

6 Electronic Commerce and Supply Chain Management at ‘The Swatch Group’

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6.1 Introduction

Electronic commerce (EC) and supply chain management (SCM) are two Business Networking strategies that are enjoying widespread popularity. As mentioned in Chapter 4 both are concepts designed to sustain networking among businesses and as such are attracting considerable management attention these days. This is explained by the substantial growth in electronic sales that is expected to take place in the coming years. According to [Forrester 1998] five percent of all global sales will be through electronic media by 2003. While EC is often put on a level with such sales solutions as electronic catalogs, malls and auctions, all sales involve supply chain activities as well. The latter cover the entire production process from procurement to distribution and for some products at least have reached a remarkable degree of sophistication. Examples are immaterial products (e.g. news, and software) as well as some physical products such as CDs, books or computers. Compared to the potential of physical products, electronic sales are still negligible. Prominent exceptions such as Dell or Cisco have had a measure of success due to their efficient link to EC and supply chain solutions. But for many companies this still remains an intricate task. Reasons for that are:

- Solutions for EC and SCM have evolved from different backgrounds: The former from sales and marketing and the latter from physical logistics, production and materials management.
- Companies are faced with the trade-off problem to quick develop an EC solution to be present on the market and to integrate transaction data in the back-end systems which is a time-consuming and expensive task (cf. Chap. 17).

In the following, we will outline how industrial companies can reap benefits by jointly managing EC and SCM. We believe that the pursuance of integrated strategies which include both areas is vital for expectations in electronic sales to materialize. We will present a case study to show how ETA SA implemented an EC and SCM strategy. This will include a description of the solution and an evaluation of the major benefits for the participants. Important lessons learned and critical success factors deduced from this project will be dealt with in Chapter 6.4. Finally, in Chapter 6.5 we will discuss the conclusions to be drawn for the management of the inter-relationship between the two concepts.

6.2 Comparison of Concepts

The theoretical analysis of EC and SCM reveals that both concepts have two aspects in common (cf. Chap. 4.3). First, buy-side and sell-side overlap with the source and deliver activities that are core elements in supply chains. Second, information on supply chain planning processes is required within the contracting

phase when the availability of goods or the scheduled delivery time for a specific configuration is to be determined. This functionality, called ‘available to promise’ (ATP), clearly requires information from the supply chain. ATP checks have become an important feature of SCM systems from i2 Technologies, Manugistics or SAP (cf. Chap. 9). It is equally important that these systems should make use of the information on EC transactions in determining demand forecasts.

Figure 6-1 illustrates the relationship in a sourcing scenario: The source activity is initiated when demand emerges from an ERP module or is determined manually. Such demand triggers off the EC transaction and goods are selected, negotiated and delivered via close interaction of customer and supplier systems. On the supplier side, a supply chain link exists between the information phase and the plan process which enable the ATP check to be performed. All other links focus on the settlement phase for the production and delivery of the goods ordered.

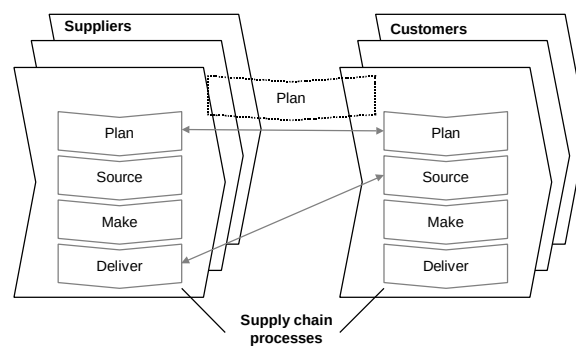


Figure 6-1: Complementary Relationship Between EC and SCM

While there is considerable overlap of the central functions in the two concepts, marked inherent differences exist in the scope of design and quality of the underlying relationships. In EC, the main emphasis is on shaping information and contracting processes within transactions. SCM is designed to provide control of the underlying flow of goods, an element reflected in supply chain planning, delivery and payment processes. From the transaction perspective, the latter mainly take place within the settlement phase and, except for a slight overlap resulting from the exchange of availability information noted above, orders emerging in the contracting phase may trigger off SCM activities. As regards the quality of the relationship, it can be observed that SCM arrangements tend to occur in long-term relationships with a substantial intensity or depth of cooperation. Often, EC tends to produce opposite effects seeing that the costs of switching catalog providers are marginal.

