Abstract

Purpose – This paper aims to describe how process reengineering, combined with the use of modern process-oriented information technology, can lead to substantial improvements in terms of overall process quality.

Design/methodology/approach – A real-life case study from the financial industry is used to show how process management can take place in a competitive business area. Four processes (each with a different characteristic) are used to explain the approaches implemented.

Findings – Through the combination of process restructuring and the application of modern IT, processes can be improved significantly. First of all, cycle times of the restructured business processes have been reduced. Second, reliability of processes has been improved. Third, process-related performance has become more visible, which in turn is a good basis for further enhanced performance.

Originality/value – This experience report illustrates that the concept of process reengineering is applicable, and that the potential of many processes is still considerable. It shows how competitiveness in the service industry can be improved.

Keywords Business process re-engineering, Automation, Production processes, Communication technologies

Paper type Case study

Introduction

Business competition in the financial services industry has increased substantially over the last decade. On the one hand, margins have become smaller (due to world-wide competition in some segments), on the other hand customers demand better and faster services. In the era of internet and mobile commerce, customers expect orders to be performed much more rapidly than in the past. In addition, the number of policies and rules imposed by national and international regulatory bodies (e.g. Sarbanes Oxley act) has risen, which contrasts to the customer-oriented expectations for faster services. In this situation process performance of financial institutions has become a key element. To increase the competitiveness, various organizational and technical options must be evaluated. One approach could be to outsource selected processes to a leading firm. As Tas and Sunder (2004) show, business process outsourcing in the financial services industry has increased over the last year and this trend seems to continue. Another approach is to keep these processes internal and to improve them through a combination of organizational and IT-related measures. This crucial link has been emphasized by several authors, see for example Al-Mashari et al. (2001), Bhatt and Trout (2005), Tennat and Wu (2005).

The rest of the paper is structured as follows: next section gives an introduction and an overview of the terms business process management (BPM). Followed by the section that describes four business processes of Crédit Suisse that were redesigned.
and are currently supported by different process-related IT systems. Furthermore, it is shown how process modeling, process execution and process performance improvement have been applied simultaneously. From our perspective this integration represents the key to better process performance. The penultimate section discusses the performance-related benefits that have been achieved through the use of BPM. The last section summarizes the lessons learned.

Business process management: a short introduction
The term BPM has been used more frequently in the past few years. However, the various definitions are not always consistent:

- Armistead and Machin (1997) write:  
  There is considerable debate about what BPM means. BPM cannot be considered simply as BPR. Rather it is concerned with how to manage processes on an ongoing basis, and not just with the one-off radical changes associated with BPR.

- According to Ovum (2000), BPM is “a change management and system implementation methodology to aid the continuous comprehension and management of business processes that interact with people and systems, both within and across organizations.”

- Smith and Fingar (2003) emphasize that:  
  BPM not only encompasses the discovery, design and deployment of business processes, but also the executive, administrative and supervisory control over them to ensure that they remain compliant with business objectives for the delight of customers.

- Van der Aalst (2004) defines BPM as follows: “supporting business processes using methods, techniques, and software to design, enact, control, and analyze operational processes involving humans, organizations, applications, documents and other sources of information.”

The authors of this paper favor the definition given by Van der Aalst (2004) since his characterization of BPM is both broad and tangible. Based on this definition we focus on a more IT-oriented view. From this perspective BMP includes five main IT-related components (Figure 1). These are:

![Figure 1. An IT-oriented view on business process management](image-url)
(1) **Process modeling.** Business processes are modeled according to a standard notation; e.g. event-driven process chains (EPC) or activity diagrams of UML. The process models are used either by the human actor who carries out the process manually or by a process engine (e.g. a workflow system).

(2) **Process/workflow engine.** These IT systems are used as components of process-based applications. They guarantee that processes are performed according to their specification.

(3) **Real-time monitoring.** This function addresses the fact that the state of running processes (instances) should be easily identifiable.

(4) **Process performance measurement.** To determine the performance of business processes via a given set of performance indicators.

(5) **Business rule management.** It aims at extracting business rules from traditional software applications and to store and manage them via a separate component, called business rules engine.

