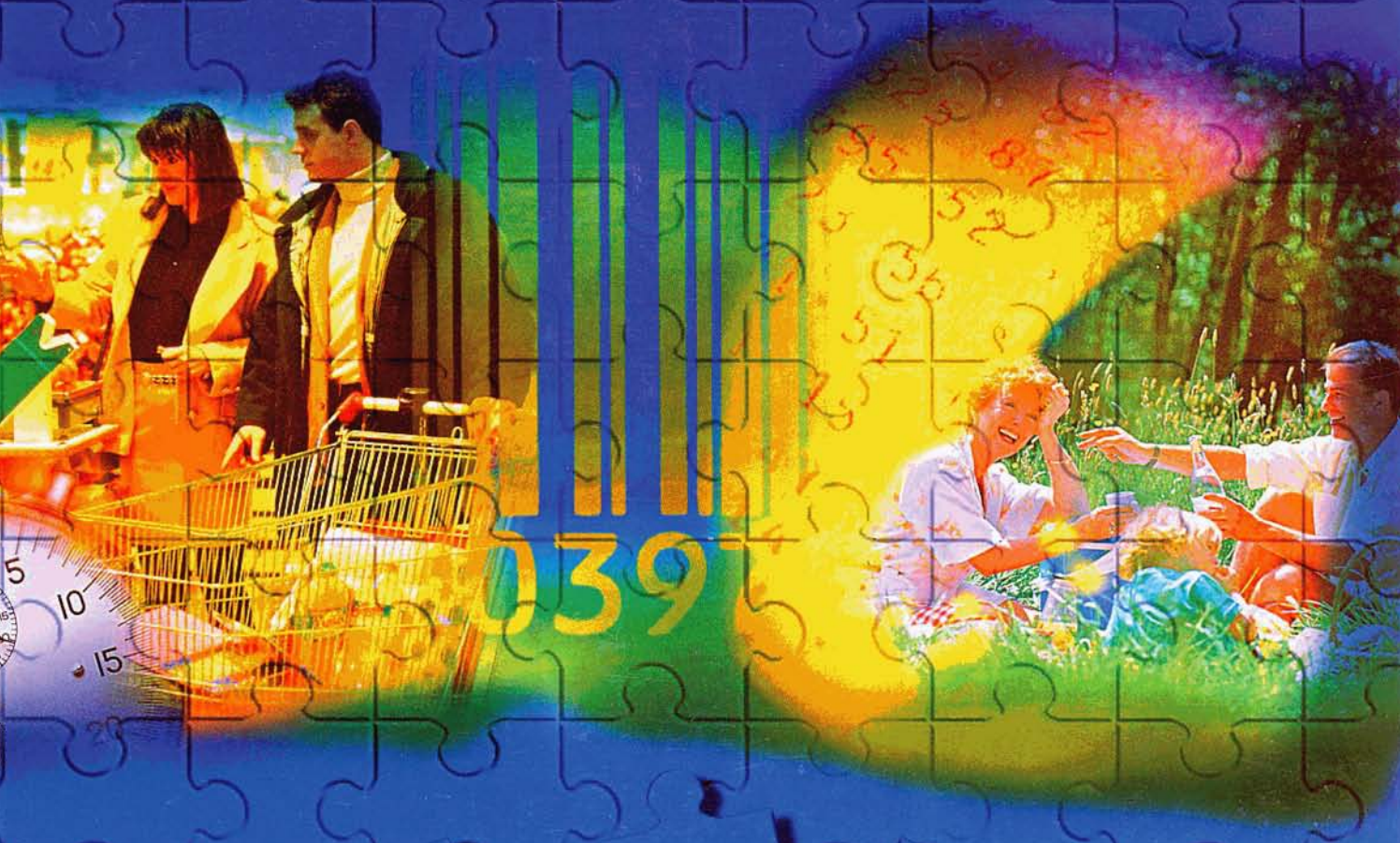
COLLABORATIVE POS DATA MANAGEMENT



ECR Europe
Efficient Consumer Response

Deloitte Consulting

ECR Europe Project

Collaborative POS Data Management

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Preface

When ECR Europe began to develop ECR principles and best practices, the focus lay on supply-side and demand-side concepts, followed by integration in 2000. This development has been accompanied by the establishment of enabling technologies and standards, making it possible for companies to efficiently exchange data and information. With these instruments in place, many companies across Europe have implemented ECR concepts and seen benefits.

The area of POS data management between retailers and manufacturers is still relatively unexplored, although everything seems to be available to perform ECR successfully. One of the reasons is probably that there are not yet any common principles for the sharing of POS data. However, in order to leverage the full potential of ECR, POS data is one of the major enablers.

For these reasons the ECR Europe Executive Board initiated the European project on POS data management, with the following objectives:

- Promote the exchange of POS data between retailers, manufacturers, and third party service providers
- Evaluate common benefits for retailers and manufacturers
- Recommend best practices on implementing POS data sharing
- Propose technical standards and how to apply them

Based on this brief, this document outlines best practice recommendations that provide a pragmatic approach to POS data management, i.e.:

- Showing where POS data management is necessary (ECR concepts)
- Giving examples of POS data management (case studies)
- Serving as an implementation guide by highlighting how to get started, how to develop, and what to bear in mind
- Motivating companies to adopt ECR concepts by showing the benefits

This guide provides companies with a pragmatic approach to POS data management, irrespective of their starting point or size. It will bridge the gaps that still exist in demonstrating that POS data management is one of the key enablers for almost any ECR activity.

We anticipate that this document will be an invaluable reference guide for POS data management and we trust that the information contained herein will drive all companies towards improved levels of collaborative practice and excellence.

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1. Executive Summary

Today leading organisations are investing considerable time and effort to make their product development, marketing, sales, and supply chain activities more responsive to consumer needs and more profitable. Whether driven by increased consumer demands or competitive pressures, these organisations understand that collaboration by adopting an ECR philosophy is a strategic imperative — a vital key to conducting business in the networked economy.

A major enabler for cross-company collaboration is the use of Point of Sale (POS) data. The collaborative use of POS data is at an early stage in Europe and there is tremendous potential for improvement.

POS data is defined as "product related information captured at an identified point of sale and generated by the act of purchase." In this context the definition of POS data excludes consumer data (e.g. loyalty card data), which will be addressed in alignment with the ECR Europe project group on CRM in a second step.

The ECR Europe POS Data Management Project Group has developed a four-step framework integrating strategic, conceptual, and operational elements of POS data management.

Figure 1: POS data management four-step framework
Source: Deloitte Consulting

Step 1: Define collaboration objectives and strategy

The initial step in collaborating on POS data management is to evaluate the current situation to gain a better understanding of the purpose, scope and potential benefits of exchanging POS data. The initial clarification of strategic issues and objectives between the trading partners results in a joint business plan and agreement on Key Performance Indicators (KPIs).

Key recommendations for Step 1:

- Evaluate the company's area of improvements
- Derive relevant collaboration strategy
- Ensure a joint understanding of category definition and role, i.e. a common understanding on the articles/products the collaboration initiative covers
- Jointly define specific objectives and project scope
- Jointly define measurable key performance indicators
- Agree on the business case

Step 2: Detail tactics along ECR Concepts

POS data plays its main role within four key ECR concepts.

1. Category Management (CM) including Efficient Assortment (EA), Efficient Promotion (EP), Efficient Product Introduction (EPI)
2. Optimal Shelf Availability (OSA)
3. Efficient Replenishment (ER) including Continuous Replenishment Programs (CRP) with special focus on Vendor Managed Inventory (VMI) and Co-Managed Inventory (CMI)
4. Collaborative Planning, Forecasting and Replenishment (CPFR)

Key recommendations for Step 2:

- Define detailed process of collaboration
- Collaborate based on the ECR concepts and follow their procedures
- Clarify specific wording in glossary or dictionary
- Build up realistic time frames and expectations
- Apply collaborative problem-solving and transparency of decisions

Step 3: Align elements for execution and operational excellence

The framework displays six dimensions which drive operational excellence.

1. Data Quality
2. Data Quantity
3. Communication and Identification Standards
4. Technology
5. Organisation
6. Legal

Key recommendations for Step 3:

- Ensure data quality by implementing multiple checking routines
- Build a data profile around a set of core data and add data attributes according to company-specific information requirements
- Use existing identification and communication standards wherever possible (i.e. GTIN/EAN, EANCOM..)
- Determine the level of technological investment by expected benefits (i.e. target costing approach) and along scenario 1-4 "from project to process"
- Deploy collaborative technologies when moving to sophisticated and frequent data exchange activities
- Build IT platform for future scalability, open design and high technical integration
- Assign ownership to the process and quality of data exchange
- Have local lawyer check legal compliance

Step 4: Review benefits and improve continuously

The expected benefits summarized in the business case and agreed by the partners determine the investment, the resources, and the technology to be deployed. Therefore the collaboration objective should be captured in a set of quantitative but also qualitative KPIs (such as a Balanced Scorecard). The KPI targets need to be set according to the level of sophistication of POS data exchange.

Key recommendations for Step 4:

- Focus on improving a limited number of KPIs
- Monitor not only financial KPIs, but also KPIs which measure performance of the collaboration process
- Measure frequently and regularly
- Work for short-term results, and build for a long-term relationship

Benefits and Challenges

POS data can provide some generic benefits due to its high level of detail, accuracy and near real-time availability. Combined with panel data and other sources of information, it has the potential to produce both tangible and intangible benefits for retailers and manufacturers. Theses benefits can range from more efficient promotions to improved ROI. A structural overview of potential benefits is given below.

The key to understanding the importance of POS data however, lies in their ability to trigger virtuous circles. POS data can improve the information basis for key management decisions, making them more near term, and even more differentiated and precise, driving cost out of the whole industry's supply chain and improving consumer service at the same time.

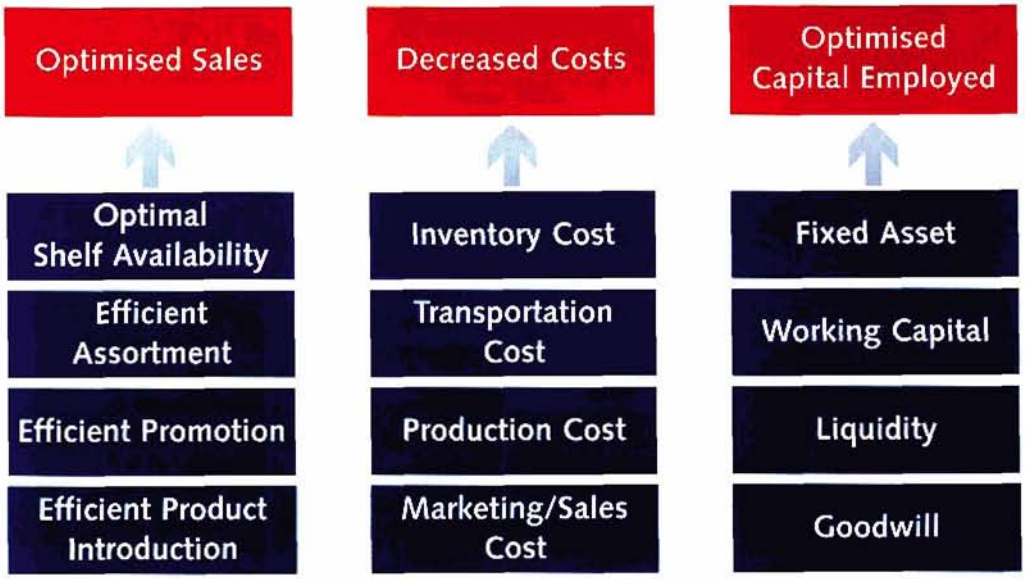

Figure 2a: Benefits from POS data enabled ECR concepts
Source: Deloitte Consulting

However, the data has to be transformed into actionable knowledge requiring investment in time and money for both parties. Typical challenges in POS data management are related to collaboration, data profile, and technology.

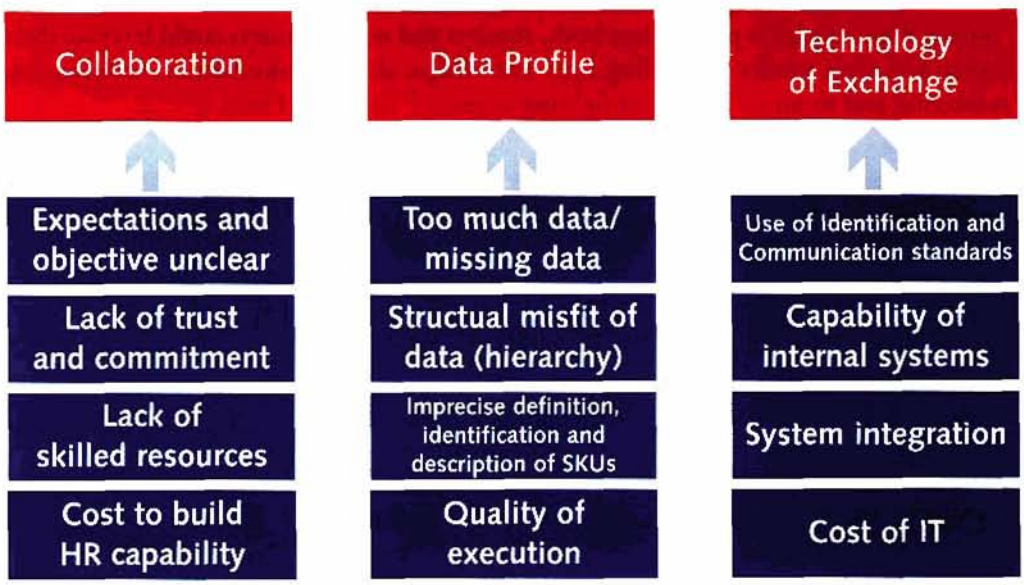

Figure 2b: Challenges from POS data enabled ECR concepts
Source: Deloitte Consulting

In order to overcome the challenges outlined above, the collaborating parties should follow a staged approach "From Project to Process". Both parties should start working on POS data exchange in a project-like structure, with low operational complexity and limited economical risk. This will allow for building confidence in a successful Return on Investment and trust in collaboratively solving future issues when moving to the next stage of sophistication.

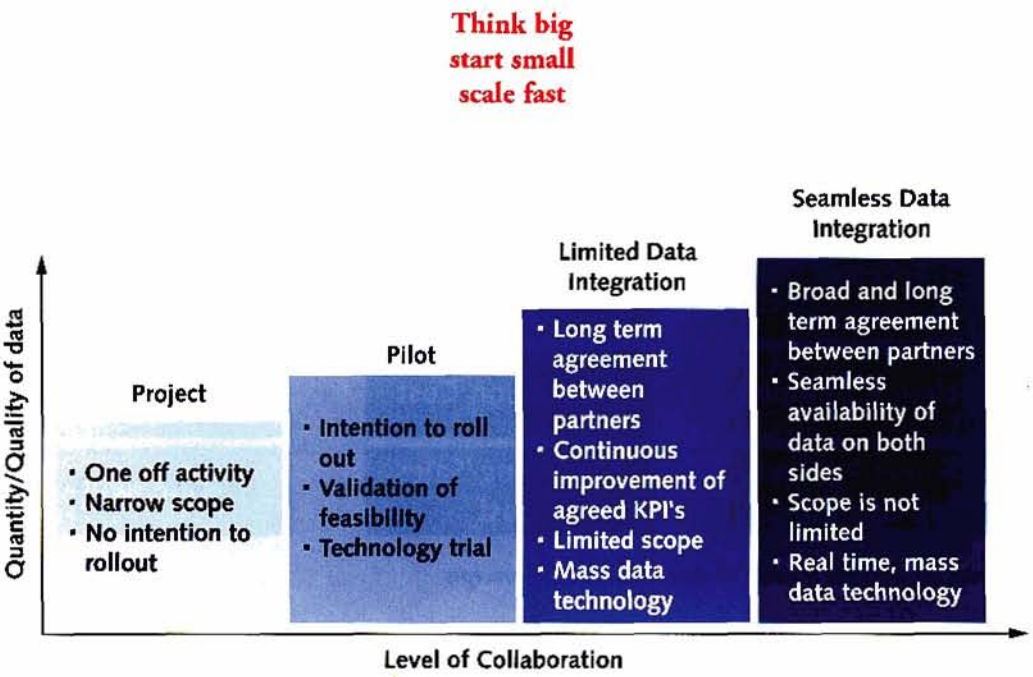

Figure 3: From Project to Process
Source: ECR Europe POS Data Management Project Group, Deloitte Consulting

"Surely, if knowledge is power, then both, retailers and manufacturers could increase their power and their profits by pooling their knowledge, sharing information, coordinating marketing and so on — instead of fighting as usual." [Industry Press]

2. POS Data Management in Context

The dynamics of today's market herald a challenging era in business relationships for manufacturers and retailers of Fast Moving Consumer Goods (FMCG). In particular the dynamic market is described by four major drivers about which industry executives are concerned. These are:

- Demanding, well-informed consumers
- Globalization
- Retailer consolidation
- Emerging new technologies

To address these changes, manufacturers and retailers are reconsidering how they think about their business relationships. Collaboration and seamless information exchange are examples which can lead to more efficient processes as well as gaining insights in operational performance and consumer preferences. Sharing data and streamlining an integrated value chain is the major aspect for improving strategic and operational decisions.

2.1 From Data to Benefit

POS data has to undergo some significant transformation in order to be turned into useful, action-oriented information. The value which retailers and manufacturers can derive from the exchange of POS data directly depends on their ability to master the transformation process.

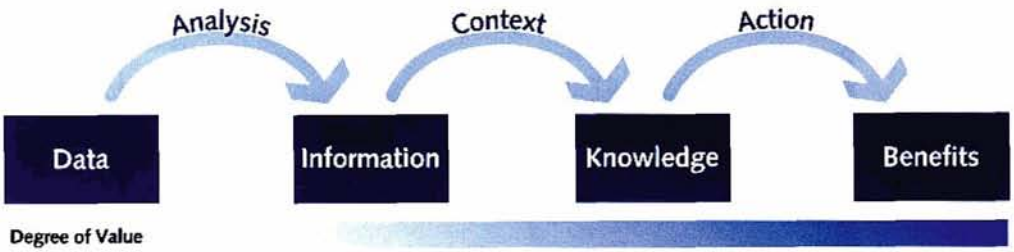

Figure 4: Transformation from data to benefit
Source: Deloitte Consulting

ECR concepts offer a wide range of analytical methods for extracting relevant information from raw POS data. The main analyses for each concept are outlined in the following sections.