Thus, an analysis of the two concepts – EC and SCM – reveals a complementary relationship with some overlapping. EC concentrates on shaping information and

contracting activities (e.g. designing electronic catalogs and matching functions) whereas SCM is primarily concerned with planning processes and the organization of various flows of goods. Specifically, SCM has developed techniques and methods for streamlining the designing, implementing and operation of settlement processes. Indeed, both concepts are bound to have an important impact on day-to-day business [Kalakota/Whinston 1997, 285]: "The integration of electronic commerce and supply chain management is changing the way businesses work internally and work with each other."

6.3 Case Study: EC and SCM at ETA SA

6.3.1 Goals of EC and SCM at ETA SA

'The Swatch Group' is a globally operating producer of watches for brands such as Blancpain, Omega, Rado, Longines, Tissot, Certina and Swatch. The Group consists of a number of individual companies which, inter alia, mainly engage in the production of watch movements and components as well as in research and development. The production of watches for the individual brands is undertaken by various member companies of the Group. ETA SA Fabriques d'Ebauches of Grenchen, Switzerland, employs about 10.000 people worldwide and supplies the movements for watches to all brands of 'The Swatch Group' which, in turn, organize the production and distribution of the finished products. As the world's third largest manufacturer of movements, ETA has over 15 production sites in Switzerland, Germany, France, Thailand, Malaysia and China. Revenues in 1998 exceeded one billion Swiss francs.

In the case of ETA SA, Business Networking makes for increased customer-orientation, improved cost-efficiency, reliability and global presence. Together with the Institute of Information Management at the University of St. Gallen (IWI-HSG), ETA has conceived and already introduced new procedures for the distribution of spare parts which incorporate SCM and EC elements. The ETA case highlights the potential of both strategies for cutting costs and for streamlining customer service processes in a typical business-to-business setting.

6.3.2 Initial Problems at ETA SA

When ETA started its 'business network redesign' project in 1996, there were three main problems that were considered to be of strategic importance: (1) the redesign of the introduction process for new movements, (2) a new distribution strategy for spare parts as well as (3) the installation of a new distribution channel

for spare parts. A two-phase project was set up to tackle these challenges: Phase I addressed the reengineering of the supply chain and phase II the introduction of the EC solution.

To start with, a number of customer workshops and a customer relationship analysis were conducted in order to explore networking potentials and problems [cf. Benz et al. 1999]. The main problems reported were:

- Customers, i.e. mainly the different brands within the Swatch Group, were lacking information about the interchangeability of parts (one part may be used in several movements) and comprehensive up-to-date technical information on the movement, assembly information for the production of watches, manuals and specific information on special questions such as necessary stocking etc.
- Specimen movements, spare parts and movement-specific tools were not available as new movements were coming on the market.
- Low level of customer service (ETA-CS) performance due to long cycle times for the repair of movements and the distribution of spare parts and frequent misunderstandings resulting in the delivery of wrong parts.
- Rudimentary information on ETA customers, their sales history concerning spare parts as well as their preferences.

6.3.3 Phase I: Re-engineering the Supply Chain

As shown in Figure 6-2, the distribution of spare parts involves a complex distribution network of warehouses, both inhouse and outside. Each brand orders spare parts from ETA-CS and delivers them to their customers, e.g. 'The Swatch Group'-country organizations (CO) and independent agents. Brands receive the parts from the ETA-CS and store them in their own warehouses. After analyzing the existing supply chain, it was found that there are three major advantages to be gained from direct deliveries to the brand's customers:

1. *Concentration of inventory holding locations at ETA.* Today, ETA had about 12 different levels of inhouse warehouses which were scattered all through the distribution process. A new high-bay warehouse has been installed to eliminate the need for small warehouses. Concentration of inventories has not only reduced overall inventories at ETA but also ensured more efficient stock-keeping, i.e. quick retrieval of necessary parts.
2. *Elimination of warehouses at the brands.* With spare parts delivered directly to the brand's customers, warehouses at the individual brands will become redundant obsolete in some cases and outphasing them will result in reduced inventory costs and improved capacity utilization.

