Abstract
Software vendors claim in their marketing brochures that business processes and interoperability can be optimised through the use of business software. Business literature emphasizes the various benefits companies can gain from the targeted use of IT systems. Academic literature, however, paid scant attention to the relationship between business process excellence and the use of ERP systems. Interoperability and business process excellence resulting from it are in the foreground of the following analysis of fourteen business software projects, examined within the eXperience framework in 2006. Hardly surprising was the insight that, in all the selected companies, central performance processes were identified as 'Excellence Processes'. Interoperability was, in this context, often crucial to the company's success. In some companies hybrid solutions were implemented, in which the relationship between human being and machine was optimized and a one-hundred-percent technology support was not necessarily pursued as an ideal.

GETTING STARTED: INTRODUCTION AND RESEARCH METHODOLOGY
The following article presents findings from a long-term research project on business software based on case studies. Since 2000, each year case studies were selected and documented on current e-business topics under the supervision of the author of this article and her research colleagues. In a public 'call for cases' companies were sought who were willing to share their knowledge with researchers from different universities. In the following selection process, those projects were identified which appeared to be most suitable for knowledge transfer in the defined primary topic.

In 2006, the focus topic was 'process excellence'. The research objective of the author was to use the basic set of case studies written in 2006 and to draw a comparative study among these case studies. The main goal was to identify 'factors' or 'features' that enable companies to build up competitive ('excellent') business processes with the use of business software. The paper contributes to the current discussion on 'does IT matter?' (Carr 2004). It describes and analyses primary processes in companies and derives factors that enable companies to differentiate themselves against their competitors.

Claims are made by software vendors in their product brochures about the success of business software for the support of business processes and interoperability. It is difficult to judge whether these claims are justified or not. For this reason we decided to perform field studies asking the users of business software directly about their experiences in the use of business software. This idea is methodologically supported by leading case study researchers such as Zikmund (1997) and Gillham (2000) who argue that the qualitative case study approach is suitable for the exploration of a problem situation where little is known about the situation.

There are several types of business software, but for the purposes of illustration the author decided to limit the discussion to ERP systems which are known to be useful for supporting critical business processes. The term ERP stands for Enterprise Resource Planning and describes a class of information systems which support primary and secondary processes in a company. The paper discusses different types of processes which are defined as...
follows: primary and secondary processes are used in accordance with the Porter taxonomy. Porter (1985) uses the term ‘primary’ for activities connected to value creation (e.g. procurement, production, sales) whereas supporting (or secondary) processes refer to activities which support the operation of a company (e.g. accounting, finance, knowledge management). The term ‘main process’ in this paper is used for the description of meta-processes, i.e. a set of primary and secondary processes which are carried out by one or more departments (e.g. ‘customer order’ or ‘inbound logistics’).

Case studies are particularly suitable for understanding phenomena within their organisational context (Yin 2003). According to a recent study by Cagpemini, managers in Germany, Austria and Switzerland are currently concerned with the consolidation and harmonisation of ERP systems (Capgemini 2006) which should further stimulate interoperability. In an ever more demanding business environment where customers expect fast and just-in-time delivery, business processes need to be electronically supported. Setting up electronic connections between information systems is part of the business model for emerging forms of companies called ‘networked’ or ‘virtual’ organisations. For these companies who are jointly producing and offering products or services, a common electronic infrastructure where business processes are smoothly supported among the partners, is imperative to the generation of business value. Whereas virtual organisations show how far an electronic integration among companies can go, traditional companies are also confronted with the same requirements: faster and cheaper processes combined with higher data quality. In this article the author examines traditional companies and the importance of ICT in the support of inter-subsidiary and inter-company business processes.

Business interoperability is not only about the exchange of electronic documents but it goes further looking at the support of transactions and business processes between companies. There are many definitions for ‘interoperability’. Many of them reflect the technical aspects of the integration of information systems, e.g. the European Interoperability Framework (EIF) (IDABC 2004). This article uses a broad definition where interoperability refers to the capability of one company to electronically connect to other companies. ERP systems are usually the core systems which need to be connected through (standardised technical and business) interfaces. This working definition is close to the definition used by Legner and Wende: ‘(...) we define business interoperability as the organisational and operational ability of an enterprise to cooperate with its business partners and to efficiently establish, conduct and develop IT-supported business relationships with the objective to create value’ (Legner and Wende 2006). The two definitions build on the concept of networkability as described by Wigand et al. (1997, p. 11) and Osterlc et al. (2001, p. 5).

