

Perspectives for our partners
***Customer Integration- Establish a
constant bilateral knowledge flow***

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1 Customer Integration – Establish a constant bilateral knowledge flow

1.1 Introduction

This volume of the perspectives for our partners serves to prepare our partners for the next workshop. We have investigated the area of customer integration in companies with the special focus on the factors, that influence, fosters, and enable, the organisational form for integration of the customers' knowledge within the company. The literature review has showed that there are only few concepts that are useful to integrate customers' knowledge and that there is a gap in theory. But it has displayed us the supportive and counterproductive factors for the integration of customer knowledge within the company. The cases have given us a practical view about the customer integration. But a concept like the Knowledge Network has never been used. By identifying these factors and the practical insights we came to the end that a Knowledge Network would be the appropriate organisational form for the described goal. We use the identified concepts and theories to adapt our framework and our MERLIN methodology for a Customer-Company-Knowledge Network. This new methodology was created in the bilateral project with HP. For further information please read the project report HP bilateral "*Customer Integration into the Knowledge Network*".

With our work we want to gain, on the one hand important insights for the enrichment of our framework for Knowledge Networks for Growth. On the other hand, we want to help our partner companies with our research to support their activities in the area of customer-knowledge integration. Therefore, we started off with a literature review focused on useful information that helps us to create a methodology for a Customer-Company-Knowledge Network and ends up with cases that describes the approaches of several companies in this area.

Both, the literature review and the case collection, show that there is the need of a concept that enables companies to integrate the knowledge of the customers to gain competitive advantage.

2 The customer as innovation partner-insights from theory

Knowledge is the most important organizational resource in the “knowledge society” [e.g. Drucker 1990, 1993, 1994; Toffler 1990; Quinn 1992, Nonaka 1991, 1995]. Knowledge creation is the process, which produces new knowledge and leads to innovations. The stages of effective knowledge management can be described as 1) identifying knowledge, 2) creating new knowledge, 3) building competences and 4) effectively managing innovation [Krogh/ Venzin 1995]. Fostering the process of knowledge creation is the first step to facilitating innovations in the company. It is our belief that the organizational form of a Knowledge Network is the appropriate form to enable knowledge creation, and by doing so, foster innovation. Drucker [1991] differentiates seven sources of innovation within and outside an organization. New knowledge is the most important source of innovation and at the same time, according to the handling, the catchiest one.

Different activities can foster or enable the process of knowledge creation. Knowledge Network as an organizational form is itself enabler of knowledge creation. This organizational form enables the company, e.g. to connect and involve different knowledge resources like customer, competitors or partner companies. The network form is ideal for bundling different specialist competencies, which innovation partners have [see Biemans 1992; Czepiel 1975; DeBressons/ Amesse 1991; Hakansson 1987, 1989; Hippel 1988]. By doing so, the network crosses organizational boundaries and builds the appropriate environment for creating new knowledge.

In this literature review, we focus on the customer as an innovation partner, because it is our underlying assumption that by integrating the customers' knowledge in the company we can create a competitive advantage by optimising the customisation of support processes and by supporting the development of new services.

2.1 Empowering the customers

Celebrated strategy guru C.K. Prahalad argues that doing business used to be a lot like traditional theatre: On stage, the actors had clearly defined roles, and the customers

paid for their tickets, sat back and watched the show passively [Prahalad/ Ramaswamy 2000]. The shift away from formal, defined roles is already occurring in many business relationships. Major discontinuities such as deregulation, globalisation, and the rapid diffusion of the Internet have blurred the roles that companies and their consumers play.

Thanks largely to the Internet; consumers now are "empowered" to engage in an active dialogue with the company [Gibbert/ Goller 2000]. Individual consumers can address their needs directly and can learn through collective knowledge of other customers [Prahalad/ Ramaswamy 2000; Sampler 2001]. Or a company can use the customer knowledge to test their knowledge base [Gibbert/ Goller 2000].

The distinguishing feature of this new scenario is that consumers become a source of knowledge for the corporation. Thinking about the customer as a source of knowledge, requires a shift in mindset: it means treating the consumer as a source of value for the company, not simply as a recipient of products and services. Knowledge has long been recognized as the primary value-generator for innovative companies. Nevertheless, this knowledge was largely sought within corporate boundaries. The shift in mindset enables companies to look outside corporate boundaries for valuable knowledge – the knowledge of customer is underestimated in many cases. In fact, the very locus of knowledge seems to shift from within to outside corporate boundaries [Hamel/ Prahalad 1990; Prahalad/ Ramaswamy 2000], demanding consideration of key questions relating to actively accessing the knowledge of the customer, or, what we call "customer integration".

Despite these challenges, the integration of customer knowledge in the corporation holds tremendous benefits in terms of stimulating innovation in products and services. Although about the merits of user involvement different views exist, [Leonard-Barton 1993, 1998] from negative to a high positive influence, customers' experience with a product is usually better than the product experience within a company [Seybold 2001; Pitta et al. 1996]. Nevertheless, customers' knowledge is a possible source of good and relevant ideas and should be integrated into a company.