**Application of BPM at Crédit Suisse on four selected processes**

Crédit Suisse is a global bank, operating in over 50 countries, and headquartered in Zurich. It includes global private banking, corporate and retail banking in Switzerland, global investment banking and global asset management. At Crédit Suisse, more than 1,000 software applications are in place, supporting more than 60,000 employees in performing their tasks.

In the past, business processes suffered from various shortcomings. One major aspect was that process cycle time was too long. Another issue was that succeeding business processes were not seamlessly integrated which could lead to the entry of the same data twice. The third weakness is related to unsatisfactory guidance of the employees through the processes; and this implies that process participants could not easily identify the state of a certain case/process instance.

At Crédit Suisse, the concept of BPM has been applied in more than ten major processes so far. Following are four real business processes which are described. They represent examples where the concept of BPM (in combination with BPM systems) has been applied. Each process is characterized, the main reengineered aspects are mentioned and the impact on performance is described.

**The “direct trade finance” process**

*Problem statement.* In the past, the trade finance process (which deals for example, with the processing of letter of credits) included many different manual steps. Communication to and from the customers was paper-based and time-consuming. In addition, the customers were limited regarding hours of availability as they were bound to the office hours of the bank.

*Process reengineering.* In a first step the “old” trade finance process was visualized graphically. Through the modeling approach it became transparent that not everybody involved in the process had the same understanding of the process structure and its related tasks. Based on the process model, the organizational and IT-related opportunities for improvement were identified. It became clear that an IT-based interface to external customers must be implemented. Moreover, all cases must be handled via a modernized IT system. To simplify the handling and tracking of the
cases the use of a BPM system was suggested. For the detailed specification of the
requirements use cases (www.omg.org) were applied. The new process established is
more detailed than the previous one, consisting of four sub-processes and 16 activities;
ten different roles are involved in the process execution. The solution built is based on
various IT components. To build the process-centered application, the BPM system
MQS workflow was used.

Outcome. Currently, about 300 cases (occurrences of the business process) are
executed per day. Although the process is pre-defined to a large extent, the customers’
requirements can be met to a very large degree. The electronic channel helped to
increase competitiveness since the customers are now able to submit orders at any time
(even on a Sunday morning) and they can track the cases easily. Internally the
restructuring and partial automation (e.g. quality checking) of the process led to an
increase in productivity and shorter cycle time – an aspect that is also relevant for
customers.

The “closing accounts” process
Problem statement. Crédit Suisse has more than two million customers in retail and
corporate banking; and many of its customers have several accounts. Every day,
several hundred accounts have to be closed for various reasons. For example,
customers move from one geographic area to another, have different needs and may
need another type of account, consolidate several accounts, want to transfer their
money to another bank, or die. In the past, the “closing accounts” process consisted of
many manual steps (Figure 2). A customer who wished to close an account had to
speak with or write to a relationship manager. He then filled out a paper-based form or
wrote a special kind of an e-mail (called flow mail) which he sent to the administration
staff, who sorted out the kinds of steps to do, updated the “pending tasks” database
and sent the order to the accounting clerk who initiated the transactions (payments
from one account to another) to be executed. If the forms were not properly filled out or
data was inconsistent, the accounting clerk had to inquire further. All in all the old
process was error-prone, slow and not very efficient.

Process reengineering. The analysis of the process showed that administrators and
the accounting clerk (Figure 2) had to use different back-end systems (core banking
systems running on the mainframe) to carry out their tasks. Furthermore, the analysis
revealed that most account closure cases can be handled in a uniform way; i.e. the
proportion of add-cases was relatively small. To improve the weaknesses, the process
was redesigned and streamlined. In particular, the redesign focused on reduction of the
various media to be used and a reduction in the number of roles involved in this process.

![Figure 2. The old closing accounts process](image-url)
Based on this analysis it was decided to build a new software application that handles the closing accounts requests in an efficient and structured way. This new application is based on a process engine (MQ workflow) that controls the activities to be carried out (Figure 3). One the one hand, it controls human interaction with the system, on the other, it invokes back-end systems which collect customer-related data needed in the process or executes transactions automatically. The new process consists of 26 activities (many of which interact with back-end systems), and the process can be initiated by approximately 10,000 of the bank’s employees.

**Outcome.** The performance of the new process, which is initiated several hundred times a day, has increased to a large extent. The new, workflow-supported process led to a reduction in cycle time by 50 percent. The number of errors has been reduced to a rate of 1 in 10,000 cases. Moreover, this process execution (controlled by a process engine) guarantees that new rules and instructions are carried out “automatically.”