In this article the author examines companies who produce goods and services not in a network of other companies (virtual organization) but as ‘normal’ single players who act independently within the value chain of their specific industry. The conclusions offered in this article should thus be applicable to any company that has business relations with customers or suppliers. For a detailed discussion on different frameworks for interoperability, see Peristeras et al. (2006).

There has been much discussion in recent years as to whether or not case studies are a valid instrument for the generation of research findings. Klein and Myers (1999) performed a study and concluded that ‘case study research is now accepted as a valid research strategy within the IS research community’. Case studies have long been used as a teaching method, especially in the area of managerial sciences (Bonoma 1985, Eisenhardt 1989, Huff et al. 2002). Bonoma (1985) pointed out that case studies in social sciences have been used for both (1) validating existing theories and thus deducing empirical consequences and (2) building theory by using inductive principles. This paper follows the second approach in trying to identify new and previously unknown effects of the use of business processes which are supported by ICT. Eisenhardt identifies eight steps of building theory from case studies: (1) Getting Started, (2) Selecting Cases, (3) Crafting Instruments and Protocols, (4) Entering the Field, (5) Analyzing Data, (6) Shaping Hypotheses, (7) Enfolding Literature, and (8) Reaching Closure.

The Eisenhardt framework shows the entire process of building theory by means of case studies right from getting started to the actual derivation of new theory. This paper uses an adapted version of the framework. The individual steps are followed with the exception of ‘Enfolding Literature’. Following every single step of the Eisenhardt framework is beyond the scope of this paper. Nevertheless, the following sections are strongly linked to her methodology.

Miles and Huberman (1984) propose a methodology for qualitative research that includes advisable steps for the analysis of intra-case and cross-case study analysis. Their four basic steps are data collection, data reduction, data display, and drawing/verifying conclusions. Miles and Huberman point to the fact that the major challenge in practical qualitative research is data reduction. In the phase of data reduction the researcher decides which of the collected information is relevant for analysis and which should be dropped. In this paper data reduction was performed on the basis of the eXperience methodology which has proved itself useful for more than seven years. More than 100 case studies where written with a uniform ‘grid’ (template). The interview questions of the template are listed in the annex of this
article. For a detailed explanation of the eXperience methodology see Schubert and Wölfle (2007).

This paper does not follow the classical research paper approach of presenting the literature, building hypotheses, and deriving findings. Instead, it follows an explanatory research approach where little is known in advance and new findings are ‘explored’. The special idea of the Eisenhardt approach of building theory from case studies is that a researcher has certain experiences and uses a well-defined step-by-step approach to gain insight from these experiences. In the end, the researcher manages to propose new ‘theory’ which can then be tested against findings from other researchers (the ‘classical’ research approach).

There are four well-established building blocks which are used and combined in this paper: (1) the Eisenhardt approach of building theory from case studies (Eisenhardt 1989), (2) the Miles and Huberman (1984) recommendations for data reduction, (3) the eXperience methodology for writing case studies (Schubert and Wölfle 2007) and the (4) Porter framework for business processes (Porter 1985). The following section illustrates how these four approaches are used to derive the desired research results.

**SELECTING CASES**

At the beginning of the projects, a search for companies was carried out that were prepared to report their experiences with ERP systems projects in several interviews carried out by representatives from different universities. A public appeal was made, what is known as a ‘Call for Cases’, followed by an evaluation carried out by the research team who conducted this study. Parallel to the Call for Cases, authors were asked to apply to write case studies. The selected authors were invited to an ‘authors’ training day’ where the ‘eXperience method of writing case studies’ was presented by the people in charge of this research. The eXperience method has been successfully used for more than seven years and has been discussed previously (Sigrist et al. 2004; Schubert and Wölfle 2007). An overview of the research steps is given in Figure 1.

**CRAFTING INSTRUMENTS**

The identification of excellent business processes through ERP support was in the foreground of the analysis of the case studies, examined within the framework of this research project (Wölfle and Schubert 2006). The term ‘excellent business process’ was used in accordance with Wölfle (2006). In his article on excellence in business processes Wölfle defines such processes as basic activities which use the core competences of a company. Excellence processes are characterised by ‘differentiating factors’ which make the performance (product or service of a company) unique in comparison to a competitor’s performance and help achieve long-term competitive advantages. The analysis of these differentiating factors is the aim of this paper.