The fact that customer or better told them users may generate competitive products, that based on their knowledge and experience with the use of a product, is shown by the development of e.g. open-source software. The software is generating within so called “user innovation communities” [von Hippel 2001] by individual volunteer participants. Often the freely products are adapted or attached by commercial enterprises.

In recent years, it could be observed, that the involvement of customers' knowledge into the innovation, market, or sales process raises the attention of the management, caused by increased research and development costs and the shorter product life cycle. In the management literature the integration of the customer knowledge is part of customer relationship management (CRM).

2.2 The classification of CRM

Based on Wilde et al. [2000] and Bärtschi [2001] Customer Relationship Management (CRM) can be subdivided into three parts: analytical CRM, operative CRM and communicational CRM.

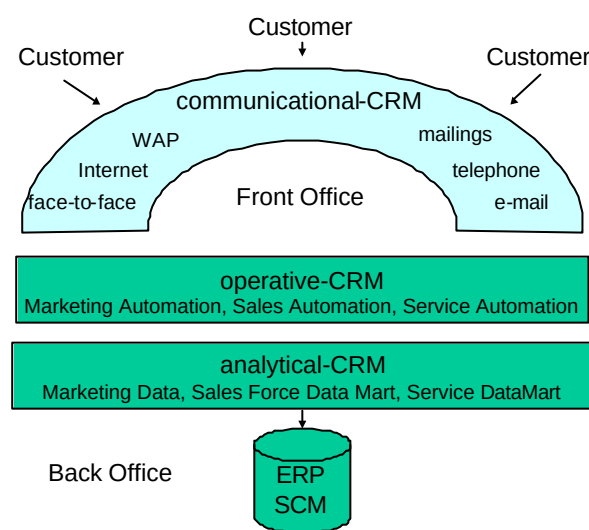


Figure 1: Components of the CRM [Wilde et al. 2000]

The analytical CRM includes the back office of the whole CRM system, i.e. it includes the data warehouse with stored marketing, sales force and service data. The analytical CRM gives the link to the processes within the company to the ERP-system and to the supply chain management (SCM).

The communicational CRM is the direct interface with the customer. It includes the whole range of the customer interaction tools, e.g. face-to-face dialogue, Internet, mailings telephone, etc. but also community concepts like the integration of customers through organizational forms like Communities of practice or networks.

Between the communicational CRM and the analytical CRM exists the operational CRM as an interface. It includes the marketing automation, the sales automation and the service automation.

The customer integration through organizational forms like Knowledge Networks relates to the communicational CRM, as for the customer's, knowledge integration is a 'dialogue' between the company and the customer. In this section, we will outline some important points considering the customers' knowledge integration.

3 Important factors by integrating the customers' knowledge

Analytical CRM consists usually the electronic stock of customer data. However, this data should be used to create knowledge within the company and lead to the competitive inventions. Creating knowledge from the stocked customer's data is the point that Davenport et al. [2001] mentioned. The framework identifies and articulates the primary success factors that must be present to build broad organisational capabilities for transforming electronic data into knowledge and then into business results. The model consists of three major elements: context (strategic, skill-related, organisational, cultural, technological and data factors), transformation (it is the element where the data is analysed and used to support a business decision) and outcomes (this are the changes that results from the analysis and decision making). But this focus only on explicit customer knowledge. But since Polanyi [1967] we know that besides the explicit knowledge there is maybe the more important form of implicit knowledge. To identify concepts that integrate customer's implicit knowledge, we have to focus on the communicational-CRM. This layer includes community and network approaches to integrate the customer personally and therefore enable implicit knowledge transfer.

3.1 Identifying the customer

The communicational CRM is the interface between the customer and the company, here the interaction and the communication takes place. All information and the knowledge enter at the front office into the company. Nevertheless, how can the company distinct between relevant information and knowledge and non-relevant knowledge? Seeking in the dark and gathering all knowledge or any information from the customer is an expensive approach. It seems to be a logical approach to collect not all knowledge. But the knowledge that gains company advantages because of its value for

optimise services and products. Therefore, a suitable and a more canonical approach is to select not the knowledge but the appropriate customer, in which the valuable knowledge implicit knowledge is embedded.

The question raise: How can we identify the right customer? Whereby the right customers means the customers with the relevant knowledge. Von Hippel [1988], Huppmann and Birkenmeier [1998], and Pitta et al. [1996] suggests to use the lead user as the right customers' group, who have the relevant knowledge and experience in field with the product to foster the invention and later the innovation. The lead user is a customer who has a rich and better real life experience and knowledge with a certain product then the other customers. Lead users face needs that will be a general in the marketplaces, but they face them earlier than the average customer. They are involved individuals who use the product extensively and are familiar with its features, advantages and benefits. This knowledge could be used to innovate new and better products. But before a company can identify lead users in a given product category of interest, a company must specify the underlying trend on which these users have a leading position. Now the question rises how to identify them.

What helps companies identify them as lead users is the quality of questions they ask and the type of support they request [Pitta et al. 1996]. The lead users are mostly much more sophisticated in their information needs. "Ordinary" users may just need hand-holding basic support. In some instances, they ask the type of question that might have to be referred to a support supervisor, or even to a team of support engineers. The technical support is an important means of communication between customers and the company. It is the interface between the customer and the company, and a crucial point in identifying the right customer. So that a company can identify them, if it collects and differentiates between the customers. It requires having a customer database or CRM system capable of capturing all the information a company glean about each customer through each successive interaction [Seybold 2001]. Therefore, the companies can identify them, their company, the problem they have, the situation they face, and eventually the solution that works [Pitta et al. 1996]. We can conclude that lead users are the appropriate customers with the relevant knowledge.