To maximize benefits, however, it is not sufficient simply to analyse the POS data provided by the retailer. This data needs to be put in context with other sources of information (e.g. consumer panel, consumer research). Retailers and manufacturers alike need to provide equally important sets of information, in order to be able to build insight-knowledge of their combined businesses and to draw effective conclusions.

The final ingredient on the way to mutual benefits is action. The case studies in this paper show that results of POS data management can ultimately suggest far-reaching changes in the way the business is conducted, i.e. from change in promotional or logistics strategy for specific categories, groups of products or single SKUs, to plain listing and/or delisting of SKUs.

2.2 Current State in Europe

The ECR Europe Group conducted a survey among European industry experts, in order to understand the status of the practice in exchanging POS data in the various European countries. The objective was to evaluate to what extent POS data is provided by Europe's Top 50 Retailers.

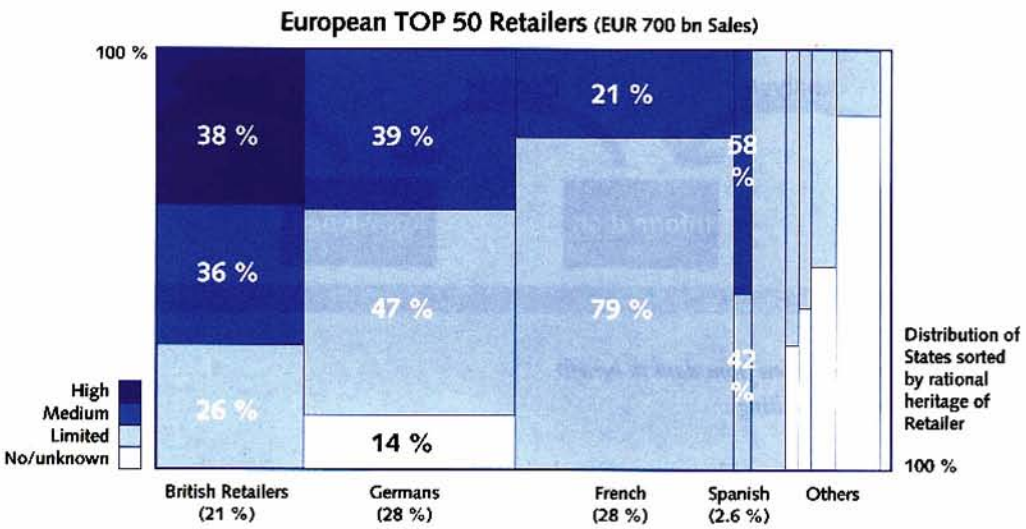

Figure 5: Current state of POS data management in Europe
Source: Qualified poll, ECR Europe POS Data Management Project Group.
Basis is Top 50 retailers of Europe, reported numbers 2001.

British, German and French Retailers represent 78% of the approximately EUR 700 billion total retail sales.

In the UK, the exchange of POS data is widely applied; 38% of sales of that segment share POS data to a high degree of sophistication. They can usually be identified by having sophisticated technology such as Extranets or Portals, which are able to provide data in great breadth and depth. Those in the next segment (36%) can be characterized as the "followers". They exchange data with some level of sophistication, achieving good results and putting significant effort into getting ahead. The remaining 26% are either in trials, first pilots, or other initial efforts. The results of the research reveal that there are many trials and pilots underway.

The leaders who have met the challenges and benefited from POS data management are differentiated by their:

- clarity of purpose
- use of technology
- collaborative approach to business relationships.

2.3 Outlook

Today, huge amounts of data are collected in retailers' and manufacturers' IT systems. The competitive advantage to trading partners will come from the capability to share, process and leverage this information. POS data, syndicated by market research companies, is already a standard business practice, whereas "direct" exchange between business partners has not yet reached this stage.

The existence and adoption of global communication and identification standards will support this process. With the standards defined by EAN.UCC, the handling and processing of data will be easier, quicker, and cheaper. Some retailers are making substantial investment in advanced technologies to share POS data. This will significantly improve the speed of widespread IT infrastructure adoption.

Managing POS data is only one step towards an integrated value chain of information, which will be further enriched by loyalty card data and future technologies such as Radio Frequency Identification (RFID). These future steps will boost the amount of available data but will rely on the same mutual understanding of how information and potential benefits are generated and shared.

3. POS Data Management Execution

POS data management execution follows an evolutionary cycle of strategy, implementation, and improvement — a self-reinforcing loop of collaboration effort and benefit. The ECR Europe POS Group has developed a conceptual framework integrating strategic, tactical, and operational elements of POS data management.

Figure 6: POS data management framework
Source: Deloitte Consulting

1. Define collaboration objectives and strategy:
Definition of the collaboration strategy is the initial step of any cross-company collaboration and should be based on a sound understanding of the company's current business situation. The extent of any data exchange is also influenced by these strategic decisions (see section 3.1).

2. Detail tactics along ECR concepts:
ECR provides the application areas for POS data within the Global ECR Scorecard. POS data management is recognized as an enabler for each of the ECR concepts. It is therefore not a stand-alone approach but a fundamental platform for overall collaboration. In practice, concept design is sometimes done outside the explicit ECR concepts, although the use of a proven approach and industry standards.

certainly gives collaboration a head start. This document follows the Global ECR Scorecard and highlights the four most relevant concepts: Category Management, OSA, Efficient Replenishment, and CPFR (see section 3.2).

3. Align elements for execution and operational excellence:
Operational excellence determines the success of a POS data management initiative as much as an innovative strategy for using the information. Six core parameters for operational excellence are Data Quality, Data Quantity, Standards, Technology, Organisation, and Legal (see section 3.3).

4. Review benefits and improve continuously:
Frequently rechecking with the business case and the monitoring of realised benefits against expectations ensures focus and continuous improvements throughout every stage of the framework. The adoption of a feedback-control system can lead to incremental benefits. POS data management is an evolution from "project to process", along levels of increased collaboration (see section 3.4).

3.1 Define collaboration objectives and strategy

At the beginning of any initiative to share POS data, the decision makers of the partners should meet and discuss the vision and strategic direction on how to better serve the consumer. This will help to ensure an alignment of expectations and can reveal any conflicts of interest early on.

The following questions could serve as a guideline:

- How do the partners view each other?
- What strategic direction of the other partner can be deduced from the outside, and how does it correlate with the actually intended strategy?
- What are the category-relevant short- and mid-term plans?
- What are the key functional strategies of each partner and what future developments need to be taken into account?
- What other aspects should be made explicit? (e.g., degrees of freedom)

- What should the purpose of the collaboration be?
- What opportunities are the partners aiming at?
- Which ECR concept can serve as a guideline?
- What data will need to be made available?

- Who will do what and when? (high level)
- What resources will be provided?
- What escalation process will be applied?

Figure 7: Guiding questions for defining collaboration objectives and strategy
Source: ECR Europe POS Data Management Project Group, Deloitte Consulting

It is imperative to initially gain a sound understanding about a company's current position in the collaboration initiative, and the expectations around the opportunity. Once the opportunity has been identified, the guiding ECR concepts can be agreed (such as Efficient Assortment, Efficient Promotion, etc.) and the corresponding data defined.

Figure 8: Context between collaboration strategy and POS data operations
Source: Deloitte Consulting

Many case studies were reviewed by the ECR Europe POS Data Management Group to determine the relevance and role of POS data. Several are summarized in this guide. These real-life examples illustrate the relationship between POS data and ECR concepts and demonstrate the broad applicability of POS data to various core concepts.

Key recommendations for collaboration objectives and strategy:

- Evaluate the company's area of improvements
- Derive relevant collaboration strategy
- Ensure a joint understanding of category definition and role, i.e. a common understanding on the articles/products the collaboration initiative covers
- Jointly define specific objectives and project scope
- Jointly define measurable key performance indicators
- Agree on the business case

3.2 Detail tactics along ECR concepts

ECR Principles:

- **Focus on consumers:**
  At the heart of ECR is a commitment to the belief that sustained business success stems only from providing consumers with products and services that consistently meet or surpass their demands and expectations.
- **Working together:**
  -> The second guiding principle is the recognition that the greatest consumer value can be offered only when we work together
  - both within our own company and with our trading partners;
  - to overcome barriers that erode efficiency and effectiveness.

  -> While ECR does not diminish the need for companies to apply good trading practices, it does open new opportunities for companies to differentiate themselves through:
  - their ability to work with their trading partners to bring more excitement to shoppers;
  - eliminating sources of costs and response times that add little or no value for consumers.

ECR differentiates between demand- and supply-side processes. Processes such as CPFR integrate both sides to exploit synergies across the whole value chain. All the processes are supported by the enablers which help to efficiently communicate the accompanying data and information.

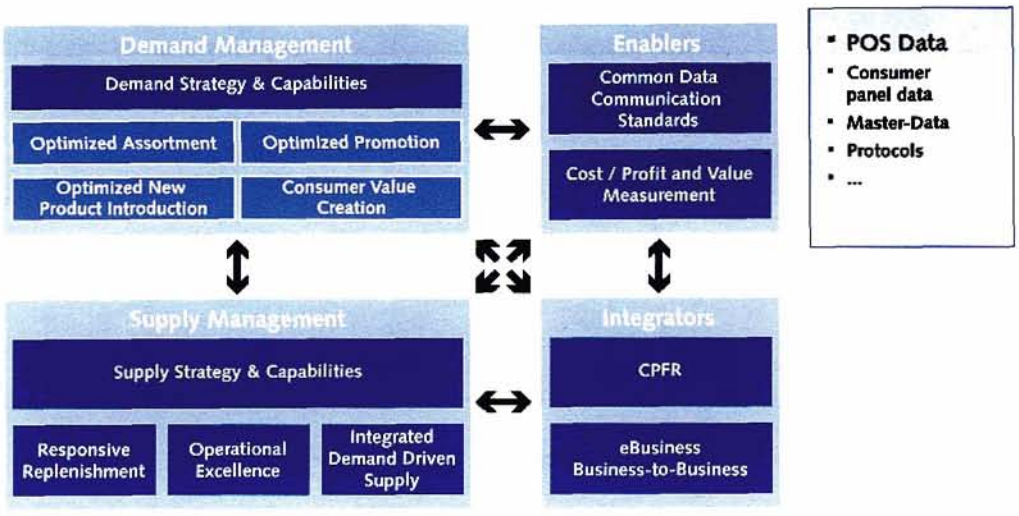

Figure 9: Global ECR Scorecard and the role of POS data management
Source: ECR Europe

Four relevant concepts,

- Category Management (Efficient Assortment, Efficient Promotion, Efficient Product Introduction)
- Optimal Shelf Availability
- Efficient Replenishment
- Collaborative Planning, Forecasting and Replenishment

and the individual roles of POS data and resulting benefits are detailed in the following chapters.

Key recommendations for tactics along ECR concepts:

- Define detailed process of collaboration
- Collaborate based on the ECR concepts and follow their procedures
- Clarify specific wording in glossary or dictionary
- Build up realistic time frames and expectations
- Apply collaborative problem-solving and transparency of decisions

3.2.1 Category Management

Traditional Category Management (CM) is based on the ECR eight-step approach which integrates all strategic, tactical, and operational aspects of demand-side collaboration in the areas of

- **Efficient Assortment**
- **Efficient Promotion**
- **Efficient Product Introduction.**

Concept of Efficient Assortment

The objectives of Efficient Assortment (EA) are to determine the optimal product offering that meets consumer needs as well as the efficient use of store and shelf space to achieve enhanced business results for retailers and suppliers.

Efficient Assortment as an improvement concept focuses on:

- Considering the role of the category within the retailer's portfolio
- Ensuring the assortment reflects the retailer's strategy
- Eliminating poorly performing SKUs or adding valuable SKUs
- Improving the shelf presentation of each category

The Role of POS Data in Efficient Assortment

Although the results of EA are company-specific, there is a common process to optimize assortments which consists of planning, executing, and evaluating individual categories and existing assortments.

This process uses assortment information about the relevant market to perform market segmentation. Syndicated data can provide this information on an aggregated level. Combined with traditional knowledge POS data provides the details needed for more specific assortment analysis (e.g. a company-specific fair share analysis). The results improve as the flow of POS data more closely approaches real-time.

Data from other sources is often required to support the use of POS data. For EA, for example, the following analyses are needed:

- Fair share analysis per subcategory, per category, per banner (benchmarking of market share)
- Category development versus banner development
- Category segmentation
- Category penetration
- Key selling brands / SKUs (SKU ranking, performers and losers)

The following case is an example of cooperation between Schwarzkopf & Henkel and a retail account in the area of Efficient Assortment:

Schwarzkopf & Henkel in this collaboration case covers two categories: Hair Care and Hair Styling. The assortment optimization was done only for the standard products, excluding promotions, displays, etc.

Both trading partners followed a three-step approach to optimise the categories:

1. **Market development:**
   The objective was to evaluate the market situation in general and assess developments and trends in the various subcategories or sales channels. Information for this step was obtained by analysing trade panel data.
2. **Penetration:**
   The objective was to evaluate which brands imperatively have to be in the core assortment of the retailer to ensure coverage of X% of the market. The analysis also brought up the penetration of the various brands in a defined past period. For this step, too, the information was obtained through analysis of consumer panel data.
3. **Sales performance:**
   The objective was to compare sales performance on national vs. account level. This way, an assortment can be created which maximizes retail sales. If products perform worse (at both market and account level) then delisting should be considered. For this step the information was derived from a third party information provider and POS data (account). Data fields needed were EAN, product description, brand, manufacturer, turn-over, sales volume, average turn-over per period, store count, number of selling weeks.

EAN	PRODUCT	HERSTELLER	BRAND	Sonderanalyse						Client X					Baustein			Feststellung	
				Absatz	Umsatz (€)	KW-Häuf. (max. 2080)	Vk/3-Häuf. (max. 20)	ø-Absatz pro Woche	Ranking (max 1000)	POS QTY	POS SALES	Avg. QTY sold per store	Store count	Ranking (max 75)	8 x 125 cm	6 x 125 cm	4 x 125 cm	Bemerkung	Empfehlung
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4045[illegible]3496	DRALLE ULTRA BEAUTY PFLEGE-SPÜLUNG INDIVIDRGANCE	GARNIER	Dralle Ultra	36	76,15	20	7	1,56	60	2064	3147,26	25,57	72	68	<	<	<		
4045[illegible]478	DRALLE ULTRA BEAUTY PFLEGE-SPÜLUNG OLIV	GARNIER	Dralle Ultra	924	1758,13	233	14	3,97	18	9926	14481,63	108,82	36	21	<	<	<		
4045[illegible]485	DRALLE ULTRA BEAUTY PFLEGE-SPÜLUNG ROSENÖL/FEIGE	GARNIER	Dralle Ultra	731	1404,74	227	14	3,22	30	7443	11378,27	83,63	36	35	<	<	<	unbekannt aus Ostsee	
4045[illegible]3483	DRALLE ULTRA BEAUTY PFLEGE-SPÜLUNG VANI	GARNIER	Dralle Ultra	960	1879,08	245	14	3,92	19	9301	14267,86	110,96	34	17	<	<	<		
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Based on POS data the SKU sales performance on national level and account level were ranked and then compared. The comparison was done by matching EANs. The product maturity was also considered (number of selling weeks, store count) to give a final recommendation to the retailer.

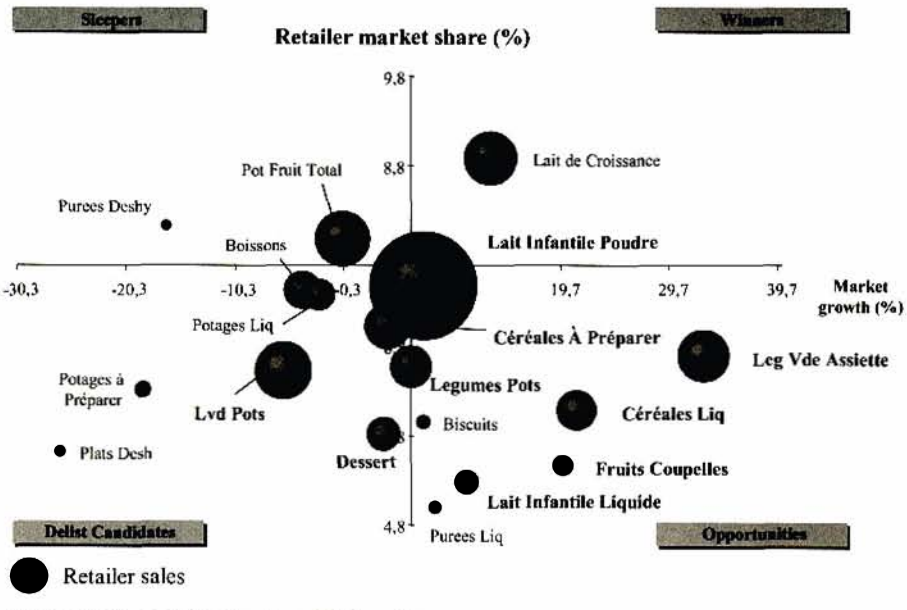
The following case is an example of cooperation between Nestlé and a retail account in France in the area of Efficient Assortment:

As Nestlé is continually analysing the performance of its products, it is essential to understand the relative contribution of all retail partners to the Nestlé product sales. Based on syndicated market data and on the POS data that Nestlé received from its retail partner, a collaborative analysis was set up in spring 2000.

The objective of this project was to understand the common growth opportunities for both parties in a specific product segment (baby food). By presenting category growth opportunities to its retail partner, Nestlé intended to increase product sales in the respective categories. An additional objective was to maintain and intensify the existing partnership by making meaningful data and analyses available to the retail partner.

Data Used

The retail partner provided POS data on SKU level on all store sales for the whole baby food category, including Nestlé's competitors' products. In addition, Nestlé provided syndicated panel data on market sales (per segment, sub-segment and brand) in the retailer's store format.