In a one-year research project, fourteen companies were documented using a standard taxonomy (see Figure 2) and lastly comparatively analysed. The interview questions which were used by the authors are listed in the annex of this article.

**ENTERING THE FIELD**

The interviews were made with the project managers who were in charge of the introduction and maintenance of the business software (ERP system). The authors visited the selected companies and gained insights from project managers and users, as well as the responsible IT partners. These interviewees were also granted access to non-sensitive internal documents relating to the project management, including investment plans, introduction period, statistics, and so forth. In addition, information was also collected from later e-mail correspondence regarding feedback to the texts written, archival records, and publicly available web pages. These in turn helped the researchers to validate and elaborate on the information gathered from the interviews. Each interview lasted for about two hours. Some authors used a tape recorder, others took notes. The transcription took place at a later point in time when all material was compiled. The first versions of the case studies were then sent to the editorial team (see Figure 1). Feedback regarding violations of the default template (see Figure 2), mistakes in the methodology of graphics, and missing or more detailed information was given and the authors were asked to correct the transcripts.

After the first feedback round, the case studies were sent to the interviewees for review and were revised based on their responses. After that, another round of comments from the editorial team followed. The interviewees (company representatives) were asked to give their consent to the final (proof) version of the case
study (‘good for print’). This allows the authors to explicitly use the company names in their publications.

Once all case study transcripts had been completed, they were analysed using the basic structure in which all case studies had been written. The cross-case examination revealed certain common patterns. In the next step, groups of case studies were formed that showed characterizing similar differentiating factors (excellence factors) in their processes. These factors leading to excellent business processes are discussed in detail in the following sections.

ANALYSING DATA

The ‘Netreport 2006’ study on small and medium-sized enterprises (SMEs) (Schubert et al. 2006) shows that ERP systems are primarily used for supporting activities (Porter 1985) in the questioned companies. The most intensive use is found in the classical areas of Finance and Accounting (94.9%), followed by Human Resources (80.5%) and Company Leadership/Management (77.7%). This impression is also confirmed by the results of the ‘Netreport’5’ (Dettling et al. 2004), in which the modules Finance and Human Resource Management and Controlling were used most intensively.

Business processes which characterize the underlying business model in such a way that they constitute a competitive advantage naturally tend to be primary (Porter 1985). These are directly achieved from the fulfilment of customer needs. Figure 3 shows a taxonomy of processes which was developed for the analysis of the cases studies. The taxonomy follows Wölfle’s proposed generic process architecture (Wölfle 2006).
and the eXperience taxonomy to business software (Wölfl and Schubert 2006). The process model shows a specific company in the middle of the figure (dotted line). The primary processes start with the customer contact (customer order), followed by internal processes such as order processing and procurement and end with the delivery of the products/services to the customer. The taxonomy was used to classify excellent processes and to derive differentiating factors (differences in performance between the companies).

Table 1 applies the taxonomy of processes to the case studies analysed in this paper. It shows how the case studies are matched to the processes. The table provides the basic structure for the following section in which the research findings are discussed in detail.

<table>
<thead>
<tr>
<th>Main Process</th>
<th>Described case studies processes in detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer order (Sales Process)</td>
<td>Lyreco: customer order processing (article search, shopping basket, orders)</td>
</tr>
<tr>
<td></td>
<td>felix martin: order processing (advisory and sales process)</td>
</tr>
<tr>
<td></td>
<td>e+h: customer order processing (commissioning, dispatch, invoicing)</td>
</tr>
<tr>
<td>Supplier Orders and Inbound Logistics (Procurement)</td>
<td>Serto: customer-side procurement and warehouse management (logistics, Kanban)</td>
</tr>
<tr>
<td>Order processing (incl. Planning/Disposition)</td>
<td>MGM: order processing (procurement for 3rd party deals and stock sales)</td>
</tr>
<tr>
<td></td>
<td>Trisa: own procurement and warehouse management (logistics, Kanban)</td>
</tr>
<tr>
<td>Production (incl. Planning, Manufacture, Warehouse Logistics)</td>
<td>Wyser: order processing (service orders)</td>
</tr>
<tr>
<td></td>
<td>MTF Micomp: order processing (import article master data, customer-side order process)</td>
</tr>
<tr>
<td></td>
<td>Aebi: customer service and error management</td>
</tr>
<tr>
<td>Outbound Logistics (Commissioning, Dispatch)</td>
<td>Neoperl: order processing with assembly (Built-to-Order)</td>
</tr>
<tr>
<td></td>
<td>Hero: central sales planning (for decentral sales volume)</td>
</tr>
<tr>
<td></td>
<td>MIFA: goods storage processing with mobile appliances and production processes (supply/logistics)</td>
</tr>
<tr>
<td></td>
<td>Otto Fischer: order processing (paper-free commissioning)</td>
</tr>
<tr>
<td></td>
<td>Lagerhäuser Aarau: transport logistics for foodstuffs as service provision (order management und commissioning) handling of supplies</td>
</tr>
</tbody>
</table>