3.2 Willingness to co-operation

After identifying the “right” customer, another important factor in the processes of customer integration arises. Sivula [1997] and Wayland and Cole [1997] describe the customer's willingness to cooperate respectively to share knowledge between the manufacturer and the customer. Integrating customer knowledge consistently in an ongoing relationship is clearly difficult. Customers are not employees. They have personal interests and concerns that may not coincide with an organization's concerns. Furthermore extended relationships involved some degree of interdependency or collaboration and do more closely resemble an ongoing process rather than a series of events or exchanges. The co-operation between the company and the customer can be regarded with the game theory and especially the prisoners' dilemma [Wayland/ Cole 1997]. Prisoner's dilemma states that it is better to co-operate in the long run than acting by itself. But in the short run it is better to act alone and this is a usually fact. The game metaphor is useful way to examine the interactions between buyers and sellers and to explore their incentives to collaborate. Many buyer - seller relationships create value but could create more if an effective environment to collaborate were available. Many relationships are like non-zero-sum games, i.e. the payoff is not constant, in which both parties do better by collaborating. A possible theoretical solution for this kind of game is the communication between the players [Bohnet 1997].

Wayland and Cole [1997] described the conditions for an extended relationship, which are bargaining power, appropriability, relationship management cost and complementarity. Whereby the bargaining power reflects the structure of the market, appropriability refers to the likelihood of making a return on the investment in the relationship, relationship management costs include search, surveillance or monitoring costs, and ownership costs and complementarity refers to the different competencies, resources, or knowledge brought by each party to the relationship.

Under the following conditions a relationship between a company and their customers is more likely. In a perfectly competitive markets, where a company and the customers may obtain every information they need, there are no much incentives to build a relationships. In case, where one has a dominant position, he has no much interest in joining in a relationship. The best market's structure for an extended relationship ex-

ists, when the markets are imperfect but the company and the customers have a reasonable range of options. The likelihood of making a return on investment is increasing, when the both understand each another needs and this foster a relationship. When the complementarity between the company and the customers is low, so the probability in establishing a relationship between a company and the customers is high, because they can create more value jointly than singly, each party has to provide the other with something that the recipient could not reproduce or acquire at a lower cost [Wayland/ Cole 1997].

We have to stress that knowledge sharing within an organisation is not as simple as it should be, and enabling knowledge sharing within one organisation requires a huge endeavour [McDermott 2001]. Sharing knowledge with customer is more difficult, because of the customers come from different companies, therefore different companies cultures they are embedded in, may lead to an enormous problem. Not all cultures might be a knowledge friendly culture, but also the competitions of the mates that in first stage create barriers in knowledge sharing with other companies. We have to mention also the internal barriers for knowledge sharing and creation. There are two types of barriers: individual and organizational barriers [Probst et al. 1997; Krogh 2000]. The individual barriers are caused by limited accommodation and threat to self-image and they are very difficult to overcome, because the knowledge is tied to self image, so people often resist anything new. The organizational barriers are provoked by human tendencies. In any organization, there are four barriers to justification in a group setting: the need for a legitimate language, organizational stories, procedures, and company paradigms. To overcome the barriers, especially the organizational barriers, von Krogh [2000] emphasized the need for care. Care is comprised of five dimensions: Mutual trust, active empathy, access to help, lenience in judgement and courage. The higher the levels of the mentioned dimensions are the better is realised knowledge sharing and creating between individuals. So a company has to create trust, increase active empathy, fostering helping behaviour and building lenience, courage and mentorship.

This rises the question of motivation, rewards and incentives. Pitta et al. [1996] mentioned that the first reward available to external team members is a solution to their

problem or an improvement of their personal situation. This may translate into personal satisfaction, better job performance and rewards from their companies. Beyond that there is a set of tangible and intangible possibilities that might include payment, early access to new products, or a special honorary status. Kleinaltenkamp et al. [1996] and Kirchmann [1994] suggest the following incentives for the customer: e.g. solution of existing problems, extraction of knowledge, reimbursement, cost reduction, special guarantees, better offers, reduction of complaint and rework costs. Whereby the confidence eases the questions of incentives and as well as the customer integration. Wayland and Cole [1997] remarked that the creation of more value jointly than singly, each party must provide the other with something that the recipient could not reproduce or acquire at a lower cost.

Harhoff et al. [2000] mentioned that under appropriate condition a voluntary information spillover may exist between an innovative user and a manufacturer. They identify the following four types of incentives and the corresponding conditions.

1. Inducing manufacturers improvements

“By freely revealing an innovative product or process, a user makes it possible for manufacturers to adopt that innovation and improve upon it. When the improved version is offered for sale to the general market, the original user-innovator and other users as well are able to acquire it and gain from in-house use of the improvements. Any given user’s gain is enhanced if more than one innovating user freely reveals innovations that are then adopted by a given manufacturer” [Harhoff et al. 2000 p.2].