3. *Delivery guarantees for customers.* Eliminating warehouses also entails reduced bufferage within the distribution network. Brands that were reducing their warehousing capacities insisted that ETA should guarantee specific times for delivery. So ETA-CS established two distribution channels, Distributions A only for EC orders, with cycle times of 24 within Switzerland and 120 hours for the rest of the world, and Distribution B for non-EC orders, with same cycle times as before, respectively.

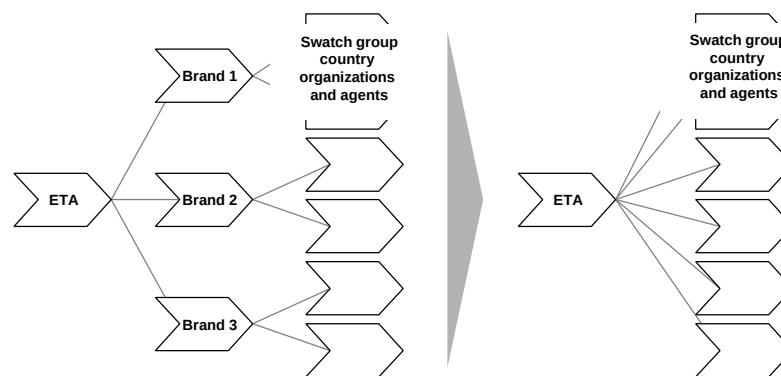


Figure 6-2: Redesign of the Distribution Network at ETA

6.3.4 Phase II: Introduction of a EC Solution

As explained in Chapter 6.2, the main activities of EC are associated with the design of information and contracting processes. At ETA, orders were traditionally sent via fax or mail to the ETA-CS. Their main problem was that consistent information on available products was lacking and orders often were for just '40 gears with 14 teeth'. Translating this order into processing terms, i.e. finding out the relevant article number, was very time consuming for the ETA-CS and it might take hours to identify the relevant article. After this matching process the order was finalized and entered into ETA's ERP system.¹ Obviously, incorrect matches would result in wrong parts being delivered.

The project team identified inconsistent product master data as the main problem and went about to elaborate a homogeneous master data structure. The master data homogenization of the collection 1999 (117 movements with about 5'000 articles) was finished in November 1999. All articles of the actual collection and all other

¹ ERP stands for Enterprise Resource Planning (ERP) and characterizes a company's integrated transaction and administration system. Prominent examples are systems from Baan, SAP, PeopleSoft etc. (cf. Chap. 2.3.1).

movements ETA-CS is responsible for - articles out of production – will be homogenized until beginning of 2001.

Information on products was initially conceived for distribution via CD-ROMs which contained article numbers, part descriptions, and pictures. However, updating in this solution involved some additional effort and order entry was still relying on conventional media, i.e. mail or fax. Therefore, an EC solution was conceived which enabled the integrated support of information and contracting activities via the World Wide Web (see Figure 6-3).

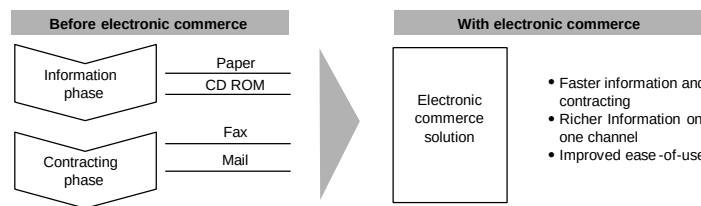


Figure 6-3: Convergence of Information Flow

The ETA Online Shop started in April 1999 with Swiss pilot customers and is available to all customers since December 1999. In the initial phase only selected pilot customers were able to order spare parts this mainly concerned those individual Swatch brands which account for the largest share of ETA's revenues. Once registered in the EC solution, customers can browse through the electronic catalog and obtain specific information about (new) products, prices, discounts, etc. Selected components are added to a shopping basket. The total order amount will be calculated and after choosing a specific payment method (e.g. credit card payment) the order process is completed. An (electronic) order acknowledgement is sent and order tracking will be possible throughout the entire order cycle. The main benefits to be gained from implementing the EC solution are as follows:

1. *Efficiency of information processes for the customer.* The convergence of information in the EC solution (see Figure 6-3) enables customers to obtain all relevant information on existing and new products (prices, technical descriptions, sales conditions, and interchangeability) via one channel. Since the site is maintained centrally, the ETA-CS can easily assure that information is up-to-date and benefit from cost savings in producing and distributing catalogs, price lists and technical documents.
2. *Improved level of customer service.* Additional, previously unavailable, features have been introduced with the EC solution and will yield significantly higher service levels. Such features include the shopping basket, electronic order payment options (credit card payments were unavailable before), technical document downloads and electronic order tracking. Additional functionalities are currently being conceived and will include enhanced customer profiling, indi-

vidual customer shopping baskets, customer communities, frequently-asked-questions databases (FAQ), online complaint management as well as auctions to sell refurbished or old parts.

3. *Efficiency of order processing for ETA SA.* With the EC solution, order processing efficiency has increased remarkably. This has been mainly due to the homogenization of master data which reduces matching efforts and, consequently, eliminates misunderstandings as well. Increased efficiency allows ETA-CS to cope with an increased order volume and enables the personnel to concentrate on intensifying customer relationships (e.g. acquisition of new customers, answering individual questions).

ETA SA, Customer Service

SHOPPING BASKET

I. Select product family then choose caliber

Product family:

Caliber:

II. Select caliber only

Caliber:

III. Type in caliber number

Caliber:

[Select your related products](#)

You have 3 items in your basket.

Quant.	Article no. (Online no. or ETA no.)	EO	Price per no.	Discount	Total Price	
330	CHRONOMETER 1950 SA	-	911.300	0%	911.300	edit
10	CHRONOMETER 1950 SA	-	911.300	0%	911.300	edit
400	CHRONOMETER 1950 SA	-	911.300	0%	911.300	edit

Subtotal: CHF 8.100

If you want to change the content of your basket (quantity and/or EO), change the corresponding items and click the button "Update Basket".

To delete all items in the Shopping Basket, just click the button "Delete Basket".

Figure 6-4: Sample Screen of ETA's EC Solution

6.3.5 Complementarity of Concepts and Implementation

The case of ETA SA underlines the complementarity of EC and SCM which was elaborated in Chapter 6.2. Supply chain activities were started by optimizing the flow of physical goods from ETA to the customer. A central aspect was establishing a direct delivery channel as well as enhanced capabilities for monitoring and controlling the distribution processes which has made it possible to offer guaranteed delivery times. The fact that no specific supply chain planning system

was implemented goes to show that supply chain performance may be improved even without setting-up complex planning systems.

Direct customer contact has also been accomplished with the EC solution with customers being able to directly browse through ETA's catalog and use the same platform for order entry. Clearly, the main areas of the EC effort were the design of the catalog and the order entry channel. EC implementation was accomplished via a proprietary, tailor-made solution. Linking the ERP and the EC system is first done manually with the integration of both systems being the object of the next step.

The overlapping of the two concepts was manifest from several aspects. First, the attractiveness of the EC solution increased as direct order entry *and* direct delivery became practical possibilities. This was mainly due to the fact that both cycle times and uncertainty of delivery were significantly reduced as a result. Before, the complex warehouse structure and incoherent master data had impeded quick and reliable deliveries. ETA's long tradition in business notwithstanding, the new electronic channel made it possible to obtain distribution structures comparable to Dell's (cf. Chap. 3.2.1) and Cisco's (cf. Chap. 8.1). Second, an analysis of the financial flow resulted in an additional payment method being introduced, i.e. payment by credit card. Third, there are plans now to integrate logistic functionalities from third-party-distributors to track orders through the entire order cycle and to calculate prices including the accurate shipping costs.