The following sections describe the analysis of the ‘differentiating factors’ in the main processes shown in Figure 3. The chapters contain the findings from the case studies as listed in Table 1. Each chapter concludes with a list of differentiating factors (in italics) which were derived from the case studies.

In his report on process excellence with Business Software, Wölfl (2006) emphasises that a company which wishes to offer excellent performance must draw appropriate business processes from its core competences. These business processes should be organised in such a way that the desired differentiating factors, when measured against the competitor’s performance, can be achieved. Table 2 shows the distinctive features that the authors identified for the described case studies. The features will be discussed in the following sections.

CUSTOMER ORDERS (FOCUS: SALES PROCESS)

At the customer interface, the individual orientation towards the needs of the customer is clearly shown as the most important criterion. Here, Lyreco offers a B2B integration solution, which will offer the customer a continuous, transparent and adapted process from procurement to invoice testing. e + h are also focusing on those ordering and offer three different, customer oriented options for the input of orders (webshop, electronic marketplace, barcode registration). The small company Felix Martin has also brought IT into action for its sales support and obtains its software from an ASP provider. This focus on core competences provides the company with higher turnover and increasing profit. Serto supplies a customer in a Kanban process with C Articles for production and takes the burden off the customer therein in the area of procurement management.

The IT responsible at Lyreco stated that, for these kinds of individual electronic connections, it is always the first implementation project which is relatively costly. From the second installation on, one can go back to the modules already developed and a further customer connection can be carried out on a made-to-measure basis. Felix Martin’s IT partner, who offers area-specific solutions with its ‘smart tools’, will experience a similar learning curve and will also incur a higher cost with its initial customers than with further projects. Lyreco combines the role of an office materials
supplier with that of an IT service provider, and solves customer problems, as a one-stop service.

e+h manages, with their orientation towards customer benefit (the customers choose the optimum channel for themselves) to achieve competitive advantage. Similarly to Lyreco, e+h see themselves not only as a commercial enterprise, but also as a solution provider.

In the Serto case study, the extremely efficient Supply Management and Procurement of a customer through a Serto-executed Kanban process is described. The solution consists of a pragmatic approach which is effective, simple and both clear and user-friendly. The establishment of a differentiating factor only required a small investment in infrastructure and will allow the company the flexibility to adapt to changing circumstances also in the future.

In addition, the interviews with the company representatives in all four companies showed that the development of standard modules and the standardisation of internal processes is an essential factor in the optimisation of the customer interface.

**Differentiating factors:**

1. optimisation of customer processes through electronic 1:1-connection;
2. orientation towards customer benefit for optimum IT connection; and
3. focus on core competence through IT outsourcing; service orientation and readiness to adapt.

**Supplier orders and inbound logistics (procurement)**

The procurement side of a company also holds potential for process optimisation. At MGM, the focus on procurement results from, firstly, the particular nature of the product traded (foodstuffs) and second, the specific situation in Switzerland (customs regulations, food laws). The food industry is highly regulated and there are certain legal requirements, e.g. the maintenance of best-before dates or regulations about the contents of product labels. Since MGM’s suppliers are mostly based abroad, their products have to pass through Swiss customs. The specific customs legislation such as the payment of duty depending on weight creates additional demands on the process support through the ERP system.

The IT solution from MGM provides an optimised process for warehousing business and the wholesaler-to-client sale (at the retailer’s request) in the trading of food, which complies with the requirements for transparency and traceability. Process excellence shows itself here in the mastery of logistic processes and their documentation. Within the ERP software itself, standardised business processes which draw upon the manufacturer’s extensive process expertise have already been implemented.

At Trisa, ERP software, in combination with mobile data collection, has brought significantly more efficiency to the warehouse management area. This takes the form of staff savings in the warehouse and a reduction in liquid assets. In addition, Trisa, like MGM and Lagerhäuser Aarau have batch management at their disposal which allows for focused and fast problem solving. Finally, the supplier relationship has improved due to the introduction of the ERP system, which, on the basis of the introduced Kanban principle, has allowed for more precisely controlled procurement.