2. Setting a standard advantageous to the user innovator

“By freely revealing an innovation, a user makes it possible for other users to adopt it as their solution as well. This adoption as a “standard” can be beneficial to the user-innovator if his innovation contains imbedded features particularly beneficial to the user that are not easily identified or removed, and if revealing of the innovation preempts the development of other versions” [Harhoff et al. 2000 p.2]; This may lead that being first to reveal a given type of innovation increases a user’s chances of having his innovation widely adopted.

3. Reciprocity and reputation effects

“By revealing an innovation the innovator may create or discharge generalized reciprocity obligations. He may also reap a gain in reputation” [Harhoff et al. p.3].

4. Low rivalry conditions

“When competitors between users is low, e.g. due to geographical separation of markets, the revealing user does not suffer as consequence of the advantages he provides to the other users” [Harhoff et al. 2000 p.3].

This lead to the generalized conditions, usually the innovator users will reveal innovation “when their benefits outweighs their costs” [von Hippel 2001, p.84], whereby there are two kinds of cost associated with revealing an innovation: the cost associated with the loss of proprietary intellectual property and the cost of diffusion [von Hippel 2001]. So the chose incentives must overweight or absorb this cost and generate equivalent value.

3.3 Communication

Are the fundamentals (the right customers, the motivation and confidence) established the way communication should take place; the communication with the customer gets an important role. This fact is well covered in the literature [e.g. Prahalad/ Ramswamy 2000; Berthon/ Hulbert 1999; Pine/ Peppers 1995]. Whereby the company should establish or has the bi-directional flow of learning between the company and the customers or a learning relationship. In this relationship the customer, teaches the company with a feedback of information and the company should encourage an active dialogue [Berthon/ Hulbert 1999].

There are different ways to establish the communication between the customers and the company. We differentiate between the virtual communication and the face-to-face communication. Both forms should be supported to optimise the interaction with the customer and create a motivating environment. Communication enabled by the technology, whereby the importance of the Internet or of the interactive technologies, e.g. e-kiosk, online services and database-driven mail, has risen in the recent years [Calhoun 2001; Fingar/ Sharma 2001; Prahalad/ Ramaswamy 2000; Wayland/ Cole 1997; Pine/ Peppers 1995]. Thanks to the Internet, the customer’s have been engaging

themselves in an active and explicit dialogue with producers of products and services. The customer is regarded as a source of competence. Therefore, ICT-tools (information and communication technologies tools) to support the communication and interaction between the customer and the company are a crucial enabling factor. In the recent years, technologies emerge, which gives the possibility to integrate the flow of information [Calhoun 2001; Fingar/ Sharma 2001]. For example some ICT-tools, like virtual classrooms or collaborative technologies (CollabNet). These are the virtual linking of the customer with the companies' resources. We should also pay attention to another possible technology that enable the communication, e.g. the peer-to-peer technology in a decentralized computer network [Shirky 2000].

But the face-to-face dialogue or interaction should not be underestimated, because the transfer of the tacit knowledge is only possible through a face-to-face dialogue or interaction [Nonaka 1991; von Krogh, 1998, 2000]. Crucial is the balance between both communicational forms.

If the customers are geographically dispersed from the manufacturer's company and the customers have to contribute their ideas or knowledge, they need a support-tool, also called user toolkits for innovation [von Hippel 2001]. The user toolkits for innovation is a support-tool that enables the customer concretises his ideas into customer-need products and visualizes his explicit knowledge. But the use of user toolkits for innovation is only possible if the company divides the usual product or service development tasks in order to concrete need-related problem-solving within a few tasks and then they assign to users.

An effective user toolkit enable five objectives that are important for users: First, they enable users to carry out complete cycles of trial and error learning. Second, they will offer users a solution space that encompasses the designs they want to create. Third, users will be able to operate them with their customary design language and skills. Fourth, they contain libraries of commonly used modules that user can incorporate into his or her custom design. Fifth, properly designed toolkits will ensure that custom products and services designed by users will be producible on manufacturer production equipment without requiring revisions by manufacturer-based engineers.

The above mentioned user toolkits for innovation depend strongly on the related line of business and task to be solved, i.e. the improvement or the innovation of a source code required only a “simple” computer and the software, but the design of an integrated circuit need a more specialised toolkit for innovation for the reason of the five objectives. So the appropriate user toolkits for innovation can be only produced with the help of the potential toolkit innovation’s user, the manufacturer does still have to know the solution space his customer need to be able to design the novel products or services they want. The advantage of such user toolkits for innovation is that a company is able to generate need-related products and the company “eliminates the need to shift problem-solving back-and-forth between user and manufacturer during the trial-and-error cycles involved in learning by doing” [von Hippel 2001, p.255].