Source: Sydicated Data Provider; Retailer sales

At first, the data were used to understand the overall market position of the retail partner and its market share in specific categories. As the slide above shows, the retailer's store format has an overall market share of 7.6% (intersection point of axes). However, analysis of POS data showed that the retailer's market share in most baby nutrition categories was below its "fair share" level.

Further investigations showed that the retail partner operated with less shelf space and fewer SKUs than its competitors. With the mix of POS and market data, the business partners were able to elaborate on a number of KPIs, e.g.

- Retailer market share per category
- Retailer market share per segment
- Retailer market share per subsegment
- Retailer market share per brand

and match it against its fair share. The joint discussions of findings led to a more detailed category management collaboration, which allowed the partners to enlarge their respective market shares in this specific category.

Benefits

The fact that Nestlé's retail partner made POS data available allowed both sides to benefit from the results. The retailer extended the growing categories to extend its sales and market shares. The Nestlé benefits lie in the category extension as well. Benefits for the retailer were also on the cost side because he does not have enough human resources to conduct analysis of all categories. In addition, the beneficial collaboration based on POS data exchange helped Nestlé and its retail partner to intensify the existing relationship.

Concept of Efficient Promotion

The objective of Efficient Promotion (EP) is to better match the promotional product flow according to consumer demand, yielding substantial benefits in operations with optimised inventory levels. The second objective is to develop the best mix of consumer-oriented promotions within categories.

Major questions which have to be answered in order to define optimal promotions are:

- What promotional activities are occurring in the market (competitor intensity and number of promotions)?
- Do promotions in this category deliver real growth?
- Which SKUs deliver the greatest growth?
- What promotional mechanics should be used, at what times, to optimise the promotions mix?
- Which discount levels are most effective?

The Role of POS Data in Efficient Promotion

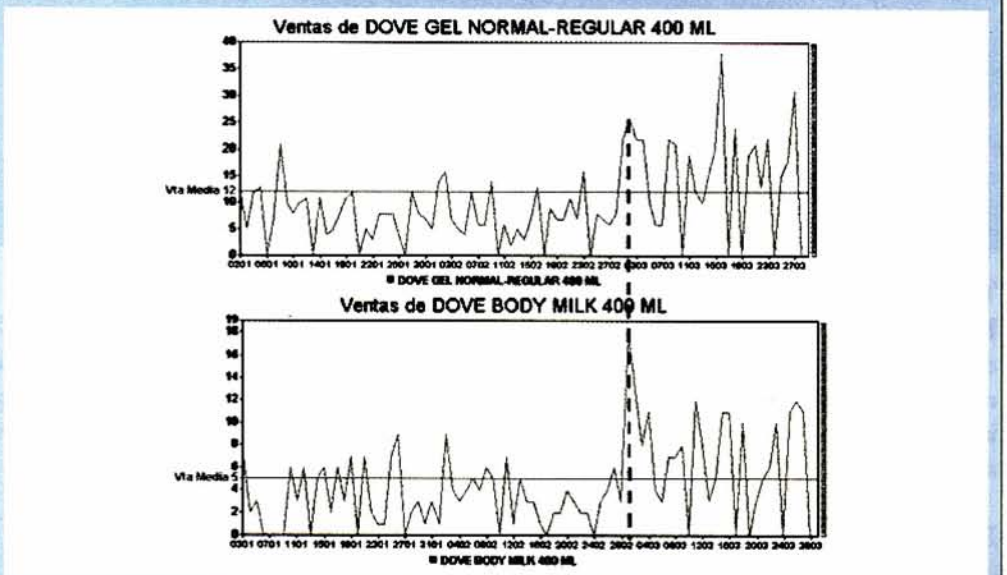
POS data enables the detailed analysis of promotional effectiveness. Sharing POS data using a collaborative approach provides both the retailer and manufacturer with an original set of data for the analysis of any promotional activity's success. When using this data it is important to bear in mind that other data sources must be used to validate the results in order to exclude diminishing factors (e.g. seasonal effects) to the highest degree possible.

For Efficient Promotion the following analyses are based on POS data:

- Incremental sales value / volume
- Promotion effectiveness ranking (promotion catalogue)
- ROI on promotional spending
- Category growth versus growth of market share
- Local promotional analysis (e.g. on store level)
- Evaluation of price elasticity

The following case is an example of cooperation between Lever Fabergé, Unilever's home and personal care business in Spain, and El Corte Inglés in the area of Efficient Promotion:

Lever Fabergé and El Corte Inglés embarked upon a large POS data exchange project in July 2000. The parties shared EAN codes and SKU sales volume at store level, on a daily basis. The example below shows how the data can be used to improve the understanding of the impact of in-store promotions on sales volumes.



For this newly developed multi-product display, Lever Fabergé and El Corte Inglés analysed the impact on sales. The display, which was backed up by a multi-category promotion, showed strong results: the upper chart shows the POS volumes for Dove shower gel and the lower chart shows body milk sales. The red dotted line marks the date when the display was set up.

The results clearly show that in this specific hypermarket the average sales went up significantly. Without POS data, the business partners would not be able to understand the immediate effect of such a promotion. The additional sales volume data can be used to run a business case on specific promotion types.

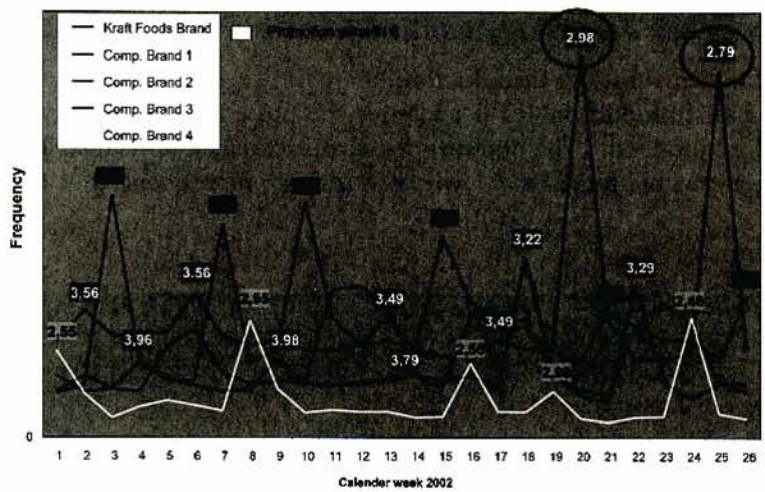
For the retailer, the advantages are obvious as well. El Corte Inglés can analyse whether the extra sales generated justifies the dedication of shop space to that specific promotion. Basket analyses can also show whether cross-selling effects take place.

The following case is an example of cooperation between Kraft Foods and a retail partner in the area of Efficient Promotion:

Introduction

Ground coffee is subject to extensive price competition in Germany. Even all premium brands are mainly sold on heavy price promotions. With its retail partner, Kraft Foods Germany used POS data provided by the retail partner to better understand the impact of price promotions.

Frequency of Shopping Basket



The retail partner provided POS data on store and SKU level. As Kraft Foods Germany is the category advisor to this retailer, the data also included POS data on the whole category. As a result of the analysis, several recommendations are developed for the ongoing collaboration with the retail partner on fine-tuning promotions and on other activities for this category.

Analyses performed and metrics

POS data are used to compare the performance of different price promotions in the ground coffee category. As the illustration above shows, the promotion led to a strong increase in purchases of the promoted Kraft Foods brand. The analyses also revealed that the total additional promotion turnover with this particular brand is more than two times larger than the additional turnover generated by a price promotion with a competitive brand. By analysing the sales volume it could also be demonstrated that the efficiency generated by the promoted Kraft Foods brand is significantly higher than with competitive brands on promotion.

Project Management
The handling of the POS data takes place within the Category Management Group of the customer account team and the trade marketing group. The preparation and analysis of the data received is part of the everyday work and does not require additional resources or infrastructure.

Benefits
The benefits in this case arise from the better insights in price promotion effectiveness. Based on POS data, Kraft Foods was also able to demonstrate that frequent price promotions generate more sales and efficiencies in this category than the EDLP (every-day-low-price) pricing strategy run by the retail partner. Based on these findings, the retail partner decided to switch to a promotion-based pricing strategy for this category.

Concept of Efficient Product Introduction

Efficient Product Introduction (EPI) addresses the process of jointly developing and introducing new products. The objective for manufacturers and retailers is to develop more consumer-oriented products at lower costs through more cooperative efforts.

EPI focuses on:

- Understanding consumer needs
- Elimination of complexity
- Reduction in time and costs
- Optimising product development with better testing possibilities and faster response to consumers' acceptance or rejection
- Controlling the launch of new articles and avoiding launch failures

Although the EPI concept has not yet reached the global process stage, some pilot projects have shown benefits. For both retailer and manufacturer, POS data management in the context of EPI provides the following opportunities for improvement:

- Shorter time to market
- Improved understanding of consumer acceptance (sell-out)
- Lower product introduction failure ratio
- Better insight to individual product life cycle (dynamics)
- More accuracy in allocating product launch budgets

The Role of POS Data in Efficient Product Introduction

The use of POS data in the context of EPI is possibly the most valid source of information for supporting the execution of launch control and market tests.

During the launch phase, the introduction and event execution is planned. Both parties should plan an introduction based on experience from similar past product launches and POS proven success (e.g. based on a promotion catalogue). Continuous monitoring of POS data indicates the success of a product launch at an early stage (flat vs. steep take-off curve). With timely availability of POS data, supporting activities can be adjusted during launch execution.

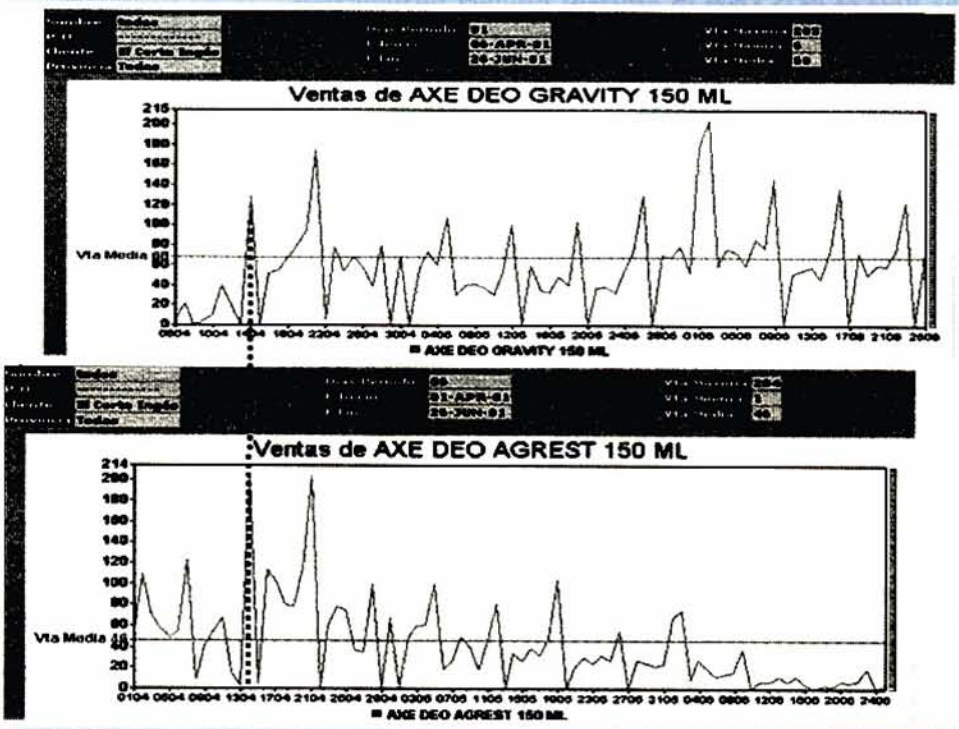
For Efficient Product Introduction the following analyses are based on POS data. These analyses can be applied to both test market and launch control:

- Evaluation for controlled distribution build-up (per store, per region, per banner)
- Analysis for controlled product shifting (e.g. sell-out of the old product, consumer acceptance of the new product)
- Evaluation of supporting introductory promotions for an optimal launch support
- Pipeline analysis (size, turnover)

The following case is an example of cooperation between Lever Fabergé, Unilever's home and personal care business in Spain, and El Corte Inglés in the area of Efficient Product Introduction:

Lever Fabergé, Unilever's home and personal care business in Spain, and El Corte Inglés began a large POS Data exchange project in July 2000. The parties share EAN codes and SKU sales volume on store level, on a daily basis.

The second example from this collaboration shows another application area of POS data: launch of a new product and substitution of the previous variant. POS data were used to analyse the timing of the product switch.



In the above figure, the two graphs show the sales data of a deodorant in one particular store for the newly introduced variant (upper graph) and the older variant which is to be faded out (lower graph). The red dotted line shows the date when the new variant sales started to become relevant.

The data show that there was quite a long overlap in terms of sales volume for the two variants and that it took more than two months until the old product variant was sold out.

Analysing this data can clearly help to plan the switch of products more accurately. Lever Fabergé has gained a much better insight on the optimal time to put an order stop on a certain product to avoid long overlap of shelf life and to better support the launch of a new article.

Benefits from Category Management

ECR case examples provide information about potential improvements by implementation of POS-enabled Category Management:

- Up to 10% uplift in sales
- Product margin increases of up to 3 percentage points
- Inventory reductions of up to 15%

Retailers and manufacturers alike can achieve improvements:

- Shopper loyalty and consumer satisfaction
- Faster stock turns
- Reduced out-of-stock occurrences
- Improved asset utilization
- More efficient replenishment

3.2.2 Optimal Shelf Availability

Concept of Optimal Shelf Availability (OSA)
OSA is a methodology based on a simple principle measuring partial and total (complete) stock outs by comparing "real" sales of one item on a daily basis with "normal" expected sales:

- one product which has normal sales displays perfect availability;
- one product which has low sales is partial out of stocks;
- one product which has zero sales is total stock outs.

A number of studies show the impact of out-of-stock (OOS) situations on consumer brand and shop loyalty. OOS is relevant both to the supply side and the demand side. Recent studies show an OOS rate in Europe between 7% and 10%.

The following graph shows consumer reaction patterns to OOS situations and explains very clearly why out-of-stock situation are more than critical to retailers and manufacturers (numbers are %).

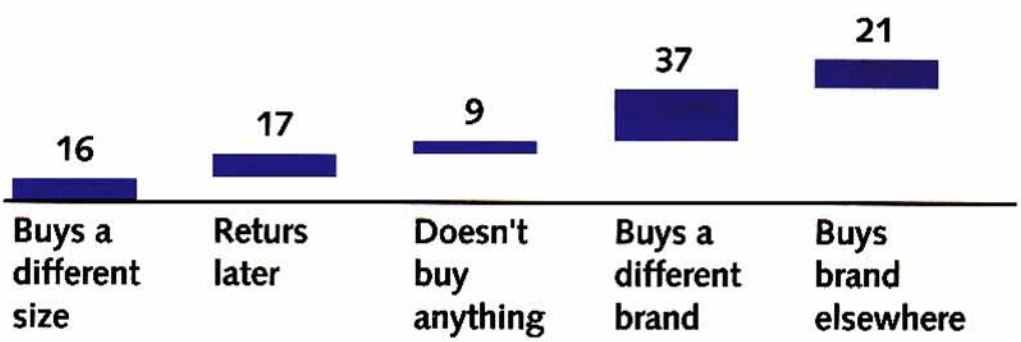


Figure 10: Common reaction patterns to OOS among European consumers (in percent)
Source: ECR Europe OSA study, 2002

Overall 9% of purchases are lost due to OOS, with consumers tending to switch brand (37%) rather than switch store (21%). This behaviour can vary slightly depending upon product category and the purpose of purchase.

OOS in Europe is estimated to cost about EUR 4 billion a year in lost turnover, which corresponds to approximately 1% autonomous growth p.a. for the FMCG industry. The upside for trading partners is to gain as much as 60% of the sales lost through OOS.

Three different types of Out-of-stock situations can be segmented:

1. Classic OOS: Shelf label but no product
2. Dual placement OOS: Product on shelf but not on secondary site and vice versa
3. Delisting OOS: Product listed but taken out by store staff

The ECR Europe OSA study identifies seven key conclusions regarding on-shelf availability:

- Availability drops in the last 50 meters to shelf
- The level of OOS relates to the characteristics of a category
- Non-promotional items perform better than promotional items
- Stores and store formats differ considerably
- The peak shopping days are the most affected
- High inventories can lead to poor availability
- There is no significant difference between Distribution Centre & Direct Store Delivery items

The Role of POS data in OSA

Measurement is a key prerequisite to tackle the OOS problem. Without measurement there will not be awareness of the existing problem, neither of the financial impact nor of the negative impact on shoppers' perception. There are basically two approaches to measurement - physical counting or using POS data. Physical counting, the direct approach, means going into the stores, physically counting the effective OOS by using in store staff or a third party looking for shelf gaps.

The use of POS data is this context provides some obvious benefits: POS data help to "automatically" identify atypical low sales or no sales, which is equated to partial or total stock outs. Using this approach gives management a performance measurement tool on a daily basis.

In addition to the identification of out-of-stock situations, POS data can also help to understand the significance of the problem, i.e. the "lost sales" (the amount of merchandise that could not be sold). As indicatively illustrated below, weekly POS data describe lost sales volume during a particular time (e.g., day) as the difference between "no sales" (resulting from an OOS situation) and the sales during the previous time period. However, there are some limitations to the conclusion as it requires a certain turnover frequency of the analysed articles.