To measure the degree of automation, a useful metric is STP which stands for straight through processing. STP refers to the complete automation of a business process, i.e. handling cases without human interaction. STP is favored when the number of cases (instances) is very high on the one hand and the proportion of special cases (cases that need special processing procedures) is low on the other. The analysis of the new STP rate shows that a large majority (80-85 percent) of the “closing accounts” cases can be handled without any manual intervention from back office staff. In those 85 percent of cases, only the relationship manager is involved; in the old process, all cases had to be handled by three different roles. Cycle time for these orders is now reduced to one day.

**The “settlement of securities” process.** Securities operations is a very transaction-intensive business and therefore it is not astonishing that automation has started very early. This was also the case at Crédit Suisse. The early automation efforts led to very large PL/1 application programs. Since, these programs were built many years ago and have been extensively modified, their modularity has suffered and, consequently, the maintenance became expensive and – even more important – flexibility to adapt to new demands became more and more limited. A modification in a securities operations process was a lengthy affair. At the same time, the number of regulations (imposed by internal or external bodies) which had an impact on the securities processes increased. In addition, monitoring facilities were poor. Checking adherence to service level agreements was time-consuming and not feasible.

**Process reengineering.** Based on the limitations just mentioned, Crédit Suisse chose the approach to sub-divide their old software applications into smaller chunks, called services.
To control the settlement of securities process, which requires the interaction of many services, was decided to build a tailor-made process engine called AM (which stands for “Auftragsmanager” – the German word for “order execution management system”). To improve the insufficient process measurement facilities a process measurement tool[1] was implemented.

Prior to the implementation of the process engine, the old process and the applications used had to be analyzed in great detail. The involved teams used the process-modeling software ARIS Toolset and printed the created process map on large pieces of paper and placed them in the corridors between cubicles. If a certain issues regarding the securities process had to be discussed, people did not go to the PC, instead they debated in front of the large pieces of paper. The graphical notation used was EPC which stands for event-driven process chain (Scheer, 2004). To improve legibility and modularity of the process models, five levels of detail were used. The top level showed the entire value chain, whereas the bottom level points to services that are called.

Figure 3 shows the functioning of the new process-based IT system that supports settlement of securities. The process definition (specified as EPCs) is loaded into a DB2 database. The Auftragsmanager interprets the process definition and interacts with the software components (called services) needed. Execution-relevant data is written in a log file.

**Outcome.** Through the process reengineering and the use of a process engine (Figure 4), a production-style process with high predictability was established. Today about 30,000-40,000 cases are performed daily. It is close to a fully automated process with very little human intervention. The use of a process engine has led to major improvements in the “settlement of securities” process. First of all, only 1 in 10,000 cases needs human intervention; 99.99 percent of orders are processed completed automated. This leads to two highly relevant aspects: First, manual efforts needed
have decreased and this in turn leads to lower overall costs. Second, the process' cycle time has shortened massively.

Prior to the implementation of the new system, orders were processed in hourly batch jobs. Moreover, the new system makes it possible to monitor cycle time of critical processes very carefully. Figure 5 shows the peak values (of cycle time) of the many thousand cases processed on one particular day.

Further useful reports that can be created with the current technical setup are:

- the relative frequency that a certain path of the process model has been utilized;
- whether the process model contains paths (sequences of events and activities) that are unused.

Based on this information the process model can be re-arranged, simplified and further improved.

The “special orders” process

Problem statement. In the financial services industry a large proportion of customer orders can be handled in a rather standardized way. However, to guarantee excellent banking services to the various customer segments, the management of special orders (i.e. orders which cannot be processed via standard procedures) remains important since its impact on customer satisfaction is considerable. In the past, the management of special orders suffered from some weaknesses. First, to perform special orders many different functions and roles were involved. It was not unusual that the fulfillment of a special order required people from
the front, the middle, and the back offices, all of which may be located in different areas. Second, since almost each special order requires different steps – carried out by different people using different tools and communication media – it was hard to identify the state of a particular case (Figure 6). Moreover, cycle time of special orders often was high, as some cases were not immediately forwarded after a certain step was carried out.