If the company or the manufacturer want to obtain a better understanding about his customer and creates the right user toolkit for innovation, so Seybold [2001] suggests using scenarios to strengthen the relationship with the customer and to deepen the understanding about the customer’s needs. The scenarios should improve company’s experience with the customer and enable the companies’ understanding about the customer and the customers’ knowledge. The scenario is the anticipation of the customers needs. However, the scenarios must be tested with the customers who use the product and services, working with them to refine the scenarios and produce new ones. „Creating customer’s scenarios is not particularly difficult, but it does require people to think beyond their companies’ own processes and objectives.” [Seybold 2001, p.87] She suggests the following steps:

- Select a target customer set
- Select a goal that the customer needs to fulfill
- Envision a particular situation for the customer
- Determine a start and end point of the scenarios. The point is what the customer considers to be the successful achievement of his or her goals
- Map out as many variations of each scenario as you can think of. Mentally walk through each step as if you were the customer

- Think of the individual activities the customer performs and the information needed at every step.
- Testing the scenarios with the customers

Not only the creation of toolkits for innovation needs a comprehension about the company's procedures. But also the customers should understand the company's processes or procedures, in case of the customer wants to share his or her knowledge. Kleinaltenkamp et al. [1996] emphasize the importance of the process clarity in reference to the customer's knowledge integration. The problem of the process clarity is provoked by the lack of process transparency, i.e. the customer does not know the process, and the lack of process awareness, i.e. it isn't obvious for the customer that his knowledge can foster or hinder the knowledge sharing process. So that the customer obtains process clarity the company should explain the customer the process or procedures the customer is involved in. Whereby the procedures or processes must be divided in understanding parts.

4 Cases –insights from practice

The following section shows a selection of cases in the area of customers' knowledge integration. The cases describe different approaches in companies and should serve to get practical approaches by observing actions in this research field.

4.1 *Burton Snowboards*

Burton Snowboards, established in 1977, with headquarter in Vermont, USA, offices in Japan, and Austria is the best-known snowboard brand in one of the world's fastest growing sports. According to company statistics, more than 2 million snowboarders are hitting the slopes these days, and over five years, Burton's market share has increased from 30% to 40%.

The company has garnered those numbers by focusing on one objective: to provide the best equipment to the largest number of snowboarders. When Burton wants to find out what customers think, it turns its attention to a market segment whose influence far exceeds its size – the "pros". Burton listens to 300 professional riders (called "pros") world-wide, 39 of whom are on its sponsored team.

Almost every day employees talk to those riders – on the slopes and on the phone. If one of them has a suggestion or a problem, a Burton employee calls back within 24 hours, sometimes attending to one of those 300 riders before helping retailers or other customers.

"We insulate staff members from having so much responsibility that they can't talk to a rider," says David Schriber [Balu 2000, p.307], VP of marketing and himself an avid rider who gets out at least 60 days a year.

In design meetings, product features live or die depending on riders' preferences – even when they contradict those of the designers.

Riders help develop virtually every Burton product. For instance, Burton designed a "Feelgood series" of boards for women, suggested by Shannon Dunn, 27, a bronze

medallist in the half-pipe competition at the 1998 Winter Olympics, who believed that females riders should have more choices to suit their different body types.

“We want to find out whether what the “pros” say they want also rings true for less-experienced riders,” Schriber explains [Balu 2000, p.308]. Company makes sure that the pros’ preferences don’t collide with the needs its rank-and-file customers. To avoid that, Burton has at least 10 of its 22 U.S. sales representatives out on the slopes each weekend, loaning gear to and riding with amateur snowboarders.

Meanwhile, at any given time, two 35-foot trailers are travelling in North America, six buses are criss-crossing Japan, and four trucks are rumbling through Europe, all with the purpose of testing gear on consumers.

Burton also has the eTeam – an online community of 25,000 kids who provide real-time feedback in exchange for trying products for free.

4.2 Amazon.com

The Amazon’s history is very short, because Amazon.com opened its virtual doors in July 1995 with more than 1 million titles and it quickly became the largest online seller of books and has leveraged its customer base as well as the rapidly expand into additional retail categories. Its headquarter is in Seattle, Washington USA. Today Amazon.com provide a vast range of things one can buy online, like books, CD’s, videos, DVDs, games, electronics, software, home improvement products, auctions and on-line greeting cards, and this in 160 countries and with 29 millions customer. The wise marketing strategy leads to the fact that the brand name Amazon.com became a synonym for on-line shopping. Currently Amazon.com operates five Web sites for selling: www.amazon.com, www.amazon.co.uk, www.amazon.de, www.amazon.fr and www.amazon.co.jp.

Amazon has pioneered a new business model for electronic commerce, one that could potentially be applied to many different consumer products. So it has transformed the book trade from a commodity-based, supplier-driven industry into a service-based book-buying community. Another specific item and therefore protected with patents is

the 1-click™ feature based on the collecting and learning from the customer's buying behaviour.

How does Amazon.com learn from their customers?

In this case Amazon.com did more than just selling some books with the help of the World Wide Web, because of the very high “repeat orders” rate of over 70 percent. The reason is that it offers a unique, customised service: about books that are of relevance to the individual potential customers. This based on two facts. First, Amazon.com uses the customer knowledge and time for its own purpose, and second, Amazon.com provides the collected information and data about the customers as a service to other customers.