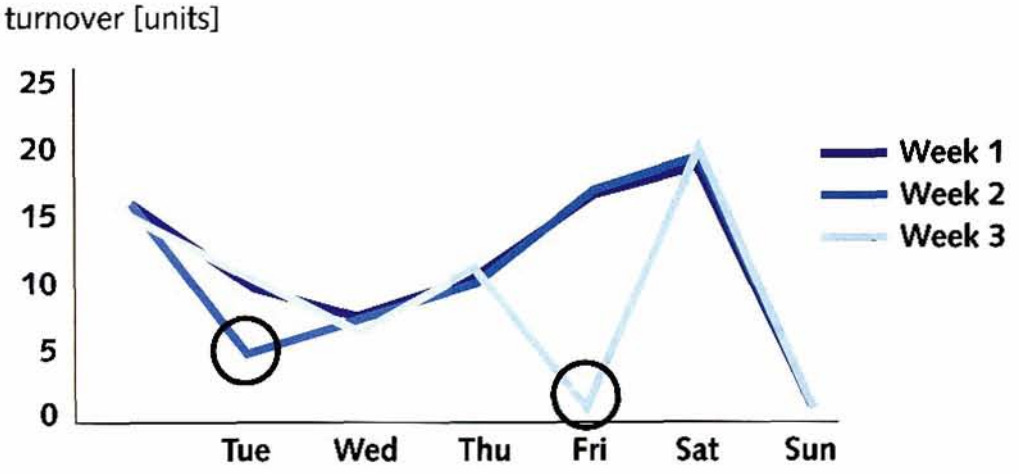


Figure 11: Illustrative indication of OOS based on POS data
Source: ECR Europe OSA study, 2002

The entire concept of POS data based measurement of OOS focuses on an early warning system functionality triggering further root cause analysis (e.g. "store ordering", "shelf replenishment", "inventory inaccuracy", and "delisting by store staff") detailed in the ECR Europe OSA publications.

For OSA the following key analyses are based on POS data:

- OOS occurrence (items that are not sold over a certain period of time)
- % OOS (number of items not available divided by the number of items)
- % On-Shelf Availability (number of days or hours the product is available on the shelf divided by a defined period of time)

Reasons for OOS situations are manifold and an initial step is to identify where and when out-of-stock situations appear.

The following example from Procter & Gamble shows how POS data can help to identify OOS.

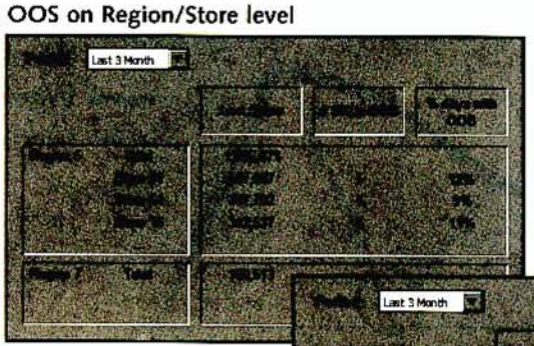
Objectives
Main objectives of P&G and its retail partners were to jointly

- determine key out-of-stock issues on EAN and store basis
- conduct a once-off analysis to understand possible OOS systematic
- perform ongoing analysis to track & fix OOS immediately

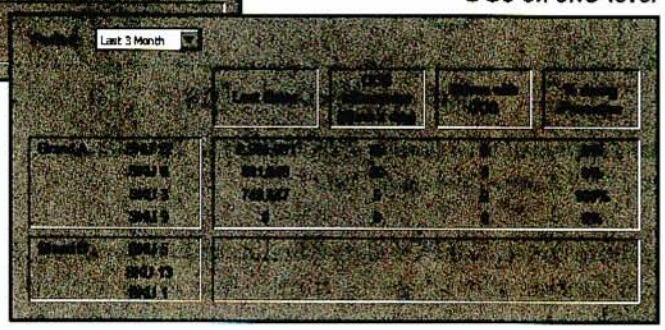
POS data play an important role here as the data provided are used as indicators for OOS situations. They are put into context to understand what activities have to be triggered to improve the processes.

Levels of analyses

OOS on Region/Store level



OOS on SKU level



Data used

The data P&G receives from its retail partner includes the EAN code, article text, store number, number of sold articles, and total article turnover. There is an indicator for articles currently on promotion. The aggregation is on store and day level. The data comes in on a weekly basis. The scope is limited to one category and to P&G products only.

P&G and its retail partners have chosen EDI as the exchange application via X400. The EANCOM® standard data format SLSRPT (Sales Report) is used.

Analyses performed and metrics

As the actual data do not describe out-of-stock situations, P&G has developed indicators and calculation rules to determine OOS situations in the store. An average sales volume per store is defined, distinguishing between promotional days and non-promotional days. In addition, a threshold value is defined to describe when a product is taken into calculation.

Specifically, if accumulated weekly sales of a specific product are either zero or significantly below the average weekly sales of this specific product, the product is considered to be out of stock. The collaborating partners are aware of the fact that this is quite a strong assumption.

Alternatively, a product is out of stock if there are no sales over a full day or, for promotional items, if the average sales during a promotional day fall below 5% of the average daily promotion sales. The OOS data is being extrapolated to estimate the so-called "lost sales".

Based on the OOS data developed, further analyses are run to understand the underlying reasons. Experience shows the following reasons can be distinguished:

- OOS on product level to determine issues (possibly systematic issues) on certain SKUs/Brands/Sizes
  Root cause:
  -> short shipments (usually known in advance - so no news)
  -> issue on shelf: e.g. shelf space, shelf tags for replenishments
  -> forecast/planning: usually on promotional EANs
- OOS on regional level to determine issues within certain stores or regions
  Root cause:
  -> OOS in multiple stores in one region: DC/distribution issue
  -> OOS in certain stores (repetitively): Store/replenishment; work process issue

In summary, the OOS data developed from the POS data are the starting point for further investigation into possible subsequent process optimisation and, as a consequence, for other collaborative projects to follow.

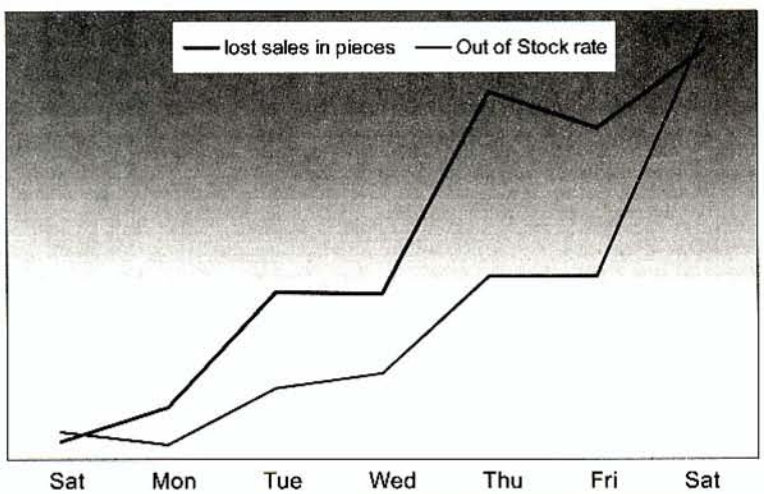
Project Management
The handling of the POS data and the analysis is part of the account team's work. There is no specific organisational structure required. The results of the data usage are part of the ongoing collaboration with the retail partners in various projects.

Results and lessons learned
The example shows that benefits from POS data exchange can be achieved little technical or organisational changes. The aggregation of data and longer-term analyses helped to get a better understanding about the overall process quality as well as about P&G and its retail partners performance. As POS data "confirm" out-of-stock situations, the trading partner can jointly work on the causes and generate mutual benefits from OOS avoidance.

The following case is an example of cooperation between Kraft Foods and a retail company in the area of Optimal Shelf Availability:

Introduction
This case demonstrates the use of POS data by Kraft Foods together with a retail partner to reduce out-of-stock situations.

As Kraft Foods Germany is the category leader in coffee at this retail company, the POS data exchange takes place within an existing collaboration.



The product in scope of this case is ground coffee which is a very fast mover in the German market, sold largely on price promotions (see also Kraft Foods case for Efficient Promotion).

Objectives
Heavy price promotion activities usually create strong demand for the promoted brand. As a result, the outlet shelf stocks last between fewer than two and five days. Kraft Foods Germany used POS data exchange to better understand the impact on temporary price promotions on shelf availability.

Analyses performed and metrics
As a basic assumption, zero sales over a period of a half day or longer were understood as an out-of-stock situation in a store.

The POS data were used to analyse the "lost sales", calculated as the average daily sales volume missed due to the unavailability of the product on the shelf.

Project Management
The initiative is placed within the Category Management Group of the customer account team and the trade marketing group of Kraft Foods Germany. The preparation and analysis of the data is part of the everyday work and does not require additional resources or infrastructure.

Results and lessons learned
POS data clearly help to better understand out-of stock situations. Based on the received data, Kraft Foods was able to understand how long shelf stock can cover the demand for the promoted product on particular promotion price levels. It became obvious that shelf stock is not sufficient to cover a promotion and that replenishment from a central or outlet warehouse is not always fast enough.

As a result of these findings, the retail partner followed Kraft Foods' recommendation to introduce a central allocation of stocks based on a secondary placement concept with a differentiation by SKU and outlet size.

Benefits from OSA
Some early ECR Europe OSA trials have produced encouraging results:

A Finnish retailer has cut the level of OOS by half, by introducing:
- sales/ POS data based ordering
- collaborative availability management
- a centralized measurement system

A British retailer reduced OOS by 40% through close management attention. New shelf technology and change activities such as specific training of staff and supplier collaboration were also used.

Both examples have in common that they start with measurement to establish OOS transparency and focus management attention. Work on the details follows, leveraging the power of joint analysis of bilateral information.

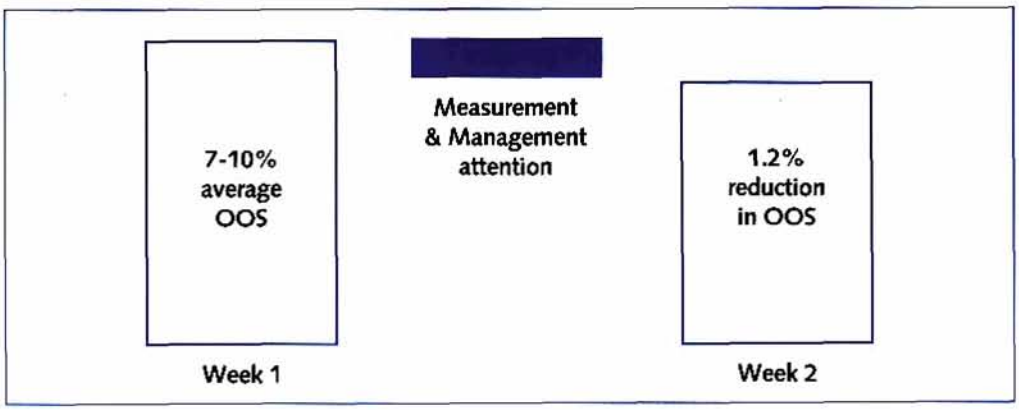


Figure 12: OOS reduction by measurement and management attention
Source: ECR Europe OSA study, 2002

3.2.3 Efficient Replenishment

Concept of ER
"Efficient Replenishment (ER) links the consumer, retail store, retailer distribution centre, and supplier into an integrated system. Accurate information flows quickly through EDI linkages between trading partners, while products flow with less handling and fewer out-of-stocks from the supplier's production line into the consumer's basket." [Source: Category Management Best Practice Report, ECR Europe]

The purpose of ER:

> Supplier and retailer work together to ensure provision of the right product, to the right place, at the right time, in the right quantity, and in the most efficient manner possible.

ER processes have been grouped under four headings and aligned with the sets of EDI messages required to support them:

Process	EDI Messages to support Efficient Replenishment	Processes and Tools to support Efficient Replenishment
Master Data Alignment	Messages needed to ensure that product and location numbering is common between trading partners	Utilization of datapools
Ordering	Messages which generate and communicate the requirement for a supply of goods	Continuous Replenishment Program (CRP): • Vendor Managed Inventory (VMI) • Co-Managed Inventory (CMI) • Buyer Managed Inventory (BMI)
Physical Distribution	Messages which generate and communicate instructions to move the goods	Cross Docking (CD)
Finance	Messages which are concerned with the payment for goods supplied	Electronic Funds Transfer (EFT)

Figure 13: Efficient Replenishment processes and methods

This document focuses on the role of POS data management in CRP and within CRP on VMI and CMI. CRP changes the traditional replenishment process of retailer-generated orders to one of partnership amongst trading partners where the replenishment quantities are agreed based on stock and sales information.

The Role of POS Data in CRP

The optimal supply chain is driven by consumer purchase (pull). The act of purchase by definition generates a set of POS data. Therefore POS data should be made the key driver of an integrated supply chain. The focus of CRP is to replenish products based on actual and forecasted sales. With inventory management (VMI, CMI), consumer demand drives replenishment orders and shipping.

In VMI, the supplier maintains the replenishment system. Sales/POS data and inventory data are transmitted from the buyer to the supplier and triggers forecasts, orders, shipping and financial transactions.

In CMI, a proposal order is generated by the supplier, and revised and confirmed by the buyer. The fundamental difference between Vendor Managed Inventory and Co-Managed Inventory is the fact that the buyer maintains the responsibility for the replenishment in Co-Managed Inventory.

The flow of information for CRP using EANCOM® messages is shown below.

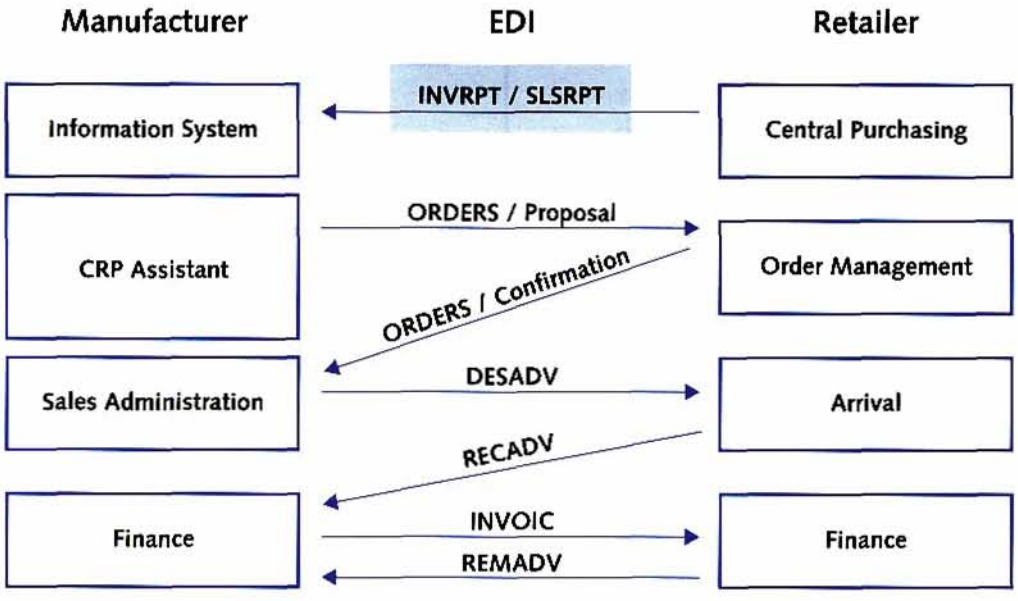


Figure 14: EANCOM® based information flow for CRP
Source: EAN.UCC

The conclusion is:

- VMI and CMI run better with sales and inventory data. They are the basis for order calculation and forecasting.
- INVRPT and SLSRPT are appropriate EANCOM® messages for the exchange of POS data.

POS data is used in the following CRP key analysis:

- Forecast Accuracy
- Inventory Volume
- Out-of-Stock Analysis
- Service Levels

Benefits from CRP

CRP can provide a series of benefits to both, retailers and manufacturers. However, it is important to ensure that savings made in one area do not result in additional costs in another area. So the goal for each partner is to find the balance between benefits.

Tangible Benefits	Intangible Benefits
• Lower inventories / storage requirements • Improved warehouse operations • Optimised use of vehicles • Elimination of out-of-stocks • Reduced returns and refusals	• Simplification • Integration of supply side processes • Enhanced communication • Increased flexibility (time to market)

Figure 15: Benefits from POS enabled Efficient Replenishment
Source: ECR Europe POS Data Management Project Team, Deloitte Consulting

In summary, POS data delivers a clearer and more up-to-date picture of the situation of a particular article or category in a particular store than a manual measurement — probably at lower costs. Thus POS data exchange should be initiated if detailed information on shelf availability is needed on a regular basis. This applies especially to the described collaboratively managed order processes.

3.2.4 CPFR

Concept of CPFR

Collaborative Planning, Forecasting and Replenishment (CPFR) is defined as a business process for value chain partners to coordinate plans in order to reduce the variance between supply and demand and share the benefits of a more efficient and effective supply chain. Thus, the overall goal of Collaborative Planning, Forecasting and Replenishment is "total supply chain collaboration among all trading partners who touch, or have an effect on the value of the product to the end consumer." [Source: Supply Chain Management Review]

Core elements of CPFR:

- Greater sharing of data and responsibility
- Common objectives and metrics (KPI)
- Forecasts aligned and time-phased across supply chain
- Managed by shared exception criteria, i.e. pre-notification of issues in meeting consumer demand
- Committed forecast

The CPFR model follows a nine-step approach through a Planning, Forecasting and Replenishment cycle:

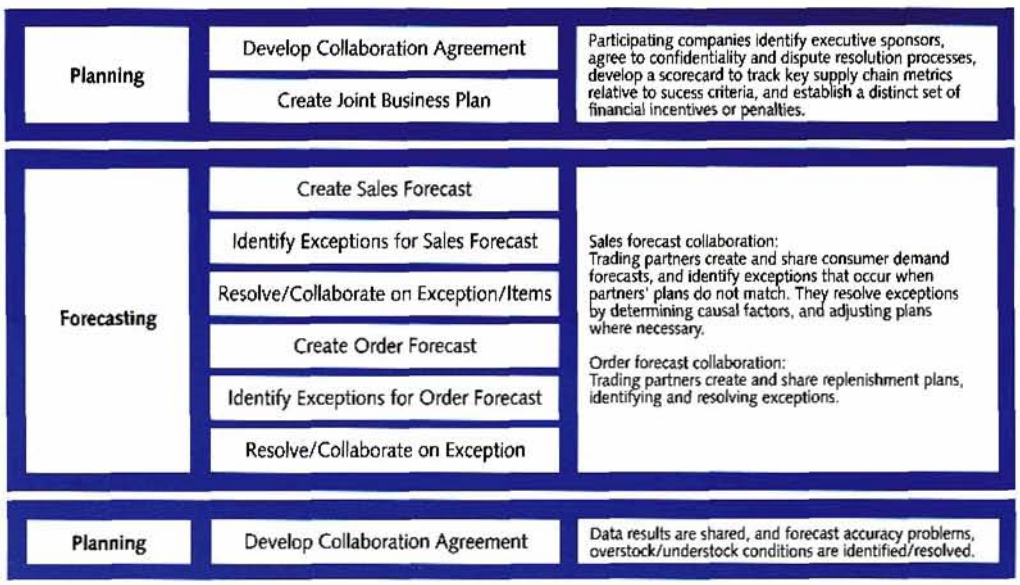


Figure 16: ECR Europe nine-step process for CPFR
Source: ECR Europe: Guide to CPFR implementation, 2001

The Role of POS Data in CPFR

One element of CPFR is the **ability and willingness to share different kinds of data** (e.g. forecast, inventory, POS). Shared data enables business partners to integrate supply chains and to act on opportunities and issues. It also facilitates a fast and thorough understanding of the capabilities of each individual partner.