**Process reengineering.** To eliminate these drawbacks a generic business process was designed for handling all special orders. The new process is only loosely structured; i.e. there is no given sequence of activities to be carried out. The kind and number of required activities, as well as the roles involved are identified while the process is running; this is a clear difference to the three processes that have been presented above. Tracking of cases submitted by customers is essential. As the sequence of activities may vary from case to case, tracking and forwarding cannot be performed via a given process model. In this example of process a set of pre-defined states a case can take was established (Figure 7). Moreover, for each case all of the agents involved are recorded. In addition to that, each

Figure 6.
Handling of special cases: prior to reengineering

Figure 7.
Handling of special cases: after reengineering
individual case is attributed to a case owner. This setup makes it possible that responsibility of each special order is determined and for each case the current state as well as the currently involved agent can be identified. This generic process model was implemented in an IT system which is based on the process engine of ActionWorks Metro.

*Outcome.* Today, more than 2,000 cases are performed by the new special order process and the people involved are very satisfied. The new process, combined with the process-oriented IT system, led to significant effects: First, cycle time for special orders has been reduced by 30 percent; response time has sped up by a factor of 10. Today the bank fulfils many customer requests in half-a-day versus two days previously. Second, productivity increased by 15-30 percent. The new system freed up the bank’s highly compensated employees from hours of daily administrative work allowing them to focus on servicing their customers.

**Summary**

Through the application of BPM and the use of process-oriented IT systems (BPM systems) quality and performance of processes has increased substantially. The most important effects are the following:

1. **Cycle time has been reduced.** This is mainly due to the fact that waiting time has almost disappeared. As soon as a certain process step is finished the case is automatically moved forward by the BPM system. Another element that has reduced cycle time is that employees are actively notified by the system about the work that has to be done.

2. **Output per employee has increased.** All process steps that can be performed by a machine (without loosing quality) are executed by the IT system. For instance, prior to automation, employees had to use long checklists for certain processes to ensure the process was carried out correctly. Today this part has been taken over by the process engine.

3. **Quality of work products has increased.** Quality of the cases performed has improved. Five aspects may have caused this effect:
   - The processes have been improved (partial re-engineering) as part of BPM.
   - Today’s processes are more clearly defined than in the past.
   - Process automation enforces correctness of process execution.
   - The role (includes duty and responsibility) of the process participants has become clearer.
   - The structure of the processes is more visible to employees.

The use of BPM systems has some limitations too. In our case we have been confronted with the following:

- In general, the importance of packaged software (commercial off-the-shelf software) is increasing in the field of financial institutions. However, the various systems available do not always offer cost-efficient integration mechanisms for BPM systems.
- Almost every BPM system available has its own reporting and performance measurement concept. Some of them are rather rudimentary whereas other systems are provided with broad and user-friendly analysis functions.
Lessons learned
Based on the experiences we have made during the last few years with BPM we learned that:

(1) BPM makes it possible to re-arrange the “old” processes. Existing activities or sub-processes can be newly combined in order to provide new or better services to the customer. This is important because competition in banks depends to a large degree on the services offered.

(2) The effect of business process re-engineering can be leveraged by the use of BPM systems. In particular, lead time can be reduced to a degree that would never be in scope using traditional methods and tools. Moreover, the use of BPM systems leads to a better conformance; i.e. the processes are executed in a way that is consistent to specifications and rules.

(3) Automated collection of performance-relevant data is central. Data collection should not be an additional manual task for the employees and real-time information can hardly be gathered manually. In other words, process performance measurement can be applied more efficiently by an integrated approach.

(4) BPM systems make it possible to monitor critical processes very carefully. This can be important for different reasons:

- It may be important to know when and how often service level agreements are violated.
- Poor parts of processes can be identified if long-running cases are identified by the system.
- If the load of a particular process is known, organizational and technical corrective actions can be taken.
- Objective metrics can be used to introduce a performance-based salary scheme.

(5) BPM is not a question of all or nothing. It is a continuum, which ranges from better process-related know-how of the employees to an organizational and technological solution that covers every aspect. In other words, the use of a BPM system is not a silver bullet for all business processes. For each business process the different performance-related dimensions (in particular the customer perspective and the financial perspective) must be considered.

Note
1. Process Performance Manager by IDS Scheer.

References


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