6.4 Critical Success Factors at ETA SA

The study of the ETA case revealed a number of critical success factors which were responsible for the success of the company in introducing its Business Networking solution.

6.4.1 Master Data Management as 'Hidden Success Factor'

Both solutions, SCM and EC, were dependent on the standardization of processes and master data. In the ETA case, this involved identifying the applicable standards for handling orders via the 'customer counter' of the ETA-CS and possible modifications of the existing master data scheme. This led to a far-reaching standardization and maintenance initiative in the area of product and customer master data. As explained earlier, the most time-consuming part of order processing was translating an order into ETA's article numbering system. This concerned mainly the processing of interchangeability information, consolidation of pricing information (for special packaged quantities) as well as the integrity of article and technical descriptions. Neither of the two concepts directly includes this activity in

its scope, but without master data management the benefits described would not have been possible. Therefore, master data management has been recognized as a 'hidden' success factor.

6.4.2 Strategic Alignment with Marketing Strategy

EC and SCM tend to mark a turning point in a company's established marketing strategy in as much as these strategies introduce a new distribution channel with novel functionalities (direct order entry and direct deliver). Interestingly enough, EC initiatives often originate in a company's IT department and SCM on the production side. For this reason, the first step to be undertaken should be to make sure that the marketing department is convinced of the initiative's benefits and strongly believes in the necessity to act.

In the case of ETA SA, the benefits and possibilities of implementing the new distribution channel were clarified with the company's top management when best practice EC solutions from Dell, Cisco and others were demonstrated. An intensive discussion process ensued and the positive effects of the planned solution on the company's marketing as well as on customer's sourcing strategy were identified. As a result, a clearer understanding was obtained of the benefits to be expected, costs and project timescale. As a side effect, it was possible at an early stage of the project to clarify such upcoming questions as security issues and legal aspects of EC.

6.4.3 Reciprocity of Benefits

The first activity on starting the project was to communicate the current status of development work to the partners on the basis of the isolated EC solution (no ERP integration). This provided a pretty clear picture of the scope the solution at this early stage and enabled the partners to assess their specific win-win situation. For this purpose, the project team conducted workshops where win-win situations were elaborated in terms of improved effectiveness (guaranteed delivery times, higher information level, transparent order tracking information, interchangeability information for customers of the EC solution) and higher efficiency (lower order fulfillment costs for ETA SA and cost-saving potentials for the brands' local warehouses). It was decided that the 'selling proposition' for the EC solution should consist in superior supply chain performance, mainly guaranteed delivery times, rather than price incentives.

6.4.4 Common Basis for Communication

As strategies for business networking, EC and SCM are inherently interorganizational in nature. In determining the scope of a joint solution and the degree of synchronization of processes among independent business units, it was important to establish a common basis for communication. At ETA, the previously mentioned SCOR model proved helpful in as much as it aims at improving communication between supply chain partners.² SCOR distinguishes multiple analytical levels of which the upper three were used at ETA.

- At level 1, management and relevant supply chain partners jointly elaborated a *business network* that enabled an overview to be provided of the internal and external organizational units for the product groups affected by the solution. Included was an overview of production and distribution locations on ETA's procurement side as well as intermediate storage facilities, distribution centers, wholesalers, retailers and end customer groups on the distribution side. With the aid of this chart, ETA defined which of the distribution levels should have access to the EC solution in the future.
- At level 2, relevant business processes and exchanged outputs were defined using the generic SCOR distribution processes such as 'make-to-stock', 'make-to-order', 'deliver stocked products' and 'deliver made-to-order products' (cf. Chap. 4.3.2). At ETA, this *execution process network* mainly consisted of execution and planning processes. For example, 'plan make' was used to coordinate the order-based production process with the order-based delivery process.
- At level 3, the *process elements* relevant to EC were analyzed and refined. For example, outputs exchanged such as product description, customer inquiries, order acknowledgements, etc. were specified. An important step was the application of the metrics provided in the SCOR model (e.g. lead times, number of perfect orders, etc.) since this forms the basis for measuring the performance of the SCM/EC solution in the future.