In the past, both manufacturers and retailers developed their own consumer demand forecasts based on their internal and syndicated data. Today, however, by sharing and analysing POS data, retailer and manufacturer alike are in a position to derive more accurate forecasting parameters giving better forecasts. In addition, by installing a real-time feedback loop with POS data, forecasts can be adjusted along actual consumer off take.

For CPFR, an integrated concept, there is an overlap of relevant analysis, such as for the evaluation of inventory, forecast accuracy, service level, OOS, etc.

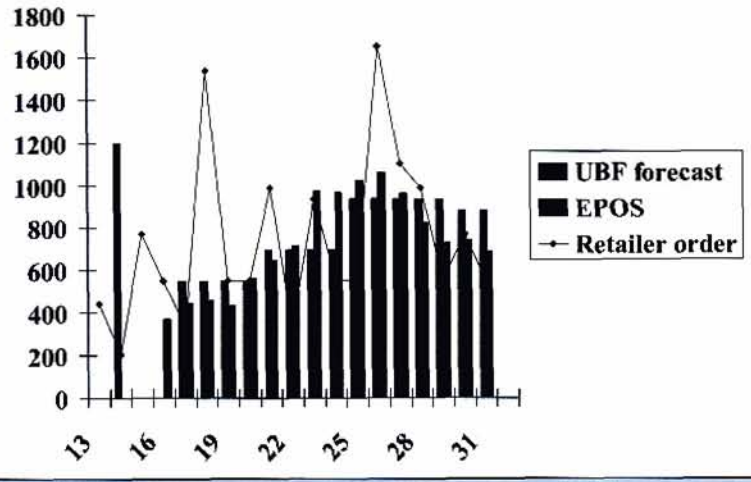
The following case is an example from Unilever Bestfoods, UK in the area of CPFR:

In the UK, a number of retailers started publishing POS data in the late 1990s. This meant that Unilever could access data for its entire product portfolio in three or four retailers simply via accessing an extranet web site. The data provided to Unilever allowed deeper analysis than before as its retail partners made available daily POS data on SKU level, which was used to support the understanding of a products performance in its launch phase in the UK. Recognising the importance of this data Unilever embarked upon a project to integrate the retailer data directly into its ERP systems.

Unilever used the POS data to achieve the following objectives

- Improve forecast quality and accuracy
- Understand the consumers reaction on advertising and promotion
- Allow faster reaction to changes
- Spot emerging trends at an early stage
- Share results with the retail partner and facilitate dialogue based on common understanding
- Facilitate improvements in consumer availability.

Basically, there were three types of data used for the analyses. The Unilever forecast data is used to plan production schedules. The order data is helping to understand the retailers stock position. The POS data show the actual sales data at an SKU level.



What POS data can tell you.

In the above example we can see how readily available POS data helped during the launch of a new product accompanied by TV advertising. Before the actual product introduction, the retailer orders were quite below the forecast expectation. During the calendar weeks 13-16 the retailer started its stock piling activities but the order volumes were very heterogeneous. Right after the product introduction the orders reached a short-time peak as a result of the trade marketing campaign that Unilever was running shortly before the product launch. At that point, the availability of POS data provided first benefits: The enormous increase of the retailer order in calendar week 19 could have led to the conclusion that there is a there is a trend to very high demand at an early stage of the product introduction. But the POS data received from the retailer showed a relatively constant level of consumers' purchases so it was decided not to change the forecast at that stage.

At a later stage of the launch (calendar week 24 and onwards) consumer advertising performed as expected, and as the POS data showed solid growth, the forecast could again be adjusted based on valid data. From week 30 it was apparent that the impact of the TV advertising which had accompanied this launch was declining more rapidly than expected. It was possible to make reductions in the forecast alleviating pressure on the supply chain.

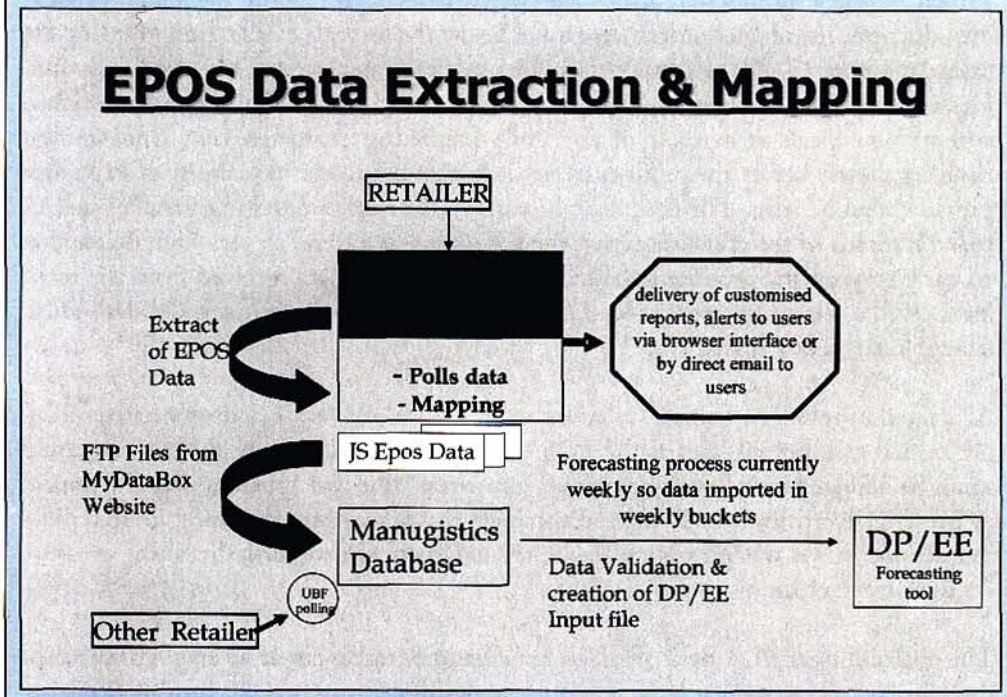
The availability of POS data provided benefits to both parties at all stages of the product lifecycle. The forecast accuracy could be significantly improved. Instead of relying on the retailer order data only, POS helped to increase the understanding of retailer and store performance in more detail and within a timeframe that enabled appropriate discussions and actions to take place. In addition, the analyses of POS data gave some helpful input to understand the impact of marketing and advertising activities.

Data Integration

The project to integrate the retailer data directly into Unilever's ERP systems started in Autumn 2000 and for three retailers, data was completed in early 2001. Further retailers have been brought on stream as their data has become available. Additional retailer data has now been integrated and circa 75% of all consumer data is now integrated into the ERP system.

A key objective of this project was to integrate the retailer data directly into the ERP systems — this ensured that key users of the data were able to see the data as a matter of course and could integrate the analysis into the ongoing demand planning task.

Different retailers publish their data with different definitions, timeframes and different metrics. The first step in the project was to collect the data from the various sources in an automated way. The challenge of different retailer data structures and data definition was overcome by producing mapping tables that enabled retailer data to be mapped directly to Unilever data hierarchy. The final step in the process involves the automated transfer of the mapped and cleaned data directly into the forecasting system.



As well as integrating the data into the forecasting system it has also been possible to automate the production and distribution of user specified reports based on the data collected to many users throughout the business. User specified alerting is also possible.

Summary
Retailer data integration has enabled Unilever and its partners to get the most out of the data available and deliver benefits across the entire supply chain to the benefit of all. In the long run, further automation capabilities are planned to allow management on exception basis, analysis and integration of additional data streams including stock and service level.

Benefits of CPFR
In a recent survey eight potential benefits of CPFR were identified and evaluated:

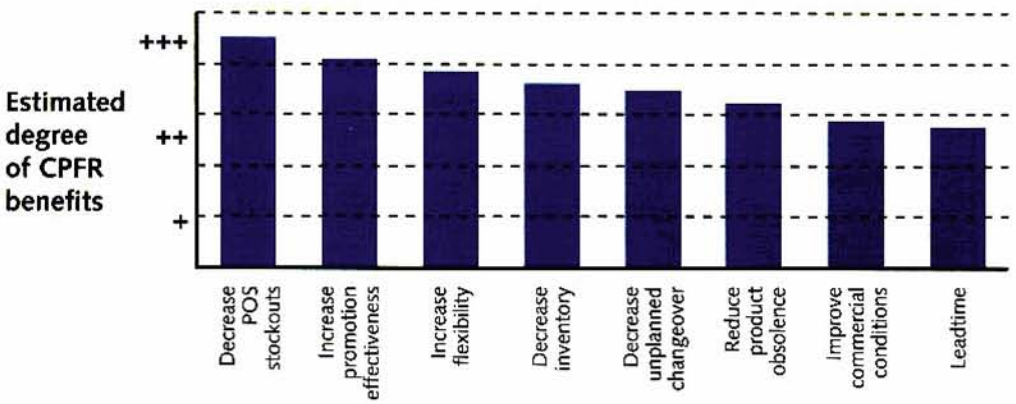


Figure 17: Estimated benefits from POS data enabled CPFR
Source: ECR Europe: Guide to CPFR Implementation, 2001

Obviously, the highest benefit expectations are related to the shelf availability of products. The use of POS data can certainly significantly contribute to the realisation of these benefits as they provide a real-time or near real-time picture of the in-store situation.

Retailer Benefits	Manufacturer Benefits
• Improved service reliability • Reduction in lead time • Increased insight into forecasting and replenishment plans • Supplier inventory and replenishment management (long-term focus) • Improved floor space utilization and reduced inventory lead to increased ROI	• Improved retailer relations • Increased insight into forecasting and replenishment plans • Improved service levels • Reduction of unexpected demand • Optimised Production • Improved information for strategy processes and tactical units • Increased flexibility to react on market opportunities

Figure 18: Benefits from CPFR using POS data
Source: ECR Europe POS Data Management Project Group, Deloitte Consulting

3.3 Align elements for execution and operational excellence

Mastery of POS data management comes in a step by step process. It is an evolution from "project to process" along levels of increased collaboration and increased quantity and quality of data sharing.

In the FMCG industry the ECR project group found four levels of sophistication.

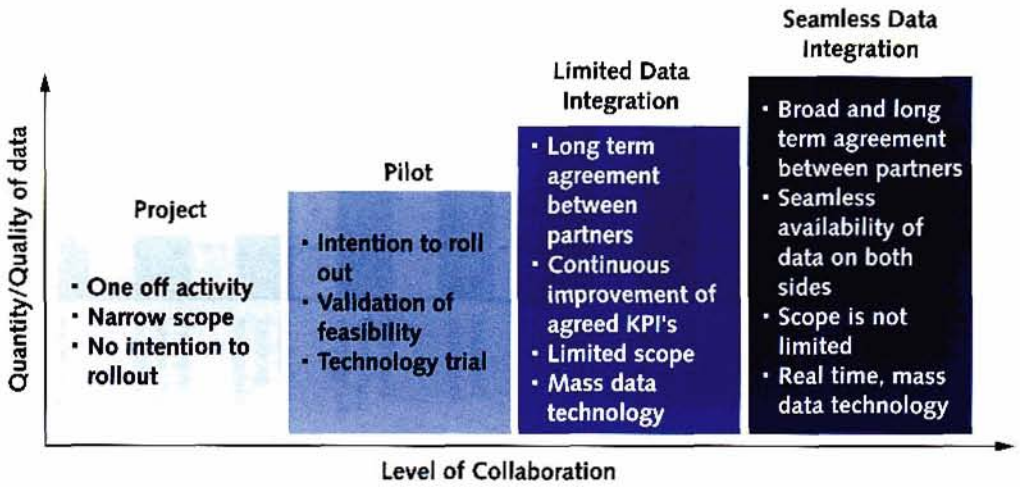


Figure 19: The four levels of sophistication in POS data management
Source: ECR Europe POS Data Management Project Group, Deloitte Consulting

1. **Project Level:**
   In the beginning of POS data exchange, there is usually a small project defined with a narrow scope. Sharing data can be characterized as a one-off activity.
2. **Pilot Level:**
   With increasing experience, companies validate the objectives. They try to achieve benefits on a small scale. Trading partners also start technology trials and improve their understanding of the IT-success factors.
3. **Limited Data Integration:**
   There is mutual commitment of FMCG manufacturers and retailers together with increasing investments into data exchange. Although the scope is still limited, the exchange is based on mass data technology and targeted to well-defined KPIs in order to ensure benefits.
4. **Seamless Data Integration:**
   A broad and long-term relationship ensures that the data is readily available on both sides. Scope is not limited. Exchange is executed on real-time data technology.

In this section six dimensions for operational excellence are detailed along these levels of sophistication (Data Quality, Data Quantity, Identification and Communication Standards, Technology, Organisation and Legal). Operational excellence in POS data management boosts benefits of every ECR concept.

Key recommendations for execution and operational excellence:

- Ensure data quality by implementing multiple checking routines
- Build a data profile around a set of core data and add data attributes according to company-specific information requirements
- Use existing identification and communication standards wherever possible (i.e. GTIN/EAN, EANCOM..)
- Determine the level of technological investment by expected benefits (i.e. target costing approach) and along scenario 1-4 "from project to process"
- Deploy collaborative technologies when moving to sophisticated and frequent data exchange activities
- Build IT platform for future scalability, open design and high technical integration
- Assign ownership to the process and quality of data exchange
- Have local lawyer check legal compliance

3.3.1 Qualitative Data Elements

Data Profile

Having an agreed set of data for the act of purchase is required for the execution of POS data management. This data profile consists of many defined data elements.

In order to bring commonality to the data exchange, it is suggested to use a set of mandatory and optional fields for the data profiles (SLSRPT and INVRPT).

Figure 20a and 21a show the mandatory fields representing a minimum data profile for transaction data, while figure 20b and 21b show the optional fields that represent a complement to the minimum data profile, allowing for extended analysis into shopper basket and CRM analysis (to be addressed in a subsequent publication).

Mandatory Data Profile (SLSRPT)

Mandatory Fields	Description
ILN/ GLN	International Location Number / Global Location Number. World-wide valid numbering structure for unique identification of physical, functional or legal entities within a business or organisational entity (e. g. warehouse, delivery points such as warehouse gate). Here the ILN/GLN of the outlet is entered.
GTIN: EAN / UPC (n..14)	Global Trade Item Number / International Article Number / Universal Product Code Internationally aligned, unique and world-wide unambiguous 14-digit article number for products and services that incorporates existing EAN 8-, and 13-digit codes. It is a prerequisite for using scanner technology and eases electronic communication substantially. In this context it is the article sold at the POS, identified by the GTIN.
Article Text	Responsible for more precisely describing the article, a. o. sale of products via Instore.
Sales Volume	Quantity of scanned GTIN.
Selling Price at POS	Selling price per GTIN.*
Date	Day and hour of sale.
Currency	
Promotion Flag	Indicator, showing whether the GTIN was sold during a promotion.

**) The VAT-rate can be looked up in the master data database*

Figure 20a: Mandatory POS data items/ fields (SLSRPT)
Source: ECR Europe POS Data Management Project Group

Optional Data Profile (SLSRPT)

Optional Fields	Description
Internal Article Number	Retailers' internal article number; mandatory field, if no GTIN available (interim solution).
Checkout ID	Identification of the checkout.
Method of Payment	Cash (incl. Vouchers) or card (EC- resp. Credit Card).
Customer Card Info	Indicator showing whether a customer card was used (yes/no).
Receipt Total/ Receipt Value	Total Sales on receipt.
Number of Articles per Receipt	Total number of articles sold per transaction.
Receipt ID	Identification number of receipt. When transmitting the Receipt ID, the transmission of Receipt Total/Receipt Value and number of articles per receipt can be abandoned.
Category Flag	This category is defined as a group of products/ services, which from a internal perspective are considered as belonging together and/or as exchangeable.
Sales, gross	Sales* selling price (incl. VAT).
Promotion Indicator	The promotion indicator specifies the promotion; using either the text field or a code.

**) The VAT-rate can be looked up in the master data database*

Figure 20b: Optional POS data items/ fields (SLSRPT)
Source: ECR Europe POS Data Management Project Group

Mandatory Data Profile (INVRPT)

Mandatory Fields	Description
Message reference number	Sender's unique message reference.
Message function, coded	Original = Original transmission of the inventory report.
Document creation date	Document/ Message Date/ time
Identification of the buyer	The GLN identifies the buyer party to which merchandise is sold and/or a service is provided.
Identification of the supplier	The GLN identifies the supplier party which provides service(s) and/or manufactures or otherwise has possession of goods, and consigns or makes them available in trade.
Identification of the inventory reporting party	The GLN identifies the inventory reporting party.
GTIN	Global Trade Item Number. Internationally aligned, unique and world-wide unambiguous 14-digit article number for products and services that incorporates existing EAN 8-, and 13-digit codes.
Actual stock	Stock on hand, undamaged, and available for dispatch, sale or use at the time of stock check.
Inventory withdrawal quantity	Quantity which has been withdrawn from inventory since the last inventory report. Inventory adjustments based on e.g. return shipments are not included. The Inventory withdrawal quantity can be used to forecast the future demand.
Out of Inventory Quantity	Out of stock quantity. Demand of the outlet which could not be satisfied in the reported period (Central warehouse - Outlet). The out of inventory quantity specifies the quantity which was requested (by the outlet) but not available. The out of inventory quantity need to be transmitted only in case of an "out of inventory situation".
Outstanding quantity	Difference between quantity ordered and quantity received.

