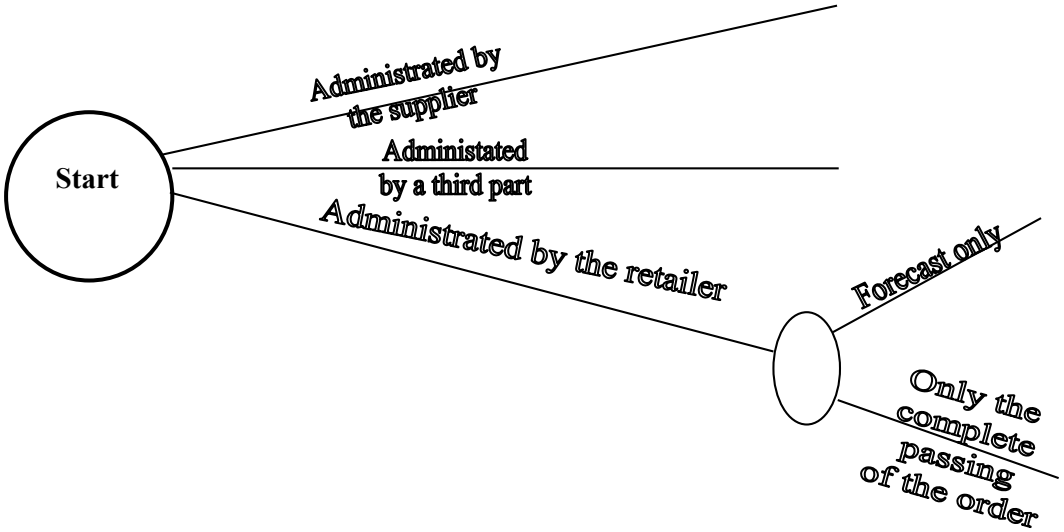
Reasons to be taken to control replenishment by distributors and retailers are to offer them an opportunity to do the following things:

- Improved management of capacity limitations.
- Limitation of provided information concerning deliveries to stores (and finally, data from point of sale).
- Integration of computer-aided control (EAC) at the shop.

In the replenishment administered by the supplier, he is responsible for managing its share of replenishment. What is missing is a priority service coordination to manage sectors where capacity is limited, as well as reception, storing and expedition, particularly during peak periods.

In this replenishment, the supplier collects information on daily deliveries to stores. As far as adopting continuous replenishment progresses along the chain to the shops, daily information at point of sale becomes the driving force for replenishment. Information at point of sale is a precious element as input information for category management, shelf space management and market analysis. This is the reason why distributors, retailers who control the disclosure of information are able to better control the manner in which this information should be used. Finally, neighter the vendor managed replenishment option nor the administration replenishment by a third party does not allow the integration of replenishment orders at the retail store sales.

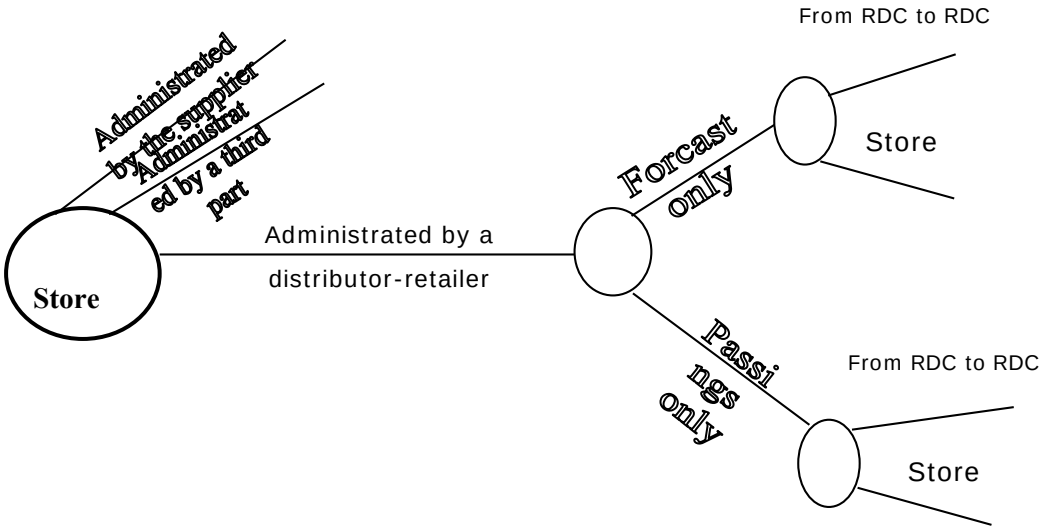
Figure 3.17.Replenishment decision tree administered by the distributor retailer, level II