The optimised processes in the area of procurement and logistics of goods received lead, in both companies, to cost savings and to an improved competitiveness.

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**Table 2. Success factors of excellence-based business processes in the case studies**

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Differentiating Factor</th>
</tr>
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<tbody>
<tr>
<td>Lyreco:</td>
<td>Optimisation of customer processes through electronic 1:1-connection</td>
</tr>
<tr>
<td>Felix Martin:</td>
<td>Focus(ing) on core competence through IT outsourcing</td>
</tr>
<tr>
<td>e+h:</td>
<td>Orientation to customer benefit for optimum IT connection</td>
</tr>
<tr>
<td>Serto:</td>
<td>Service orientation and readiness to adapt</td>
</tr>
<tr>
<td>MGM:</td>
<td>Focus(ing) on core competence through IT outsourcing</td>
</tr>
<tr>
<td>Trisa:</td>
<td>Optimised warehouse management through batch management and mobile data collection</td>
</tr>
<tr>
<td>Wyser:</td>
<td>Efficient order commissioning through connection to networks</td>
</tr>
<tr>
<td>MTF Micomp:</td>
<td>High degree of automation through IT support</td>
</tr>
<tr>
<td>Aebi:</td>
<td>Outstanding customer service and ongoing quality improvement</td>
</tr>
<tr>
<td>Neoperl:</td>
<td>Optimisation of central corporate management and local customer orientation</td>
</tr>
<tr>
<td>Hero:</td>
<td>Optimised sales-driven production for decentral sales</td>
</tr>
<tr>
<td>MIFA:</td>
<td>Optimised warehouse management through unambiguous material numbers</td>
</tr>
<tr>
<td>Otto Fischer:</td>
<td>Optimisation of person-machine-interaction in commissioning</td>
</tr>
<tr>
<td>Lagerhäuser Aarau:</td>
<td>Outsourcing of distribution logistics</td>
</tr>
</tbody>
</table>

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Differentiating factors:

1. focus on core competence through IT outsourcing;
2. optimised warehouse management through batch management; and
3. mobile data collection.

Order processing (including planning/disposition)

In his report on order processing, Ruile points out that the term ‘order’ is used with varying meaning and specification in almost all case studies (Ruile 2006). The term ‘order processing’, is used in the following section to describe processes which are triggered by external business transactions such as customer inquiry, orders or consumer demand.

In the cases of Wyser and MTF Micomp, excellence lies in a method of cross-company order processing through e-business networks. By this means, it is possible to integrate different ERP systems from different parties, without having to set up an individual point-to-point interface (as for example at Lyreco). In this way, Wyser achieves an efficient order processing which is leading to long term competitive advantage. The solution from MTF Micomp consists of an extremely high level of automation and also the possibility of completely integrating the system all the way from the company’s customer right up to the distributor. As a consequence, several activities which were previously manually dealt with have now been taken over by the system.

Positive economies of scale for those who have taken part up to now, result mainly over a period of time, when further suppliers and customers connect to the network and therefore the cost for the one-off connection pays for itself against the setting up of individual interfaces.

The Aebi case study shows particularly well that excellence can emerge from the combination of particular characteristics of the products and the complementary services of a company. Because of the very specific business sector with its long-lasting agricultural multi-purpose machines, an outstanding customer service and ongoing quality improvement was identified as a differentiating factor. A machine failure at the end customer must immediately be dealt with by the Aebi service. The speed and precision of the processes connected to this, not only internally but also in connection with retailers are fundamentally based on functions which were only made possible by a knowledge data base and a complementary CRM tool. Here, the differentiating factor only becomes possible through the use of IT.

Differentiating factor

1. order processing through the connection to networks;
2. high level of automation through IT support; and
3. outstanding customer service and ongoing quality improvement.

Production (including planning, manufacturing, warehouse logistics)

In the original core area of goods and services, the area of production (including production planning, manufacturing, assembly, logistics) three particular examples are found for optimised processes.

The Neoperl and Hero companies show how central applications can direct decentral activities in a concern. In both companies the ERP system in the parent branch has optimised the planning of production and marketing/sales and achieved a strong, local customer orientation.