Figure 21a: Mandatory POS data items/fields (INVRPT)
Source: ECR Europe POS Data Management Project Group,
based on: ECR D-A-CH: Der Weg zum erfolgreichen Supply Chain Management, 2002

Optional Data Profile (INVRPT)

Optional Fields	Description
Date/time/period of the inventory report	Inventory report date Date/ time
Promotion information	Information, if the GTIN is on promotion.
Quantity received	Quantity of a SKU which has been received.
Inventory movement quantity	Quantity moved from promotional stock to "normal stock" or vice versa.
Quantity returned	Return shipment from the outlet to the central warehouse of the retailer. Specifies the quantity returned.
Adjustment to inventory quantity	Specifies the inventory quantity adjusted within the reported period due to: damaged items, inventory differences, wrong entry, "locked" items, return shipments from the central warehouse to the supplier; without return shipments from the outlet to the central warehouse, inventory movements and products received and quantity of reserved products.
Reserved stock	A quantity of stock reserved for specific purposes, e.g. stock reserved to cater for natural disasters (floods, earthquakes, etc).

Figure 21b: Optional POS data items/fields (INVRPT)
Source: ECR Europe POS Data Management Project Group,
based on: ECR D-A-CH: Der Weg zum erfolgreichen Supply Chain Management, 2002

Data Quality

The use of any electronic exchange of data requires accurate data. Consistency, complete datasets, and the ability to identify sales by item are, therefore, important criteria from a quality perspective and should not be underestimated.

The ECR Europe project group has compiled 15 quality issues around four topics to watch out for:

- Incompleteness of data
- Cumulating data
- Data coding
- Others

Topic	POS Data Quality Issues	Check
Incompleteness of data	• Data of a complete key account is missing or unavailable for a selected period of time. • Sales or causal information are missing for a total shop. The missing period could be a week, a day or part of a day. • One or more EANs are completely missing for a given period of time.	• Completeness of key accounts • Completeness of periods per key account (weeks, days) • Completeness of shops • Completeness of periods per shop (days, hours) • Completeness of shopping items/ GTIN/ EAN
Cumulating data	• Data of two periods are loaded on one or data of two receipts are loaded on one. • Data of two or more shops are stored under one store-number.	• Consistent accumulation of bons/ baskets (clear-cut) • Consistent accumulation of periods (clear-cut) • Consistent accumulation of shops/ stores (clear-cut)
Data coding	• All retailers use their internal identification system to code their items and to store them within their data warehouse. The reference of EANs to the internal number (Price Look-up or Local Assigned Code) and vice versa is not unique • Every instore-EAN beginning with "2" is only valid for specific markets (e.g. retailer, region, store) • Multipacks are special EANs consisting of two or more pieces of a single EAN. The question is: Do retailers store the multipack-EAN or the original one? • Banded packs are special EANs consisting of two or more products belonging to different categories. Retailers store this kind of product under special product groups • EANs are "non descriptive" codes. The item master data related to the EAN must be complete and accurate. If this text description is wrong or incomplete the data could be misinterpreted. • The item master database of a retailer is valid for the present only. If retailers change the item master (e. g. recoding of an EAN), this changes. • Depending on the location of production, products have two or more different EANs. All other product characteristics are equal. Retailers tend to link those EANs to one number. • Even if UPCs are clearly defined, some retailers "complete the missing 13th digit" by entering a dummy number. This then could be interpreted as an EAN.	• Unique reference of EAN to the retailer's internal number and vice versa — how to deal with this issue • Reported instore-EAN beginning with "2" is only valid for specific markets, e.g. retailer, region, store (retailer specific internal coding) • Correct determination of multipacks vs. original items • Correct determination of banded packs as these items are stored under special product groups • Completeness and consistency of the GTIN/ EAN master code • Valid item-master-database of a retailer. If retailers change the item-master (e. g. recoding of an EAN), this changes • Unique reference of EAN to single product; retailers tend to link those EANs to one number. • Correct interpretation of reported EANs (13th digit valid or dummy)
Others	• Not all errors occurring because of under trained service personnel or inadequate scanning procedure can be corrected afterwards. • Trading partners may not start the calendar week on the same day.	• Correct scanning and data capturing processes at the retailer's check-out • Consistent start of the calendar week

Figure 22: Checklist for POS data quality issues
Source: ECR Europe POS Data Management Project Group, Deloitte Consulting

To overcome the issue of incomplete data it is recommended implementing data checking routines on gross-totals and calendar. POS data should be exchanged at the most detailed SKU level which allows aggregations. To avoid multiple coordination effort it is suggested that GTIN/EAN codes be used as the master key. See Appendix A for more details.

3.3.2 Quantitative Data Elements

Retailer POS Data and Market Research Data Exchange

In addition to data quality another challenge is the sheer amount of POS data that is exchanged, aggregated, and analysed. Depending on the purpose of the analysis to be conducted, POS data from the retailer has to be combined with panel data coming from the manufacturer. Figure 22 illustrates the relationship between purpose of analysis and quantity and source of data.

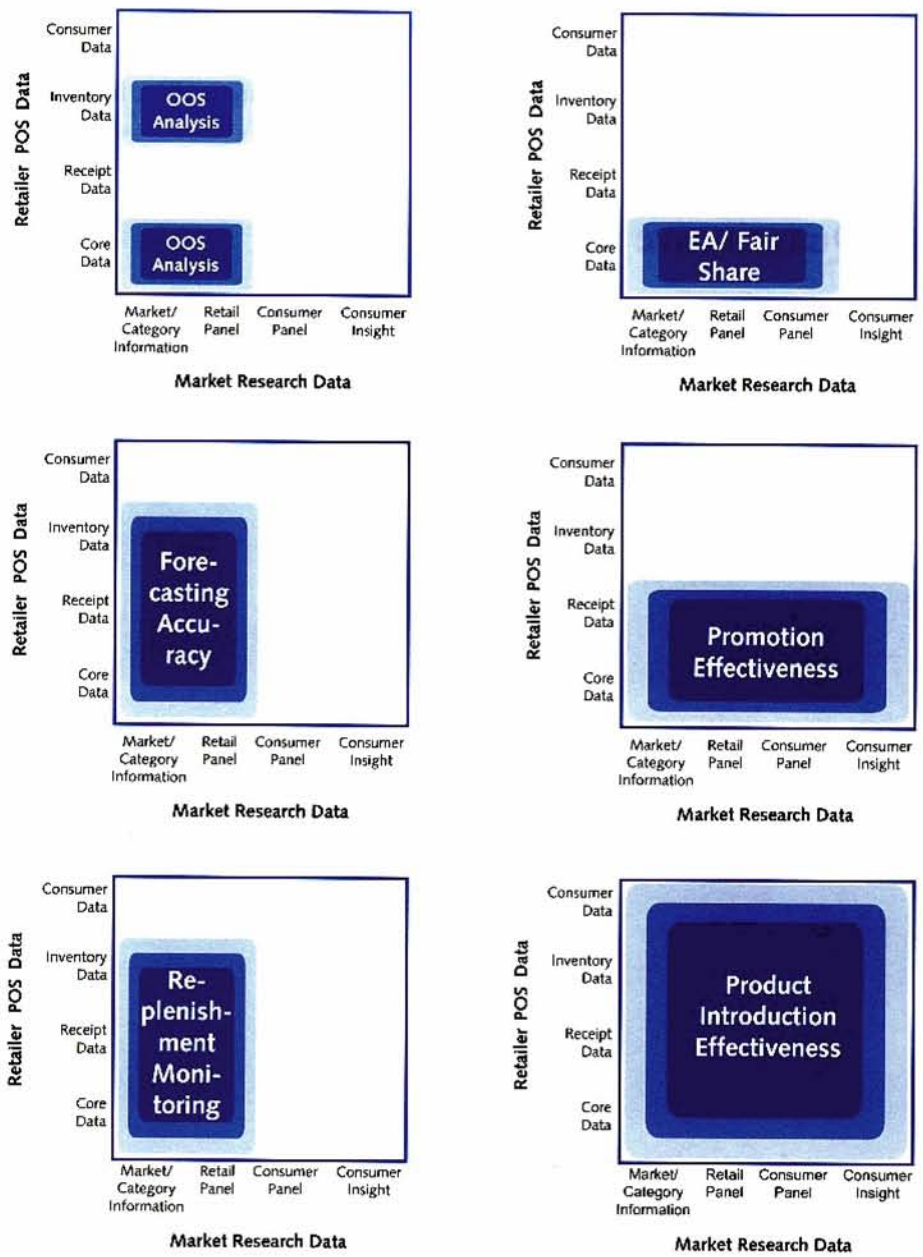


Figure 23: Overview of interdependency between breadth and depth of data and analysis purpose
Source: Deloitte Consulting

The lower the depth and breadth of data required, the fewer elements are exchanged and need to be analysed. However, less data means less flexibility of "slicing and dicing" data for other analyses.

Frequency of Exchange

The overall vision of any data exchange frequency is to be near "real time." Permanent access to and analysis of "up-to-event/occurrence" POS data increases the flexibility and shortens the time to action. Today's retailers' extranets come closest to real-time availability of data.

Relationship of Exchange
The exchange of POS data in practice is either done directly or indirectly. In general there are two different types of POS data exchange relationships:

Direct exchange	Indirect exchange
1:1 manual, electronically	n:m e-Marketplace
n:1 Retailer extranet	n:1:m market researcher, information broker

Figure 24: POS data exchange relationships
Source: Deloitte Consulting

It's obvious that an increasing quantity of items requires even greater standardization and very powerful integrated technology. However, the individual decision on how to organise for the exchange (make or buy) must be based on a detailed cost-benefit analysis.

3.3.3 Standards

The definition of standards in the context of POS data management follows a systematic approach:

- Identification Standard: i.e. GLN/ILN, GTIN/EAN
- Communication Standard: i.e. UN/EDIFACT, EANCOM®, XML
- Data Transfer Standard: i.e. EDI, WebEDI
- Data Application Standard: i.e. Internet, X400

Data identification and communication standards are explained in this section; data transfer and data application are discussed in the technology section.

Today we see a movement towards global standardization. Global Trade Item Number (GTIN) and Global Location Number (GLN) are the access keys for computer stored master data.

Based on the level of sophistication of POS data management, the standardization matter is prevalent. ECR Europe recommends that EAN.UCC global standards be used for all levels, even the pilot level.

EANCOM®
EANCOM® is a subset of UN/EDIFACT messages and provides clear definitions, explanations, and examples of messages which allow trading partners to exchange commercial documents in a simple, accurate, and cost-effective manner. For the electronic exchange of sales data the Sales Report (SLSRPT) has been identified as the relevant EANCOM® Message. In addition to SLSRPT the application of the EANCOM® Inventory Report (INVRPT) should be considered for ECR concepts such as ER, CPFR, and OSA.

Appendix B provides an overview of the structure of the EANCOM® Message SLSRPT and INVRPT. It is recommended to clearly define upfront which optional fields are necessary for your collaboration needs (see also previous section).

XML

Through the evolution of the Internet, a new standard has evolved in 1998. The eXtensible Markup Language (XML) offers new opportunities to exchange standardized data via the Internet (see also the following section). Howeever, the standardization of the business semantics for EDI purposes, has not yet reached a mature status as in EANCOM®.

3.3.4 Technology

The technology landscape of business-to-business data communication in the FMCG industry provides a framework for this section. The design of any POS data management technology solution refers back to the landscape illustrated in figure 25.

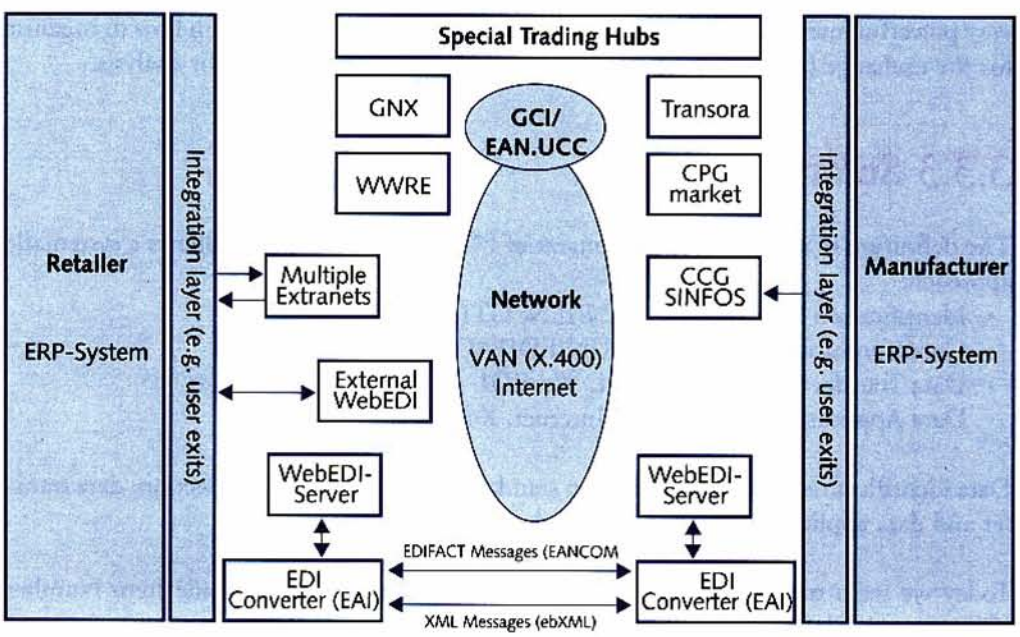


Figure 25: Technology landscape of Business-to-Business (B2B) data communication in the FMCG industry
Source: Reinhard Mommsen: Die Landkarte der elektronischen Datenkommunikation, 2nd ECR-Day Germany, 2001

Ideally the appropriate level of technology depends on the expected benefits from the collaboration effort. It should be determined upfront by a cost-benefit approach.
For explanatory purposes we outline three technology scenarios:

1. Manual
2. EDI
3. Seamless machine-to-machine

Scenario 1: Manual Data Exchange Process (Project Level)
The simplest and — at first glance — lowest cost option to support data exchange is the use of manual processes; this form is usually chosen in order to gain experience with POS data management and decide, based on test results, whether to proceed with a permanent implementation.

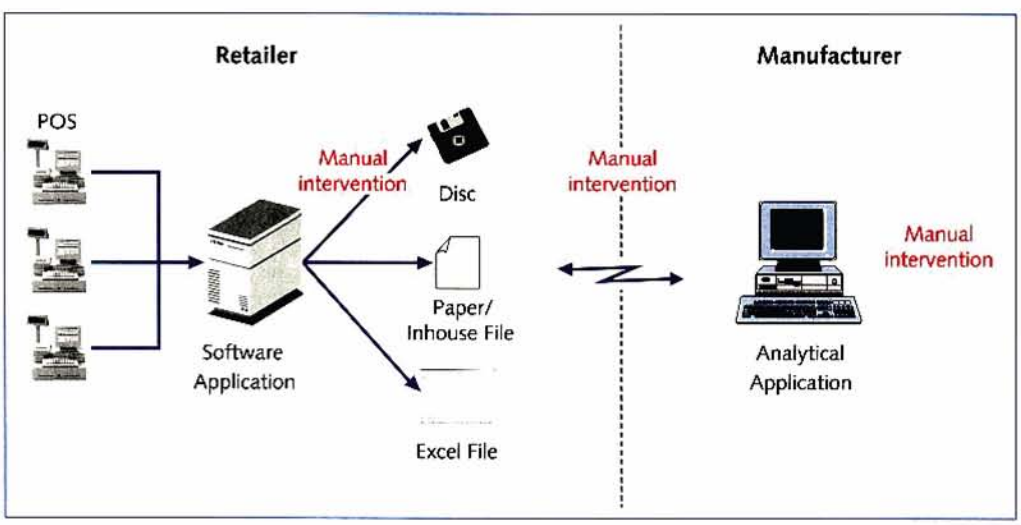


Figure 26: Project — Manual data exchange process
Source: Deloitte Consulting

At this stage POS data (for example product and brand codes or number of sales per product) is generated from existing computer applications and is printed or is extracted as an electronic file and sent to the manufacturer by e-mail, mail, or fax. The communication media includes e-Mail, the physical transmission of data through software components (e.g. MS-Excel files), physical media such as tapes or diskettes, or even paper-based. The manufacturer in turn re-keys all this information into his POS analysis application for further processing to transform it into meaningful and manageable POS data.

Advantages:	Disadvantages:
Low investment into existing systems required	Time-consuming process
Low-cost option if scope analysis is narrowly defined	High human resource demand
	Unreliability: High risk of errors caused by manual intervention
	Costly if analysis is carried out regularly several times a year

Figure 27: Advantages and disadvantages of the manual data exchange process
Source: Deloitte Consulting

Scenario 2: EDI (Pilot Level and Limited Data Integration)
EDI provides trading partners with an efficient business tool for the automatic transmission of commercial data from one computer application directly to another. Incompatible computer systems are no longer an issue. Companies deciding to implement EDI are by definition in agreement on the data profile and format. Thanks to the numerous EDI implementations in the past years, many retailers and manufacturers already have EDI infrastructure that can be used for POS data exchange.