Once the distributor or retailer decideds to assume responsibility for continuous replenishment, he must take another decision: to send only sales forecasts or orders with only full authorization?

To begin, retailers may choose to transmit sales forecasts to maturity (weeks or months) for storage units in stock (SKU) of suppliers which in turn, served of this information to prepare calendars with order with deadline, such as in the replenishment scenario managed by providers (themselves).

Figure 3.18. Continuous replenishment decision tree of distributor-retailer level III

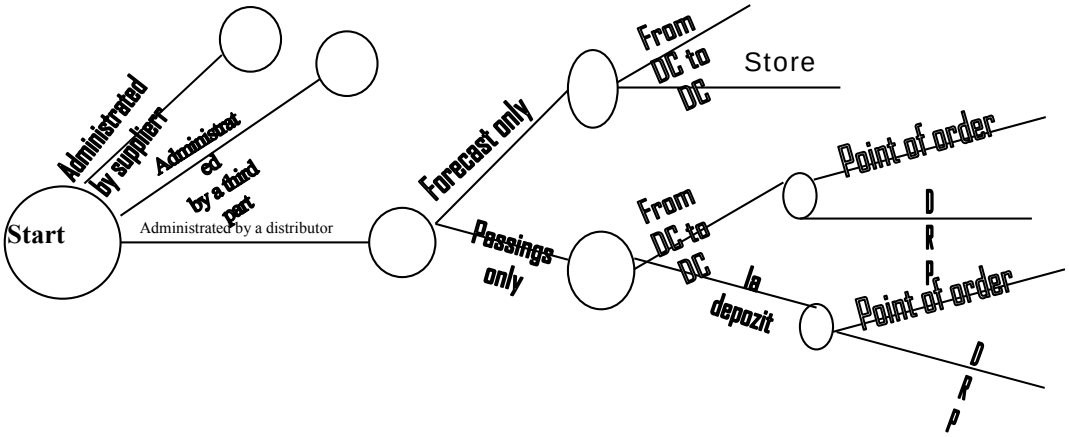


In time, and with the attract skills needed by distributors, retailers, these will achieve order schedules with deadines for stock units for each distribution center (from dispatch to the location) that will be sent once a week or more often to suppliers.

Initially, sales forecasts can be made by merchandisers and category managers of distributor-retailer.

Finally, order schedules will be made based on sales projections (normal and promotion) prepared either at headquarters or at the store.

Figure 3.19. Continuous replenishment decision tree of distributor-retailer- level IV



Whichever is adopted by continuous replenishment - in the shop or RDC - you will need a decision from the start about the extent of achievement in the initial stage. Availability of accurate information at the point of sale and in store stock records will be key factors in the decision.

The last branch of the decision tree refers to the execution of replenishment option: the control point or DRP (Distribution Resource Planning). It is obvious that the question does not apply to distributors or retailers who opt only for the transmission of projections. Current control point systems, enhanced with some modifications, can equally illustrate perhaps this concept, but they requires time, money and resources to implement them. This approach may prove ultimately to be more onerous than a DRP applied from the beginning.

Integrating continuous replenishment: RDC (Regional/Retail Distribution Center) and shops of distributors – retailers.

We refer to the last link in the supply chain of consumer goods - retail store.

At the store, the necessary orders are provided with computer assisted control program (program CAO). In simple terms, the CAO (Computer Assisted Ordering), the computer is fulfilling the task.