At Neoperl the basic processes in sales/marketing and logistics are standardised across the group. Process details can be adapted to the specific location. The release and control of sales/marketing and logistic processes can, according to demand, take place centrally (from the headquarters) or decentrally (in national branches). The business activity of the national branches is co-ordinated and supervised from Neoperl headquarters. In this way, further national branches can be set up with little risk and low costs. The differentiating factor in this solution consists of a strong standardisation of the decentral processes.

The excellence of the Hero solution is shown in that it has succeeded in distributing a fresh product from a single production location to several countries in Europe. Thanks to a needs-based logistics with only one storage stage between production and retail, the competing dimensions of production capacity, goods availability and breakdown costs are optimally balanced out. This has a direct effect on the profitability of the product.

MIFA optimised its inbound logistics and warehouse management with the introduction of unambiguous material numbers. Clear identification of every material in the warehouse means that shelf life can be better controlled.

Differentiating factor

1. optimisation of central corporate management and local customisation;
2. optimised sales-driven production for decentralised sale; and
3. optimised warehouse management through unambiguous material numbers.

Outbound logistics (commissioning, dispatch)

Under the heading ‘Outbound Logistics’ come orders which are concerned with what Ruile calls internal
activities (as here e.g. transport orders, set up orders or commissioning orders) (Wölfe and Schubert 2006).

In the case of both Otto Fischer and Lagerhäuser Aarau it is a matter of commercial enterprises, who have reached a process excellence in the logistics und commissioning areas.

Otto Fischer now has an optimised, paper-free process in order processing. The commissioning process is so effectively developed in a hybrid way (not completely IT supported), in an interaction between person and machine which, according to the participants, would not be possible with a fully automated storage system. In a highly competitive sector the company achieves, in this way, with effective supply to their customers, decisive competitive advantages.

The business model of Lagerhäuser Aarau is based on the flexible integration of sub-processes from its customer logistics. In order to optimise the business processes, the ERP system was designed so that the company’s particular capacities could be added or even built relatively easily into the system and process architecture of the customer. This is attractive for the customer in cases where the performance of the logistics service provision of the Lagerhäuser Aarau is greater than their own. The differentiating factors here are reliability, speed and transparency as well as knowledge of the Swiss market.

The case studies show that, through the use of an optimised and automatised supply chain, process costs can be saved and processing time can be reduced. This raises the competitiveness of the participating companies with sustainable effect.

To summarise, it can be said that the ability to use the same solution for further customers can be cited as a general criterion for success in several case studies. Hybrid solutions are often employed, in which manual processes as well as IT supported measures are interspersed, if the cost-benefit-flexibility relationship is identified as the best solution.

Differentiating factor
(1) optimisation of person-machine-interaction in commissioning; and
(2) outsourcing of distribution logistics

REACHING CLOSURE: THEMATIC SUMMARY OF INSIGHTS

Table 3 summarises the findings. It shows the selected main processes with the differentiating factors that were identified in the cross-analysis of the case studies. Apart from the differentiating factors discussed above, the analysis of the case studies revealed general patterns of company behaviour in the use of ERP systems that are discussed in the following paragraph.

Under the headword B2B-Integration, companies show how they have connected their system to their customers, in order to execute their orders electronically (e.g. over AboNet, VIAM, io-network, nexMart). Within this closed cycle, the data is utilised by the partners without media-break. It can be seen that, above all, it is electronic invoices that will be the driving force in coming years for electronic data exchange between companies.
Customer-retaining is a central theme in almost all case studies. In over half of the cases it is described how companies strive, on top of their own products or their core performance, to offer their customers a larger or additional benefit. In doing this, various strategies are utilised and business software is applied in very different roles. The theme Order Processing primarily covers logistic processes, which have been subjugated to increasing demands for optimisation within the context of international competition. It is clear that logistic processes hold particular potential for process excellence. The food industry is one of the most active sectors in the development of universal IT supported business processes. The most pressing concern is that trade wants to order at ever shorter notice. The responsibility for the availability of products should be, as far as possible, taken over by the manufacturer – including the associated risks of stock keeping. Excellence in logistics means reaching top performance from seemingly unimportant single activities through an optimum coordination of the partial performances.

THE ERP SYSTEM AS COMMODITY? RESPONSES FROM THE CASE STUDIES

The analysis of the case studies showed that software systems can help companies to effectively support their core processes and thus help sustain competitive advantage. ‘Differentiating factors’ (listed in Table 2 and 3) could be identified and were discussed against the background of the experiences of the companies. They are the most important result of this article.