SCOR clearly helped in rapidly mapping out processes and in compiling an unambiguous documentation of the future supply chain configuration. However, it turned out that SCOR was conceived for supply chains and, when applied to the modeling of an EC solution, it permitted only delivery processes in the settlement phase to be modeled with the pre-defined elements. Despite its shortcomings in the area of information and contracting activities, SCOR was chosen for the intro-

² SCOR comprises a standard description for management processes, a framework for relationships among the standard processes, standard metrics to measure process performance, management practices that produce best-in-class performance, and standard alignment to software features and functionality [cf. Supply Chain Council 1998].

duction of the EC solution since the 'selling proposition' consisted to a high degree of supply chain performance.

6.4.5 Method for Structured Procedure

The ETA project clearly brought out the specifics of Business Networking which are non-technical to a great extent. Business Networking needs strategic management attention and requires organizational standards and rules. Important examples are homogenized master data and clear responsibilities between marketing and IT for the design and operation of the EC solution. Both SCM and EC involved business relations to other members of 'The Swatch Group' that are largely independent. Therefore, hierarchical pressure to participate in the SCM and EC solutions was no viable option to ensure the acceptance for the solutions. Once the internal organizational measures had been initiated, a possible scenario was developed and benefits for potential partners were estimated. Based on these expected benefits pilot partners were convinced to participate in the further development of the EC solution. This mainly involved completing a change request and also offered the possibility of shaping the final solution according to their requirements. After a series of change requests from internal and also from pilot partners the EC-solution was ready to be rolled out to all customers.

Phase 1: SCM	Phase 2: EC
• Homogenization of product master data • Redesign of distribution network: Concentration of existing inventory holding locations • Redesign of warehouse management, e.g. high-bay warehouse • Redesign of supply chain process networks based on common basis for communication	• Strategic alignment with marketing strategy • Homogenization of customer master data, including customer specific discounts in a rebate matrix • Calculation of customer benefits • Communication of customer benefits and selection of pilot partners • Set-up of EC steering committee • Selection of pilot products • Design, plan and implement EC pilot • Collection of change requests • Roll-out EC solution • Enhancement of EC solution (ERP integration)

Table 6-1: Steps Undertaken in Business Networking at ETA

The major steps in the ETA-project are shown in Table 6-1 and were used in the development of a method for Business Networking (cf. Chap. 14). The structured approach is also apt to improve efficiency where further Business Networking processes are to be implemented.

6.5 Conclusions and Next Steps

This Chapter discussed the steps and procedures used in implementing a business-to-business EC solution based on a redesign of the supply chain for industrial products at ETA SA. In executing the EC solution, the supply chain proved a critical element and direct delivery and direct order entry facilitated a direct link to the customer. The performance of the supply chain was, in fact, used as a selling incentive with a view to fostering the diffusion of the EC solution. At the same time, the EC-system was instrumental in improving such supply chain activities as order entry and payment. There are many other aspects, too, that underline the complementarity of EC and SCM, i.e. the flow perspective of SCM versus the transaction perspective of EC.

More importantly, the project also reflects the intricacies of inter-business projects that involve multiple Business Networking strategies. It was crucial for the success of the project that it had the management's support and that not only IT and customer service were involved, but the marketing department, too. As far as external partners are concerned – the individual brands at ETA – here is a case that bears witness to the importance of reciprocity. Creating mutual win-win situations is clearly a *sine qua non* for the successful diffusion of an inter-business solution. Addressing these challenges and the hidden success factors that became apparent in the course of the project, is a complex task. The method adopted provided a structured procedure model and systematic guidance in identifying roles, problems, success factors, milestones, budgets, and other key elements.

It should be pointed out, however, that work on both the method and the EC/SCM solution is ongoing. Important steps to be undertaken next are to develop an extended cost-benefit analysis and to define metrics to assess the performance of the EC/SCM solution as well as to establish links with customer relationship management functionalities, e.g. complaint management, customer communities or self-information services.