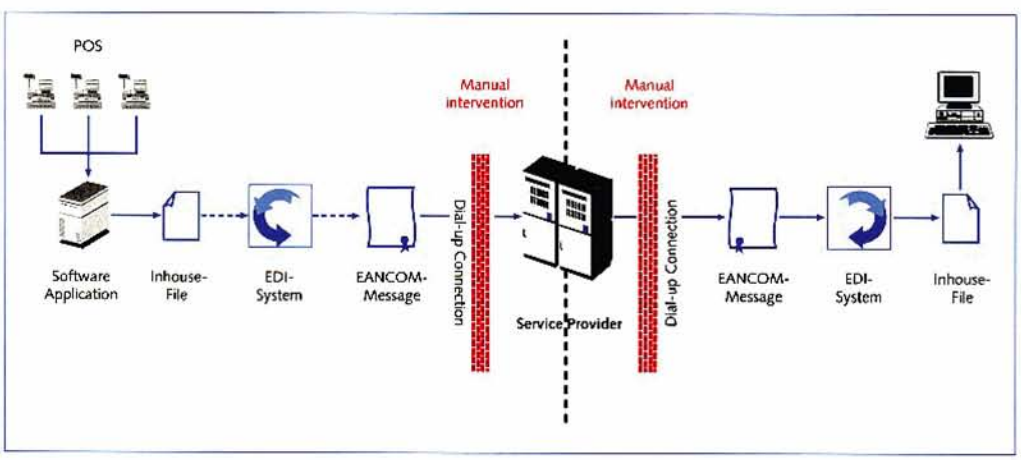


Figure 28: Pilot — Limited Integration/ EDI
Source: Deloitte Consulting

Advantages:	Disadvantages:
Faster data exchange process	Implementation project requires a higher commitment on both trading partner sides
Optimisation of internal processes through process automation	Costly for new installations
Less manual intervention	
Applicable although computer systems of data exchange partners may be incompatible	
EANCOM® is a fully compliant UN/EDIFACT Subset	
EANCOM® represents a single face to internal applications	
EANCOM® supports international ECR applications	

Figure 29: Advantages and disadvantages of limited integration/ EDI
Source: Deloitte Consulting

WebEDI allows communication between connecting trading partners with low or only sporadic transactions, based on web-based documents without bearing the cost of EDI systems (e.g. VAN costs). Trading partners no longer have to provide the infrastructure for several different communication services and protocols but can simply communicate via the Internet. In this context WebEDI means a low-cost transport medium for POS data.

Scenario 3: Machine-to-machine (Seamless Data Integration)
"Seamless Data Integration" is required to support broad, long-term relationships between retailers and manufacturers.

At this stage the scope is not limited. Data is stored on a common database. The exchange is executed via mass data technology and each trading partner has direct access to the POS data which is stored in a data warehouse at the manufacturer, the retailer or at a third party location. The analysis via data warehouse typically relies on OLAP (Online Analytic Processing) technology.

OLAP decision support software allows the user to quickly analyse information that has been summarized into multidimensional views and hierarchies. For example, OLAP tools are used to perform trend analysis of sales information and to enable users to drill down into sales details.

Relational OLAP (ROLAP) tools extract data from traditional relational databases. Using complex SQL statements against relational tables, ROLAP is able to create multidimensional views on the fly. ROLAP tends to be used on data that has a large number of attributes.

Selection of an appropriate OLAP method depends on the data characteristics.

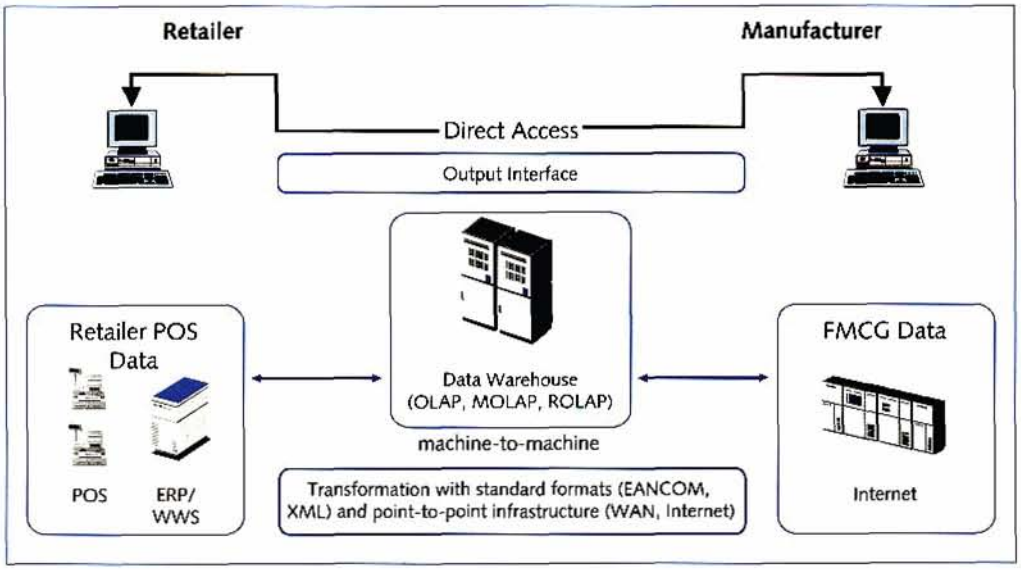


Figure 30: Process — Seamless POS data integration/ machine-to-machine
Source: Deloitte Consulting

Advantages:	**Disadvantages:**
Direct access to the data	Data warehouse investment
Real-time data	High joint data structuring and content alignment between the trading partners necessary
Fast data transmission	Manual intervention still required
Free queries possible	
Constantly high query response time	
Quick data analysis, e.g. trend analysis on sales	
Drill-downs	

Figure 31: Advantages and Disadvantages of machine-to-machine integration
Source: Deloitte Consulting

3.3.5 Organisation

An appropriate organisational structure is required to manage POS data as part of a collaborative initiative. Both trading partners usually have established organisational structures based on internal functions. It is only in recent years that the organisational structures have needed to address collaborative processes along the value chain. Companies have now started to move towards multifunctional teams addressing internal and external processes. To set up such a team some of the questions to be answered are:

- Which departments are involved?
- What skills are needed?
- How much time investment is necessary?
- How is collaboration tied to performance management?

Organisation and core processes

According to the illustrated "pilot-to-process" approach (see section 3.3), two organisational structures are possible:

- Project-like Organisation
- Line Organisation

In the project and pilot phase (Level 1 and 2) usually a virtual project team is responsible for the POS data management. The size of the team is limited and the resources do not work full time for the project. The team should be aligned to the department that owns the collaborative contact. Typically these are the trade marketing or sales unit at the manufacturer and the purchasing department at the retailer. The requirement of staff and management involvement increases with the level of collaboration.

In Level 3 and 4 the organisation may require a reallocation of resources. Usually POS data management is assigned to a support staff function. The alignment of this position depends on the collaboration character (supply side vs. demand side). POS operations are covered by a heterogeneous customer/ collaboration team. Typically the team integrates different functions as shown in figure 32.

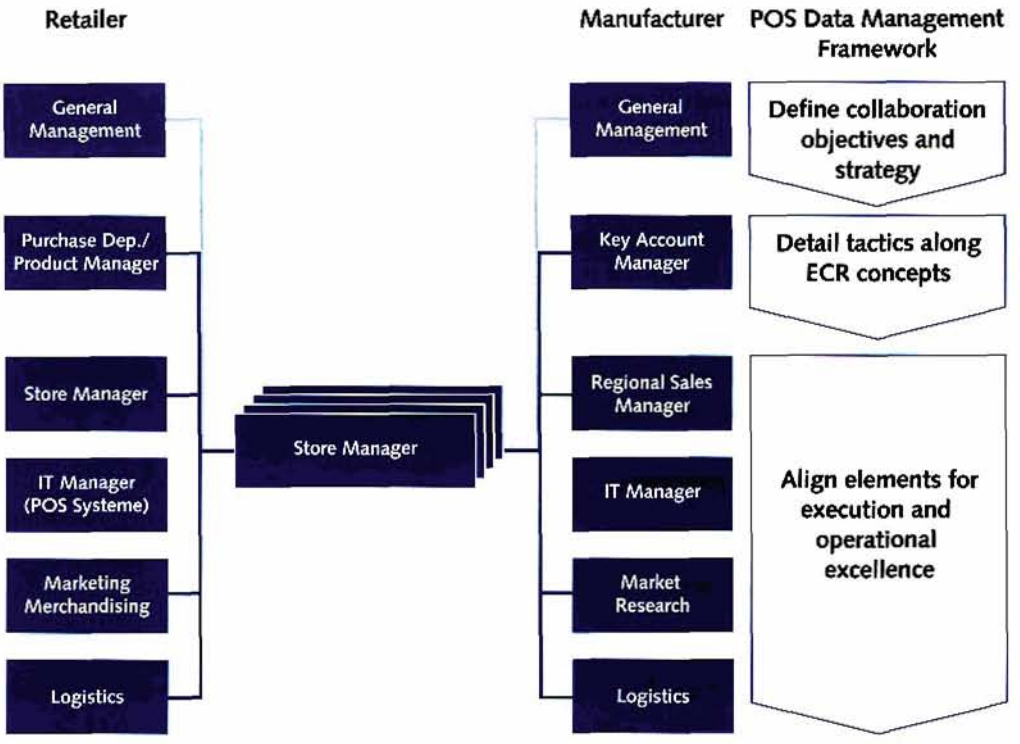


Figure 32: Sample organisational structure for institutionalized POS data management
Source: Deloitte Consulting

The roles and responsibilities of the people involved change according to the steps of the POS data management framework.

If POS data is provided on a one-off basis, the responsibility lies in the customer/ collaboration team. In larger projects with a continuous flow of data, one has to consider assigning dedicated data analysts to focus on the data analysis and deployment. If POS data is coming from a syndicated source, normally there is a more centralized entity that holds the responsibility (e.g. market research).

Competence and knowledge
Employees should have the necessary competencies and knowledge for POS data management and should be trained accordingly.
The following skills are considered mission-critical:

- Analytical skills: Employees should know how to retrieve and analyse data (e.g. aggregate, slice and dice)
- Process skills: Engaged resources should know about core processes of both retailer and manufacturer.
- Interpretation skills: As a result of analytical and process skills the employees should understand how to draw conclusions from data and convert these into action.

Measurement and incentives
What gets measured gets done! Currently there are several incentive systems that can actually counteract collaborative thinking. For successful POS data management it is recommended putting the performance measures around the fair share of benefits.

Most collaborative projects show that there is a strong willingness to adopt new measurements and incentives because synergies and mutual benefits occur. However, the dictum is not to expect short-term results but to build for long-term commitment.

3.3.6 Legal Aspects

Generally the exchange of proprietary data is not a legal issue in itself. However, potential issues can be caused by violation of:

- Confidentiality
- Intellectual property

Many trading partners wish to enter an upfront agreement that rules the "dos and don'ts" around the usage of data being shared. In most cases, there are already agreements in place aimed at specifying the overall purpose of the collaborative projects.

Legal risks potentially arise in the case of information misuse. However, as long as confidentiality and intellectual property rights are agreed to, legal issues should be avoided. In this context the EU Competition Law provides some guiding principles:

The respective roles of manufacturer and retailer (Article 81 EC).	• The manufacturer may only give non-binding "recommendations" (advice) on resale prices with respect to his own products (not to other products). • Retailer remains free to follow or not follow the manufacturer's recommendations
No agreements or exchanges of confidential information between competitors (Article 82 EC).	• Exchanging commercially sensitive information, such as net prices, sales-in, trade terms and conditions, etc. about and between competitors is not allowed. • Retailer should not send competitor net price information or other sensitive data to all manufacturers (as enhanced transparency could lead to enhanced cooperation between competitors). • Sharing of POS data between a retailer and a category advisor is of itself acceptable.
Prerequisite for anti-competitive activity	• Sharing of data between competitions is not the issue; it's what the parties do with the data shared. This does not prevent a retailer from disclosing to a manufacturer POS data on the products of the manufacturers' competitors, as long as this is a clear bilateral manufacturer/retailer relationship and no competitor or the manufacturer is involved.

Figure 33: Essentials from the EU Competition Law on data exchange
Source: EC Treaty

Due to company specificities it is suggested that companies incorporate specific arrangements on the data exchange within these collaborative projects. For this purpose it is recommended that your legal department or an external specialized lawyer be consulted.

The ECR Europe Operating Principles which can be found in Appendix C also provide some suggestions on legal aspects.

3.4 Review benefits and improve continuously

Common understanding and continuous review of objectives by both trading partners will support achievement. Therefore it is essential that both trading partners define quantitative, measurable KPIs for evaluating the benefits (effect on sales, costs, and capital employed) as well as the process quality (collaboration, data profile, technology) and review these at regular intervals.

Sample KPIs are shown below for illustrative purposes. For further details, please refer to the respective ECR publications, in which specific catalogues of concept-relevant KPIs are recommended, or visit the Global ECR scorecard website at www.globalscorecard.net that contains all ECR metrics. As indicated above, POS data does not stand alone; it must be combined with other data sources (such as consumer panel, retail panel) to support the ECR processes. It is recommended to create individual scorecards with KPIs from four clusters.

1. Market related KPIs
KPIs in this cluster should be used as benchmark data reflecting the overall market situation and evolution of the market. They enable the use of other KPIs (especially strategic KPIs) in the context of the total market. Commonly used KPIs are:

- Share of market, volume and value
- Market growth
- Fair share and fair share index
- Distribution (numeric and weighted)

2. Strategic and financial KPIs
Strategic KPIs are used to measure the performance of the trading partners. They reflect general financial data (financial ratios), consumer behaviours, market evolution, and POS parameters. Recommended KPIs are:

- Sales volume
- Sales value
- Contribution margin
- Number of shoppers
- Consumer loyalty of banner, brand (consumer panel)
- Share of category
- Shelf space productivity
- Inventory turn

3. Tactical KPIs

While financial KPIs indicate the performance of the trading partners, tactical KPIs evaluate the activities at the point of sale. Tactical KPIs directly influence the strategic key figures and reveal whether the selected POS activities are appropriate to enhance the performance of collaboration. Typical tactical key figures are segmented as follows:

- Assortment (e.g. assortment coverage, listings, launches, OOS-rate)
- Placement (e.g. inventory reach)
- Promotions (e.g. number of promotions, incremental volume)
- Pricing (e.g. price index — regular/promotion price)

4. Process KPIs

The figures in this cluster monitor typical challenges in the POS Data Management process. Measuring the quality of collaboration, data profiles, and IT-technology effectiveness, the KPIs aim to improve the POS Data Management process. Recommended are:

- Number of skilled resources, man hours involved
- Frequency of alignment meetings, escalations
- Time spent on data collection, cleaning, and consolidation
- Degree of system integration, number of manual interventions in data transfer
- Cost of IT

It is important to focus on a limited number of KPIs (between 10 and 15) which are most suitable to reflect the market and/or trading partners' specific objectives. Also it is recommended to first make use of existing ratios sourced out of both trading partners' systems (where appropriate) and then to decide whether any other ratios should be introduced.

Cluster	KPI	PRIO	Historical data per period	Target value per period	As-is data		
					Period 1	Period 2	Period n
Market related KPIs	Marketshare (volume)	1	10%	--	11%	12%	12%
	Market growth	1	2%	--	2%	1%	1%
	Fair share	1	19%	--	17%	18%	19%
Strategic KPIs	Sales Volume	1	10.000	12.000	10.500	11.500	12.000
	Sales Value	1	50.000	60.000	52.500	57.500	60.000
	Buying Households	2	43%	48%	44%	44%	46%
	Loyal Households	2	22%	24%	22%	22%	23%
Tactial KPIs	**Assortment**						
	Assortment coverage	1	70%	80%	72%	72%	75%
	Listings	1	15	10	13	12	12
	OOS-rate	1	5,0%	4,0%	4,8%	4,5%	4,2%
	Placement						
	Inventory reach	1	16 days	14 days	16 days	14 days	15 days
	Promotion						
	No. of promotions	2	4	6	4	4	6
	Incremental volume	1	2.000	2.800	2.400	2.600	3.000
	Pricing						
	Price index	1	103	95	101	99	97
Process KPIs	No. of mandays involved	2	5	15	25	22	20
	No of escalations	2	3	1	5	3	1
	timeshare for data cleansing	3	25%	10%	25%	22%	18%

Figure 34: Illustrative example of a KPI matrix
Source: Deloitte Consulting

The KPI matrix uses historical data as a baseline for the determination of the target values. In order to enforce continuous improvements, set multiple achievable targets on the timeline.

The KPI matrix should be used as a common tool to evaluate the performance of collaboration, determine and review success, and promote the partnership internally. Especially the communication of successes of the partnership is essential for both organisations (manufacturer and commercial partner) in order to increase acceptance and motivate people, accelerate the implementation of POS data management processes, and continuously improve these processes and its benefits.

Appendices

Appendix A: POS data quality issues

Incompleteness of Data

Incompleteness of data			
Description	**Reason**	**Identifier**	**Challenge**
Data of a complete key account is missing or unavailable for a selected period of time.	- System/ -server crash - Data could not be transferred due to line problems.	- Implementation of specific calendar-checks for missing days or multiple days. - Comparison of the total turnover across periods for checking missing parts of a day.	
Sales or causal information is missing for a total shop. The missing period could be a week, a day or part of a day.	- Transfer from the check-out to the central shop server did not work. - Missing connectivity between shop and retailer's DW. - Hardware crash within the retailer's network. - Data transfer from retailer to manufacturer has been interrupted.	- Implementation of specific calendar-checks for missing days or multiple days. - Comparison of the total turnover across periods for checking missing parts of a day.	Identifying regional holidays and open Sundays in specific regions
One or more EANs are completely missing for a given period of time.	- Data transfer within the retailer's network was not completed. - EAN is linked to another EAN. - EAN has changed but the retailer still uses the old one.	- Check on number of delivered items per data transfer period	Is an EAN missing or was it not sold?

Cumulating Data

Cumulating data			
Description	**Reason**	**Identifier**	**Challenge**
- If data is cumulated over time (week or day), data of two periods are loaded on one. - If retailers deliver receipt-adequate data, data of two bons are loaded on one.	- Data of actual period is loaded on last period - No trip change by processing the data load	- Check on total turnover and time-comparison - Check on turnover per EAN. Describe distribution of deviation	Checks are based on time-series routines, which need CPU-time or long runtime on servers
- Data of two or more shops are stored under one store-number.	- Incorrect data load - Two or more stores have the same identifier (e. g. new stores)	- Check on total turnover and time comparison - Check on turnover per EAN. Describe distribution of deviation	Checks are based on time-series routines, which need CPU-time or long runtime on servers

Data Coding

Data Coding			
Description	**Reason**	**Identifier**	**Challenge**
All retailers use their internal identification system to code their items and to store them within their data warehouse. The reference of EANs to the internal number (Price Look-up or Local Assigned Code) and vice versa is not unique.	- No retailer has a centralized department for coding. The coding of the internal identifier is driven by ad hoc issues of the individual coder. - Reduction of storage	Check if all own EANs are reported.	This is the most critical issue because it can not be identified and even if, it can not be solved for the past.
Every instore-EAN beginning with "2" is only valid for specific markets (e.g. retailer, region, store).	Product is produced by an own retailer company.	Check details with the individual retailer.	Different products might be aggregated under one EAN.
Multipacks are special EANs consisting of two or more pieces of a single EAN. The question is: Do retailers store the multipack-EAN or the original one?	Cigarettes, boxes for non-alcoholic beverages	Price checks	If the registry at the check-out is not corrrect, there is no chance to identify this afterwards.