The question of how much value IT has in companies is often not easy to answer. There are frequently two diametrically opposed opinions. One faction believes, following Porter and Millar’s theories of more than 20 years ago (Porter and Millar 1985, Porter 2001), that IT has a particular potential in the achievement of competitive advantage. The other faction takes the view that the diffusion process of IT is now so advanced that it has already become a so-called ‘Commodity’ or ‘Utility’ (therefore a basic commodity available to all). It has lost therein, according to this view, its effectiveness as a strategic instrument of differentiation.

Nicholas Carr says in ‘IT doesn’t matter’ (Carr 2003), that IT in companies will soon come like electricity from the plug socket – meaning it will be produced by external suppliers and consumed by companies. IT would then become inappropriate for use as a strategic competitive advantage. The case studies analysed in this research project make clear that the introduction of business software solutions does not yet mean that an ‘Electricity Project’ is in sight. Two case studies show ASP solutions as the first step of the ‘Utility Concept’, in which small companies profit through a rental solution from a significantly more powerful system than they could afford if they had to purchase comparable software. In all other case studies, the path to highly individualised solutions is chosen, in order to differentiate themselves from competing companies.

In an interview with the magazine to new management (Kisseloff 2006), Carr says that it only makes sense to be innovative ‘if it is extremely difficult for the competitor to copy this innovation’. It will be interesting to observe, how the balance between individual software, individually adapted standard software as well as purchasable software and rental software will develop in the coming years. As it turns out, the examined companies are distinguishing themselves through such different processes that it is in no one’s interest to copy the IT solution 1:1. At most, one could gain stimuli or a basis for one’s own benchmarking. Most of those responsible still believe that they require individually adapted software to support their own differentiating core processes. The analysis shows that it is difficult to agree on general rules for the achievement of process excellence. Certainly not surprising is the insight that what matters, in all cases, are central performance processes in companies (and not supporting or secondary processes). Frequently, hybrid solutions have therefore been introduced, where the relationship between human being and machine has been optimised and a one-hundred-percent technology support has not been pursued as an ideal.

A single well-mastered business process can be a commodity and does not necessarily constitute a competitive advantage. From a process which claims excellence, something more is expected. The authors of the case studies were instructed to show in which aspect the operating company judges its solution as excellent, ‘best in class’ or superior to the customary solution in other ways. The case studies show, therefore, how it is possible, with the support of IT to implement business concepts which are superior in an important aspect to the business concepts of the competition (for example, in the Neoperl case study with its difficult-to-describe franchising business). This superiority leads to an improved profit (as, for example, illustrated by the pipe connection manufacturer Serto in high-salary Switzerland).

It is interesting to see which driving forces stand behind a decision for business software. In three of the case studies, the responsible parties have made a conscious decision to choose a solution from one of the ‘big’ suppliers, in order to protect their investment. Others, however, have sought a software supplier who was ready and able to adapt the solution to the individual objective of the customer. Tracking down models of success or rather clusters in the profiles of the presented companies was almost impossible as the ‘excellent processes’ identified by the authors show little common ground – and this is the case, interestingly, although all of them are involved in order processing. Actually, this result could have been expected if the discussion about core competence (Prahalad and
Hamel 1991) is recalled, in which the unimitable quality of a process is dealt with as a fundamental factor for the achievement of competitive advantage. The excellence-based business processes are components of the business models and are based on the core competences of the examined companies. Hence they cannot, by definition, be easily copied.

CONCLUSIONS AND IMPLICATIONS

The article uses a framework for exploratory research. It draws from four different approaches: the (1) Eisenhardt framework for deriving theory from case studies, (2) the Miles and Huberman (1984) recommendations for data reduction, (3) the eXperience methodology for writing case studies, and the Porter framework for business processes. The resulting research methodology should encourage other researchers to follow the same steps towards gaining real-world experiences.

As common to most research projects based on case studies, the paper has certain limitations in that it derives findings from a small sample size of only fourteen companies. The opinions stem from a small group of company representatives and are thus not representative for the large number of Swiss companies. Nevertheless, the author hopes that the described methodology will encourage other authors to use case studies for the generation of knowledge from practice. It would be interesting to challenge the ‘differentiating factors’ described in this paper using a different and maybe even larger set of case studies. The author intends to continue analysing case studies over the next years. A growing sample of companies contributing to the knowledge base will improve the picture of differentiating features for the use of business software. Also, the author expects to see future studies from other countries where similar patterns could be examined.