The first fact includes synopses, excerpts, and reviews including reviews submitted by readers. For it Amazon.com has built-up an extensive community of buyers through positive feedback. So everyone may freely write a review about a book and the book review is published with the correspondent book to other users. Whereby the reviewers are listed in a ranking list, which leads to a self-affirmation and a higher reputation of the reviewer, and also every buyer may find more information about the reviewer, which leads to a feeling of confidence towards the reviewer. The Amazon.com uses buyer's knowledge and provide this knowledge on the one hand to other customers, via the published reviews, and on the other hand it uses this information for the purpose of his own.

The second fact is Amazon.com accumulates also a database of customer's preferences and buying patterns or searching patterns (“Your Recent History”), tied to their email and postal address. So the selling is enhanced by additional product information, like synopses, reviews or topic related books (“Customers who bought this titles by XY also bought titles by these authors: ...”). This facilitates customer buying decision it gives him a touchy feeling as well leads him to further buying, whereby the recommended book titles are in most of the cases relevant.

Amazon.com learns from their customers the whole time, whereby the success of learning depends on the software and technology Amazon.com used.

4.3 Hilti AG

Hilti AG was founded in the year 1940 as Maschinenbau Hilti oHG in Schaan, Liechtenstein, as a mechanical workshop with five employees by Martin and Eugen Hilti. First they made products for the Swiss textile machinery and the German automotive industry. They were so successful that the number of employees increased to about 100 in the year 1945. In the early 50s they had the first contact with the “fastening business” and they established their first foreign representation.

In the late 60s Hilti entered in a new business unit, namely into the drilling and anchoring systems. In the next years Hilti expanded worldwide and established its sales representatives. In the 80s another diversification took place, Hilti entered the field of industrial chemicals. So Hilti AG grew based on its core competencies.

A characteristic of Hilti AG is its sales mode, because Hilti uses the direct sale, so Hilti AG can keep track of its customers.

The Lead User market research method is built around the idea that the richest understanding of new product and service needs is held by a few “Lead Users”.

A Lead User market research study involves four major steps:

1. Specify the characteristics a Lead User will have in the product/market segment of interest
2. Identify a sample of Lead Users who fit these criteria
3. Bring the sample together with company engineering and marketing personnel to engage in group problem solving
4. Test whether concepts found valuable by Lead Users will also be valued by the more typical users in the target market.

An application of this method was carried out at Hilti AG – a major European manufacturer of products and materials used in construction, on the example of “pipe hangers”:

Step 1: Specification of Lead User Indicators

(a) Identification of Trends

Identification of important trends in the evolution of users in pipe-hanging hardware began with a survey of experts. Expert advisors were found in construction departments of technical universities, professional engineering organisations and municipal departments. The trends identified as most important by the experts were:

Increasing need for pipe hanger systems that are extremely easy to put together

- need for rapidly actuated, interlocking fasteners to connect pipe hanger elements securely
- need for pipe hanger made of lighter, noncorrodible materials

Solutions were expected to result in significant benefits for the users of pipe hangers.

(b) Identification of High Benefit Expectations

Lead Users have been defined as those who display two characteristics:

1. They have needs that are advanced with respect to an important marketplace trends
2. They expect to benefit significantly by obtaining a solution to those needs.

The first step was to identify important trends and users with relatively high benefit expectations related to these.

Telephone interviews with a sample of 74 interviewees displayed that 36% of participated companies build their own pipe hanger hardware or modified commercially available one.

Step 2: Identification of Lead User

The tradesmen who actually install pipe hangers comprised the group in which Lead User would be identified. Hilti's three divisions provided names of 120 firms, where innovativeness or customer sizes were not considered as criteria.

74 of these were successfully contacted and asked to point out expert person on pipe hanger systems in their company. In all cases the interviewers were referred to expert "fitters" or their direct supervisors. Among them 22 lead users were identified.

As a matter of interest, these numbers are similar to these in technically sophisticated field¹.

Step 3: Lead User Product Concept Development

(a) Select a Lead User Concept Group

14 of 22 Lead Users met additional test and were invited to join the workshop.

12 Lead Users agreed to join the workshop, 2 that did not were users who had patented their own pipe hanger system designs.

All users who joined the workshop agreed that ideas developed during workshop would be the property of Hilti. As compensation, every participant was offered a small honorarium but most of them did not accept it.

Three-Day Product Concept Generation Workshop

The goal of the workshop was to develop the conceptual basis for novel pipe hanger system with characteristics identified in the technical trend analysis described earlier.

The Lead Users were joined by two of the expert layout engineers who had participated in the trend analysis, and Hilti invitee - the marketing manager, the product manager, and three engineers.

On day 1, the entire group reviewed trends and problems in pipe hanging systems. Five problem areas were defined and a subgroup was established to work on each. Membership of the groups was at the option of participants, and shifts in membership were made from time to time.

On day 2, the five groups worked on their problem areas in the morning and in the afternoon all participated in some general problem solving and creativity exercises.

On day 3, the subgroup ideas were presented to the entire group, the ideas were evaluated on three criteria: originality, feasibility and comprehensiveness of solution. Next membership was changed; work on the most promising concepts was continued. Finally, the most promising concepts were discussed by entire group and then merged into one joint concept.

Results of Product Concept Generation Workshop

The technical and economic feasibility of the new product concept proposed by the Lead Users was evaluated by Hilti personnel. In the judgement of company experts the suggested pipe hanger system was well in advance of the offerings of the competitors.