CAO replenishment logic is served by the following parameters to achieve outstanding orders for quantities of stock units:

- Sales forecasts regarding daily increase
- Store daily sales
- Inventory levels updated daily
- Minimum lot size
- The amount of orders in transit
- Necessary safety stocks
- Time and / or time of transport.

Quantities ordered are consolidated and optimized, taking into account the limitations in terms of weight and volume of cargo and transmitted via modem or EDI to the provider of the retailer or the distributor in the distribution center.

For example: apple sauce in a jar of 250 gr., below is presented the typical ordering for magazine. 1. They sent two orders of 30 boxes for weeks 3 and 5 (the intervals can be expressed in days rather than weeks. As forecast is consumed (sales are updated daily) the system will perform a new dynamic calculation and necessary quantities will be ordered and updated calendars sent to RDC provider.

Tabel 3.9. Replenishment administered by the distributor-retailer

Discount Muntenia Store no. 1 – apple souce in jars of 250 gr.						
Store quantity: 50 boxes Deadline: 1 week Safety stock. : 20 boxes Minimum quantity: 30 boxes						
	Present	Week 1	Week 2	Week 3	Week 4	Week 5
Forecast		10	12	9	11	22
Stock	50	40	28	49	38	46
Receiving the order				30		30
Sending of the order			30		30	

Under this method, replenishment orders are controlled by the scheduler of orders, or to the deposit or to the RDC as an exception. Whenever the system is updated, messages are produced or action to accelerate the order, or for late delivery.

More sophisticated programs allow planners to sort by the priorityof order according to the store items, such as promotion stock unit (SKU) or type of stock (ie, replenish safety stock instead of stock promotion).

RDC recapitulates the demands of the applesauce in jars of 250 gr. for all stores.

Tabel 3.10. Passings after the payment deadline – store assignment to RDC

Replenishment administered by the distributor-retailer

RDC METRO-Băneasa – apple sauce in jars of 250 gr						
Discount Muntenia (DM)	Present	Week 1	Week 2	Week 3	Week 4	Week 5
DM Store. nr.1			30		30	
DM Store. nr.2					15	
DM Store nr.3	30			30		30
DM Store nr.4			15			
DM Store nr.5			30		30	
Total	30	0	75	30	75	30

The RDC itself regroups SKU orders after - stock units (in this case, SKU = apple sauce in jars of 250 gr.), customer (the invoice address) and RDC (shipping location).

Tabel 3.11. Passings after the payment deadline - store brands assignment to DC

Replenishment administered by the distributor-retailer

RDC METRO-Băneasa –apple sauce in jars of 250 gr.						
	Present	Week 1	Week 2	Week 3	Week 4	Week 5
Discount Muntenia Târgovişte	30	0	75	30	75	30
Discount Muntenia Ploieşti	50	70	30	10	30	50
Discount Muntenia Slatina	100	70	10	20	50	65
Total	180	150	115	60	155	145

All stock units (SKUs) are grouped in a controlled maturity ordering. Before being transmitted, orders calendars are reviewed by a buyer or commands planner to check the following points:

- If loading truck or wagon is optimized
- If reception programs are properly balanced
- Whether any less bulky stock is distributed according to priority needs
- If limited volumes of orders, valued in dollars, are not exceeded.

Approved schedules are sent weekly or daily via EDI provider. Partners of replenishment agree in advance on the planning horizon, including a ferm time limit or a designated period (eg. 10 days) and for it the quantities ordered are fixed. This limit of the specified period allows manufacturers to organize their production lines to ensure that the products needed are available on the terms and in the amounts indicated. It happens sometimes to be needed a considerable change of quantities to take into account a weaker promotional request or stronger than expected.

Manufacturers prefer stable programs against programs that are constantly fluctuating. Finally, reducing time translates into lower safety stocks, provided the time limits to be reduced on justified grounds (one treatment cycle improved controls, better development of physical flow and so on). However, noted in most cases is the decision of a low period artificially determined. In this case, the result would only move stock from one level of the supply chain to another, which runs counter to the objective of continuous replenishment process and not a case where everyone is a winner.