Data Coding

Data Coding			
Description	**Reason**	**Identifier**	**Challenge**
Banded packs are special EANs consisting of two or more products belonging to different categories. Retailers store this kind of product under special product groups.	A deodorant and an aftershave are sold as one pack.	Check if delivered EANs contain banded packs or not.	Whenever a total category is analysed the contents of banded packs belonging to this category have to be integrated.
EANs are "non descriptive"-codes. The only chance to identify an EAN is the text description. If this text description is wrong or incomplete the data could be misinterpreted.	- Wrong coding within the retailers. - The space for the text description is too small.	Check all delivered information permanently with EAN.UCC-master.	Wrong or incomplete information can only be identified if it is checked permanently against the agreed master.
The item master database of a retailer is valid for the presence only. If retailers change the item master (e. g. recoding of an EAN), this changes.			As long as the data is delivered to the manufacturer directly, all back data have to be modified.
Depending on the location of production, products have two or more different EANs. All other product characteristics are equal. Retailers tend to link those EANs to one number.	Internal coding structure of the retailer (Price Look-up or Local Assigned Code).	Identification is only possible for the manufacturers own products.	See section "Incomplete data on shop- and EAN-level".
Even if UPCs are clearly defined, some retailers "complete the missing 13th digit" by entering a dummy number. This then could be interpreted as an EAN.	Retailers' data warehouse is designed to work with 13 or 14 digits only.	EAN-check using the check-number (13th digit).	CPU or server runtime.

Others

Others			
Description	**Reason**	**Identifier**	**Challenge**
All errors occurring because of untrained service personnel or inadequate scanning procedure can not be corrected afterwards.	- EAN could not be identified by the scanner - Similar products with different EANs (e. g. different tastes) are scanned with one number only.	None.	Having no identifier
Some retailers define the calendar week by starting with Saturday and ending on Friday.		- If the data is delivered per bon or day calendar-checks can be used. - If the data is aggregated week-by-week there is no check available.	By "real-time" analysis the data of the last week is incomplete.

Appendix B: EANCOM® Messages: SLSRPT and INVRPT

SLSRPT

Data Element	Segment	Mandatory/ Optional	Comments
Header			
Message Type Identification	UNH	M	Fixed value specified by EANCOM
Message Reference No.	UNH	M	Has to be identical with the Message Reference No. In the UNT-Segment at the end of the message.
Message No.	BGM	M	ID-Number of the message
Date of Generation of Message	DTM	M	
Accounting Period	DTM	M	Stating the reporting period.
GLN of data sender	NAD	M	
GLN of data recipient	NAD	M	
Currency	CUX	M	
Position Data			
ILN/GLN of Outlet	SG5, LOC	M	International Location Number/ Global Location Number. World-wide valid numbering structure for unique identification of physical, functional or legal entities within a business or organisational entity (e. g. warehouse, delivery points such as warehouse gate) Here the ILN/GLN of the outlet is entered.
Date	SG5, DTM	M	Day and hour of sale.
Article Data			
GTIN: EAN / UPC	SG7, LIN	M	Global Trade Item Number / International Article Number / Universal Product Code. Internationally aligned, unique and world-wide 14-digit article number for products and services that incorporates existing EAN 8-, 13-digit codes. It is a prerequisite for using scanner technology and eases electronic communication substantially. In this context it is the article sold at the POS, identified by the GTIN.

Data Element	Segment	Mandatory/ Optional	Comments
Header			
Internal Article Number	SG7, PIA	O	Retailers' internal article number; mandatory field, if no GTIN available (interim solution).
Promotion Flag	SG7, PIA	M	Indicator, showing whether the GTIN was sold during a promotion.
Category Flag	SG7, PIA	O	This Category is defined as a group of products/ services, which from a company internal perspective are considered as belonging together and/or as exchangeable.
Customer Card Information	SG7, IMD	O	Indicator, showing whether a customer card was used (yes/no).
Article Text	SG7, IMD	M	Responsible for more precisely describing the article, a. o. sale of products via Instore-GTIN.
Receipt ID	SG7, RFF	O	Identification number of receipt. When transmitting the Receipt ID, the transmission of Receipt Total/Receipt Value and number of articles per receipt can be abandoned.
Promotion Indicator	SG7, RFF	O	The promotion indicator specifies the promotion; using either the text field or a code.
Sales, gross	SG7, MOA	O	Sales* selling price (incl. VAT).
Receipt Total/Receipt Value	SG7, MOA	O	Total Sales on receipt.
Selling Price at POS	SG7, PRI	M	Selling price per GTIN*.
Method of Payment	SG7, PAI	O	Cash (incl. vouchers) or card (EC- resp. Credit Card).
Sales Volume	SG8, QTY	M	Quantity of scanned GTIN
No. of Articles per Receipt	SG8, QTY	O	Total number of articles sold per transaction.
Checkout ID	SG7, NAD	O	Identification of the checkout.
Message Reference No.	UNT	M	Has to be identical with the Message Reference No. in the UNH-Segment at the beginning of the message.

*) The VAT-rate can be looked up in the master data database.

The PAI-Segment indicating the method of payment which is stated in the template is not yet part of the Message SLSRPT in EANCOM® 97. A Change Request has been transmitted to EAN International and will be contained in EANCOM® 2002.

INVRPT (Data profile for Inventory Report in CRP processes, based on ECR D-A-CH recommendations)

Data Element	Segment	Mandatory/ Optional	Comments
Header			
Message reference number	UNH	M	Sender's unique message reference.
Message function, coded	BGM	M	Original = Original transmission of the inventory report.
Document creation date	DTM	M	Document/ Message Date/ time
Date/time/period of the inventory report	DTM	O	Inventory report date Date/ time
Identification of the buyer	SG2, NAD	M	The GLN identifies the buyer party to which merchandise is sold and/or a service is provided.
Identification of the supplier	SG2, NAD	M	The GLN identifies the supplier party which provides service(s) and/or manufactures or otherwise has possession of goods, and consigns or makes them available in trade.
Identification of the inventory reporting party	SG2, NAD	M	The GLN identifies the inventory reporting party
Position Data			
GTIN	SG9, LIN	M	Global Trade Item Number. Internationally aligned, unique and world-wide unambiguous 14-digit article number for products and services that incorporates existing EAN 8-, and 13-digit codes.
Promotion information	SG9, PIA	O	Information, if the GTIN is on promotion.
Actual stock	SG11, QTY	M	Stock on hand, undamaged, and available for dispatch, sale or use at the time of stock check.
Inventory withdrawal quantity	SG11, QTY	M	Quantity which has been withdrawn from inventory since the last inventory report. Inventory adjustments based on e.g. return shipments are not included. The Inventory withdrawal quantity can be used to forecast the future demand.
Out of Inventory Quantity	SG11, QTY	M	Out of stock quantity. Demand of the outlet which could not be satisfied in the reported period (Central warehouse — Outlet). The out of inventory quantity specifies the quantity which was requested (by the outlet) but not available. The out of inventory quantity need to be transmitted only in case of an "out of inventory situation".

INVRPT (Data profile for Inventory Report in CRP processes, based on ECR D-A-CH recommendations)

Data Element	Segment	Mandatory/ Optional	Comments
Position Data			
Outstanding quantity	SG11, QTY	M	Difference between quantity ordered and quantity received.
Quantity received	SG11, QTY	O	Quantity of a SKU which has been received.
Inventory movement quantity	SG11, QTY	O	Quantity moved from promotional stock to "normal stock" or vice versa.
Quantity returned	SG11, QTY	O	Return shipment from the outlet to the central warehouse of the retailer. Specifies the quantity returned.
Adjustment to inventory quantity	SG11, QTY	O	Specifies the inventory quantity adjusted within the reported period due to: damaged items, inventory differences, wrong entry, "locked" items, return shipments from the central warehouse to the supplier; without return shipments from the outlet to the central warehouse, inventory movements and products received and quantity of reserved products.
Reserved stock	SG11, QTY	O	A quantity of stock reserved for specific purposes, e.g. stock reserved to cater for natural disasters (floods, earthquakes, etc).

Appendix C: ECR Europe Operating Principles

1. Generating Demand

ECR Practice requires both trading partners:

- To jointly analyse consumer and shopper data in order to mutually understand and respect one's consumer/ shopper marketing objectives when developing and reviewing the category;
- To focus on delivering cost effectively the most relevant set of products and services that truly add choice and value to consumers;
- To jointly agree on a set of Key Performance Indicators (e.g. consumer, market, productivity and financial), to measure the results against these objectives.

2. Managing the Supply Chain Efficiently

ECR Practice requires both trading partners:

- To adhere to supply chain management standards and protocols recommended by ECR Europe;
- To jointly define a set of objectives and processes for optimising product planning, forecasting, and replenishment as well as in-store logistics:
  - To achieve full visibility of product flow along the supply chain so that the consumer demand is always met;
  - To jointly make efforts to move to paperless transactions (e.g. using data flow to clear deliveries and invoices);
- To jointly define a set of objectives and processes for optimising shelf availability;
- To apply a commonly agreed method for evaluating total costs and benefits related to supply chain changes;
- To share benefits and risks whilst adopting a total supply chain view;
- To jointly define a set of Key Performance Indicators to measure results against these objectives.

3. Making Information-Based Decisions

ECR Practice requires both trading partners:

- To exchange information in order to support business decisions;
- To agree on a common process, cost effective for both partners, to systematically gather and/or exchange the best possible information in a structured way;
- To establish a non-discriminatory and transparent process for evaluating the information leading to any business decision (e.g. KPIs, scorecards);
- All information exchange between trading partners should happen in strict accordance with the applicable competition laws.

4. Organising to Implement ECR

ECR Practice requires both trading partners:

- To promote the ECR mindset and way of working to all management and staff
- To dedicate appropriately skilled resources from both sides in order to implement ECR practices in pursuit of category benefits;
- To invest in ECR Demand Generating, Supply Chain Management and Enabling practices only in pursuit of tangible and measurable business and category objectives;
- To support ECR practices in their trading agreement; however, ECR practices may not be linked to the trade terms;
- To link personal/team rewards to the defined business KPIs.

5. Respecting Competition Law

ECR is designed to serve the interest of the consumer. ECR Practice may not be used to restrict competition between suppliers. Companies undertaking ECR projects should apply ECR Practice in strict respect of applicable competition laws.

ECR Europe is committed to strong and fair competition in support of which competition guidelines are issued which focus on demand side projects; in particular they provide:

- That no sensitive information should be exchanged between competitors; and
- That along the supply chain itself, parties should not enter into agreements that restrict the other party in its freedom to set prices, choose trading partners, decide product assortments, and otherwise manage sales to consumers or other customers.

Appendix D: Glossary of Terms

Banner
A term used to describe a Retailers chain or Retailers channel.

BMI (Buyer Managed Inventory)
Describes the traditional replenishment process, where the buyer manages his inventory and orders.

CM (Category Management)
A partnership between Retailers and Suppliers to jointly manage a category as individual business units created to meet the needs of consumers.

CMI (Co-Managed Inventory)
A form of continuous replenishment (CRP) in which manufacturer and retailer jointly manage the replenishment for the retailer's Distribution Centre (DC). See Vendor Managed Inventory .

Consumer Insight
The 360° view of the consumer. Allows seeing deeper into the values, beliefs and motivations of the consumers

Consumer Panel
A Consumer Panel provides marketers with key Consumer Insights, capturing actual consumer purchase information. It provides insights into buying behaviour across every outlet, from warehouse clubs to convenience stores and from supermarkets to independent drug stores and mass merchandisers.

CPFR (Collaborative Planning, Forecasting and Replenishment)
CPFR is a cross-industry initiative designed to improve the supplier/manufacturer/retailer relationship through co-managed planning processes and shared information.

CPG
Consumer Packaged Goods.

CD (Cross Docking)
An operational technique for receiving, allocating, sorting and despatching a product while it remains on the dock of a Distribution Centre (DC) and therefore does not rely upon withdrawing stock from storage.

CRP (Continuous Replenishment Program)
The concept of continuous supply of goods between supplier and trade partner based on automated exchange of current demand, inventory and stock management information, within the framework of an agreed supply policy. The aim of CRP is to achieve a responsive and precise flow of product to the store, with minimum stock holding and handling.

DC (Distribution Centre)
DC is a warehouse that receives merchandise from multiple sources and distributes it to multiple destinations.

DSD (Direct Store Delivery)
Practice where suppliers deliver merchandise directly into stores, often right to the shelf with no distribution centre handling.

EAI (Enterprise Application Integration)
EAI refers to the plans, methods, and tools aimed at modernising, consolidating, and coordinating the computer applications in an enterprise. Typically, an enterprise has existing legacy applications and databases and wants to continue to use them while adding or migrating to a new set of applications that exploit the internet, e-commerce, extranet, and other new technologies.

EAN (International Article Number)
See GTIN.

EAN International
EAN International, based in Brussels, Belgium, is an organisation of EAN Member Organisations that jointly manages the EAN.UCC System with the Uniform Code Council, Inc.® (UCC®).

EAN·UCC System
The EAN·UCC System is a set of standards enabling the efficient management of global, multi-industry supply chains by uniquely identifying products, shipping units, assets, locations, and services to improve business efficiency and productivity. The system is co-managed by EAN International and the Uniform Code Council® (UCC®).

EANCOM®
The international Electronic Data Interchange (EDI) standard within the EAN.UCC System, conforming to the United Nations Directories for Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT).

ECR (Efficient Consumer Response)
A joint initiative by members of the supply chain to work to improve and optimise aspects of the supply chain to create benefits for the consumer — e.g. lower prices, more choice variety, better product availability.

EDI (Electronic Data Interchange)
EDI is the computer to computer transmission of information between partners in the supply chain. The data is usually organised into specific standards for transmission and validation.

ERP (Enterprise Resource Planning)
Packaged software systems using database technology and a single interface to control all the information related to a company's business — including customer, product, employee, and financial data.

Extranet
An extranet is a private network that uses the Internet protocol and the public telecommunication system to securely share part of a business's information or operations with suppliers, vendors, partners, customers, or other businesses. An extranet can be viewed as part of a company's intranet that is extended to users outside the company.

FMCG
Fast Moving Consumer Goods.

GCI (Global Commerce Initiative)
GCI is an initiative of retailers and manufacturers with the objective of building a collaborative inter-business process that will endorse a set of recommended standards, enabling technologies and best practices with worldwide application. This will provide benefits to all users, large and small, wherever they operate, as well as facilitating global supply chain efficiency and effectiveness and consumer value through co-operation.

GLN (Global Location Number)
World-wide valid numbering structure for unique identification of physical, functional or legal entities within a business or organisational entity (e.g. warehouse, delivery points such as warehouse gate).

GTIN™ (Global Trading Item Number™)
Internationally aligned, unique and world-wide unambiguous 14-digit article number for products and services that incorporates existing EAN 8-, 13-digit codes.

ILN (International Location Number)
See GLN.

KPI (Key Performance Indicator)
Measures that are deemed essential in monitoring the performance of a business, e.g. service level, profitability.

Lead Time
The time it takes from order generation to order receipt.

MOLAP (Multidimensional OLAP)
See OLAP.

OLAP (Online Analytic Processing)
OLAP allows companies to analyse (summarising, consolidating, viewing, applying formulae to, and synthesising data according to multiple dimensions) aggregated databases built from their data warehouses (Codd). OLAP is the infrastructure for decision support applications.

OSA (Optimal Shelf Availability)
Improvement of product availability on store shelves. Concept to avoid out-of-stock situations.

POS (Point of Sale)
Point of Sale is the place where the purchase is made at the checkout or scanning terminals in a retail store. The acronym POS frequently is used to describe the sales data generated at the check-out scanners.

Retail Panel
A Retail Panel is a regular survey that monitors sales of particular products and categories of products in a sample of various types of retail outlet.

RFID (Radio Frequency Identification)
A data carrier technology that transmits information via signals in the radio frequency portion of the electromagnetic spectrum. A radio frequency identification (RFID) system consists of an antenna and a transceiver, which read the radio frequency and transfers the information to a processing device, and a transponder, or tag, which is an integrated circuit containing the radio frequency (RF) circuitry and information to be transmitted.

ROLAP (Relational OLAP)
See OLAP.

SKU (Stock Keeping Unit)
A SKU is any trading unit (e.g. case, tray, promotional shipper, pallet), that can be ordered by customers and handled in the supply chain. It is labelled with a uniquely identifiable trade number. It may internally consist of consumer units (product package size as sold to consumers) or other trading units.

UCC® (Uniform Code Council, Inc.®)
Uniform Code Council® The Numbering Organisation in the USA to administer and manage the EAN·UCC system standards in the USA and Canada.

UPC (Universal Product Code)
See GTIN.

UN/EDIFACT
United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport. They comprise a set of internationally agreed standards, directories and guidelines for the electronic interchange of structured data, and in particular that related to trade in goods and services between independent, computerised information systems.

VAN (Value Added Network)
A company that acts as a clearinghouse for electronic transactions between partners.

Vendor Managed Inventory (VMI)
A form of CRP in which the vendor (supplier) manages the stock levels and availability in his customer's warehouse, based on actual and/or forecasted demand.

WebEDI
Web EDI covers the techniques used to facilitate EDI via the Internet-Service WWW. Compared to Internet EDI it is not only used as transport medium but also as communication medium. A media disruption is deliberately intended.

XML (eXtensible Markup Language)
XML is the universal format for structured documents and data on the Web. XML is a flexible way to create common information formats and share both the format and the data on the World Wide Web, intranets, and elsewhere.

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