Step 4: Testing whether Lead User concepts appeal to typical users

The new product was decided to test on a sample of 12 “routine” users from the original group of 74 interviewed companies. Their response was very positive: 10 of the 12 preferred the Lead User product concept over existing; all except 1 of the 10 expressed willingness to buy such a pipe hanger system when it become available and estimated that they would be willing to pay 20% higher price for it.

Comparison of Lead User method with method ordinarily used by Hilti.

It was possible to compare time and costs expended on this method and on a project that Hilti had recently conducted. Lead User method required 9 months and \$51,000, conventional method required 16 months and \$100,000.

The reason for the time saving appeared to lie in systematic, parallel involvement of engineers, market specialists, and highly qualified users – in contrast to the serial involvement of these groups used in the earlier method.

The costs of customer surveys were lower as only 12 users were involved in joint, face-to-face discussions.

Solutions provided by the Lead User required less work on the part of manufacturer technical departments, Hilti's product development engineers have direct user contact and have been involved in concept development from the start. They therefore had richer data regarding user needs.

The conventional method was conducted in a form of marketing research, where all phases were conducted by the internal Hilti employees.

Summary

In this case, the Lead User method for the development of new product concepts worked well. A significant fraction of all users sampled were found to have Lead User

characteristics. A group selected proved very effective and developed a new system judged to be very valuable by both the manufacturer and a group of non-Lead users. Anticipated result was an observed improvement of teamwork within the manufacturer, manifested in a significant improvement in the level of co-operation between the technical and marketing groups in the company.

Also, since product and performance requirements were immediately translated into language meaningful to both engineers and market researchers, a shared language was created that made further co-operation easier.

4.4 Ritz-Carlton

Established in 1983 with the purchase of The Ritz-Carlton, Boston and the rights to the name "Ritz-Carlton", the company has grown from one hotel to 38 hotels worldwide with \$1.4 billion in profit (1999) and plans for major expansion in Europe, Africa, Australia, Asia, the Middle East, North America and Latin America.

Learning from the customer

The Ritz Carlton, renowned for its service, and individual treatment of its customers treats them all a little different. "All service staff and employees have note pads, and are taught to record every little piece of information they learn about a customer." [Lee 2001, p.1]

A million employee-guest transactions a day provide ample opportunities to impress or irritate Ritz customers. The goal of "zero service defects" is both compelling and difficult to achieve. Still, according to an independent survey, 99 percent of guests said they were satisfied with their overall experience; more than 80 percent were "extremely satisfied".

Employees are trained to identify guests' preferences in subtle ways. For example if a guest of the Boston hotel, let's say Ms. Enkel, mentions to a maid that she appreciates having her bed turned down at 9 p.m., but prefers not to find a chocolate on the pillow, the maid is expected to note this on a small guest preference card and drop it at the front desk.

The information is conveyed to the maid who will be responsible for nightly turn-downs on that floor. It is also keyed into a guest preferences database managed by Galileo International, the reservations systems company.

When Ms. Enkel subsequently checks into the chain's Palm Beach hotel, the staff there will be aware of her turn-down preferences, her interest in early morning aerobics classes, and any other desire she may have mentioned to Ritz employees in Boston or elsewhere.

While other hotels ask guests to fill out questionnaires, the Ritz's subtle approach is consistent with its credo, "Ladies and gentlemen serving ladies and gentlemen." Guests' requests or complaints have priority over routine work. Staff are empowered to set aside routine tasks in order to assist guests, additionally, any employee can spend up to \$2,000 to immediately correct a problem or handle a complaint. All complaints have to be noted down and fed into the service database.

The Ritz Carlton uses Information Systems to better serve the customer, focuses on turning guests preference data into actionable information. Such information is available to each employee, who can use it to provide a more personal level of service.

As the guest preferences database grows, the next challenge will be to transform information about individual guests into enhanced knowledge about how to create consistently delightful guest stays.

Partnership with Galileo and its expertise in transaction processing helps the Ritz focus on its distinctive competence of delivering personal, elegant service. The result: in July 1994, Customer Reports rated the Ritz Carlton first among luxury hotels; it won the Malcolm Baldrige National Quality Award twice. Ritz Carlton opened its Leadership Center that provides courses on Ritz Carlton business practices for both own employees and numerous external participants.

4.5 Comprehension of the Critical Support Factors for Customer Knowledge Integration

During the theoretical work as well as during the field work (see the final report: *Case Study HP and Customer Integration*) the following critical success factors for customer knowledge integration were found: the appropriate task for an extended Knowledge Network, a management commitment in both enterprises, and the motivation as well as the confidence between the extended Knowledge Network members.

First, the appropriate task means that all Knowledge Network members need a common task, the reason is that the common task respectively the solution of the common task must lead to values for all Knowledge Network members. Therefore the common task is aim that must be reached by every member of the Knowledge Network.

Second, the extended Knowledge Network needs a management commitment or stakeholder commitment from both sides, i.e. from the company's side as well as from the customers' side. The reason is that the extended Knowledge Network needs the support and some resources. Mainly the exempt of resources is important, for the customers should not have the feeling they are working for free and so they can be more obliged.