All statements in this article were approved by the originating companies. The text is completely based on primary material (i.e. interviews with company representatives). The author believes that calling companies by their real names makes the results easier to scrutinize and might be a valuable anchor for future researchers e.g. if they want to perform a long-term analysis or a comparison over time.

References


APPENDIX

The following uniform template was used for the interviews:

The following details were asked for in the interviews:

1 **The Company**
   - Background of the Company: history, structure, number of employees, turnover, company culture. Who is concerned and what are the internal conditions.
   - Industrial Sector: special facts of the sector, situation related to the competition, development of market potential, type of product, assortment, specific features, history, target group, B2B or B2C.
   - Vision of the Enterprise: the special position of the enterprise (unique selling proposition) against the competition.
   - Meaning of IT and e-business: importance of ICT and/or e-business for the success of the enterprise.

2 **Project Trigger**
   - Starting Position and Reason for the Project
   - Introduction of Business Partners

3 **Individual Title for the Solution**
   - Business View/Objectives
   - Process View
   - Application View
   - Technical View

4 **Project and Operation**
   - Project Management/Change Management
   - Programming and Roll-out of the Software
   - Regular Maintenance

5 **Experiences**
   - User Acceptance
   - Achievement of Objectives and Changes
   - Investment, Profitability and Financial Ratios

6 **Success Factors**
   - Specialties of the Solution
   - Reflection of "Process Excellence"
   - Lessons Learned

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Figure 4. Case study structure that all authors adhered to
2 Trigger for the Project

- 2.1 Starting point and trigger for the project: process of decision making that has lead to the provision of the respective resources and the start of the project. Alternatives that have been considered for the solution.
- 2.2 Presentation of business partners: issues related to the partners who have helped considerably for the preparation and/or setting into motion of the proposed solution. Background of the business relations. Evaluation process. Partners may include: IT Partner, ERP vendor, Internet agency, business partners.

3. Description of the Individual Solution (four views)

- 3.1 Business View and Objectives: introduction to the proposed business scenario. Participants, their roles, products and services. Business model/business concept. Has the described solution led to a change in the concept for business activity? Comparison of the situation before and after. Business scenario providing an overall survey of the circumstances, cost and value distribution among the partners. Participants in their roles, the most important processes in the context, as well as the relations of exchange between these processes. Market scheme, supply chain, co-operation in joint venture or only co-operation in a certain field or enterprise. Operative and strategic objectives of the contractor after introduction of the solution and expenses/benefits from the project.
- 3.2 Process View: selected processes in detail. Selection of one or two excellent processes and illustration in an extended event-driven process chain (EPC). Co-ordination of processes and decisions supported by the IT solution. Additional aspects, e.g. how process quality is measured.
- 3.3 Application View: information systems which take part in the solution and their distribution with regard to the roles presented in the business scenario. Distribution of most important functions and data, areas of responsibility, dependence and related risks with respect to the solution. The three layers data, business logic, and user interface show level of integration.
- 3.4 Technical View: distribution of applications over the hardware systems, networks, system integration, as well as specifications of software systems.

4. Project and Operation

- 4.1 Project Management/Change Management: how the project has been initiated, who has taken part, project organization. Project phases and key achievements. How agreement with the needs of the target group has been achieved, how processes have been changed and how new processes have been introduced. Aspects of motivation, training, resistance to exerted counteractions.
- 4.2 Programming and Roll-out the Software: history of the application, test phases, establishment of productivity of the organizational units. Standard software or individual software, software development, customizing, integration with the internal systems, roll-out.
- 4.3 Regular Maintenance: service providing, aspects of operation and accessibility, content management.

5. Experiences

- 5.1 User Acceptance: do experiences match expectations? Changes, extensions, reprogramming?
- 5.2 Achievement of Objectives and Changes: planned and non-planned benefits and successes, back sides and problems. Insights and learnings for future projects. Differences after the introduction of the software. Subjective factors and satisfaction of the people involved.
- 5.3 Regular Maintenance: service providing, aspects of operation and accessibility, content management.

6. Success Factors (assessment of the author)

- 6.1 Specialities of the Solution: factors which make the solution exceptional. Reasons why partners (clients) use the platform.
- 6.2 Reflection of ‘Process Excellence’: the aspects that make a process ‘superior’.
- 6.3 Lessons Learned: what can be learned from the case, mistakes, things that have been made exceptionally good. Brief conclusion.