Third, the customers must have the motivation in working in such an extended Knowledge Network, it is possible that the preceding factors may lead to the motivation, but it is better for a Knowledge Network, when motivation exists as a prerequisite.

4.6 Implications for Customer-Company Knowledge Network

In the following table, we summarise the main results of our literature review.

Author	Title	Assertions / Findings
von Hippel, 1988	The source of innovation	Identifying the relevant customer: The identification of the customer is based on the concept of the "Lead User", who possesses a "real

Pitta et al., 1996	Redefining new product development teams	experience” of the company’s product. Identification of such lead users is possible through the more sophisticated question they ask, and the type of support they need.
Birkenmeier, Huppmann, 1998	Kundenorientiertes Technologie- und Innovationsmanagement bei Hilti	
Seyold, 2001	Get inside the lives of your customers	Anticipating the customer needs: The anticipation is realised through scenarios; they should improve a company’s experience with the customer and enable the company’s understanding of customer and the customer’s knowledge.
Sivula, 1997	Competing on knowledge from customer	Customer’s willingness to cooperate They emphasise the complexity of cooperation between two or more independent organisations. The cooperation is influenced by the following conditions: bargaining power, appropriability, cost of relationship management and complementarity.
Wayland and Cole, 1997	Customer connections	
Kleinaltenkamp et al., 1996	Customer integration: Von der Kundenorientierung zur Kundenintegration	Be aware of the processes Before a customer can share his / her knowledge, he / she must know where and when the knowledge must be shared.
Kirchmann, 1994	Innovationskooperation zwischen Herstellern und Anwendern	Trust, Motivation, and Incentives Knowledge sharing between independent organisations is facilitated by existing or obvious confidence. The customer should obtain incentives for his / her knowledge contribution. Possible mentioned in
Kleinaltenkamp et al., 1996	Customer integration: Von der Kundenorientierung zur Kundenintegration	

Wayland and Cole, 1997	Customers connection	centives: payment, solving customer's problems, cost reduction, special guarantees etc.
Pitta et al., 1996	Redefining new product development	
Nonaka, 1991	The knowledge creating company	Communication and interaction There are different ways to establish communication between customers and the company, i.e. the virtual communication and the face-to-face communication. Thanks to the Internet, customers have engaged in an active and explicit dialogue with producers of products and services. But face-to-face dialogue should not be underestimated, because the transfer of tacit knowledge is only possible through face-to-face dialogue.
Wayland and Cole, 1996	Customer connections	
Prahalad and Ramaswamy, 2000	Co-opting customer competence	
Calhoun, 2001	CRM, driving loyalty by managing the customer experience	
Fingar and Sharma, 2001	Customer care – Through the e-commerce looking glass	
Österle, 2001	Knowledge Portals for Business Engineering – A Reference Architecture	

Table 1: Literature overview

The customer integration needs an organizational form that enables the communication between the company and the customers. Knowledge Network can easily integrate the customer. The reason lies in the fact that this organizational form lays over the functional and hierarchical company structure and can therefore integrate external resources without disturbing the conventional organization.

However, which implication do the above-mentioned theories and concepts have for the development of a Knowledge Network that integrates the customers' knowledge in the company?

The lead user concept implicate for a company to identify the right customers with the relevant knowledge for the Knowledge Networks and motivate the customer to share his/her knowledge. Nevertheless, how can the company identify the right customer? This could implicate that a company has to find another than the usual customer and to convince this customer to cooperate. The scenarios implicate a deeper understanding about the customer; the company has to anticipate the customer's needs. The company has to gather the relevant information about the customer.

The problem of procedural clarity implicates the legal and intellectual property rights, because the company ought to demonstrate the customer, the relevant processes and proprietary documents from the own company, and this could lead to security problems.

Another important point that facilitates the knowledge sharing between a company and the customers is the motivation factors and the willingness to cooperate. As said before, without the motivation and the willingness to cooperate, the knowledge sharing between the company and the customers will fail. The motivation can be established through relevant incentives, so the company have to think about and find the special incentives, e.g. financial reimbursement, the motivating environment or the task to solve, for the customers', the own company and the Knowledge Network members and establish them in the network development. We argue that an incentive within the company's boundaries is not an appropriate incentive for the customer. In addition, the question of confidence is very important and difficult to establish, because the Knowledge Network works beyond the boundaries of a company and therefore the company has to interact with different people who have a different background and different needs and views. The confidence is fundamental in creating the appropriate climate for knowledge sharing, especially beyond the company's boundaries. Also the

collecting of knowledge about the customers' processes and the network can contribute/add value and lead to higher customer commitment.

The Knowledge Network has to find the right balance of virtual and face-to-face communication, communication enable sharing of tacit and explicit knowledge. As for the face-to-face communication, the Knowledge Network should establish the organizational tools, like regular meetings, team events. However, the Knowledge Network has also to think about the ICT-tools, like portals, and peer-to-peer technologies. This could implicate that the existing ICT-tools do not support the required needs of the Knowledge Network and it has to establish new ICT tools.

5 Abbreviations

CRM:	Customer Relationship Management
ERP:	Enterprise Resource Planning
ICT-tools:	Information and Communication Technologies tools
SCM:	Supply Chain Management

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