

Anatomy of a Failed Knowledge Management Initiative: Lessons from PharmaCorp's Experiences

Ashley Braganza^{1*} and Gerald J. Möllenkramer²

¹Information Systems Group, Cranfield School of Management, UK

²MBA and Master of Business Informatics, Erasmus University Graduate School of Business, The Netherlands

On a sunny morning in July 1999, Samuel Parsons, Head of Knowledge Management at PharmaCorp, convened his regular Monday team meeting. He looked stressed. After dealing with a couple of administrative issues he said: 'Last Friday evening I was informed that Wilco Smith, Head of Pharma Global Order Handling Services, no longer wants knowledge management. His only question now is how to off-board the knowledge management staff.' Thus came to an end a three-year initiative that at the outset was considered to be 'the knowledge management showcase for the firm'. This paper is for managers who have an interest in operationalizing knowledge *and* want to avoid the traps others have fallen into. It examines the case of PharmaCorp, a global organization and one of the largest in its industry. The case provides managers with five key lessons. First, manage knowledge interdependencies across communities of practice; second, contextualize knowledge within natural groups of activities; third, avoid an over-emphasis on explicit knowledge; fourth, let knowledge management recipients determine tacit and explicit knowledge; and fifth, manage the input from external consultants. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION

The effective management of knowledge as a source of competitive advantage is acknowledged widely (Lahti and Beyerlein, 2000; Leonard-Barton, 1995). Recent studies show that another rationale for managing knowledge is globalization and the exploitation of e-business (Anon, 2000). Yet for many organizations knowledge management initiatives have yielded very limited benefits (Davenport *et al.*, 1998). Undaunted, organizations continue to invest significant time and resources to knowledge management initiatives.

At the heart of operationalizing knowledge management initiatives are people. It is the knowledge they have and their utilization of the knowledge that deliver benefits. Yet for many people in organizations knowledge management, its concepts and supporting IT-enabled tools hold little relevance to their day-to-day working lives. It is perhaps not surprising, therefore, that while many knowledge management initiatives begin with a 'bang' they end with a splutter (Seely Brown and Duguid, 2000).

In this paper we examine PharmaCorp's global knowledge management initiative, a part of its Alpha Project, in order to identify potential pitfalls to avoid when implementing knowledge management. Research into Pharma's knowledge management initiative was undertaken using the case study method (Eisenhardt, 1989). Individuals in

*Correspondence to: Ashley Braganza, Information Systems Group, Cranfield School of Management, Cranfield, Bedford MK43 0AL. The order of authorship is arbitrary; both authors contributed equally to this article.

the organization who were closely involved in the Alpha Project were identified and interviewed using a semi-structured questionnaire (Blaikie, 1995). The interviews were taped and transcribed (Stake, 1994). The raw data was analysed, in order to develop an overall picture of knowledge management in the Alpha Project.

PHARMACORP'S GLOBAL KNOWLEDGE MANAGEMENT INITIATIVE

Background

PharmaCorp is one of the top ten players in its industry and operates in over 70 countries around the world. The organization is an active global player, with products and services being offered to suit local conditions in each country. The management teams have a tradition of operating autonomously although from time to time neighboring countries and/or regions may collaborate on specific developments. The organization had sales of about US\$10 billion and an employee base of about 95,000. Approximately 4000 employees came within the ambit of the Alpha Project.

Alpha Project — beginnings

In mid-1995, PharmaCorp's executives met to discuss a report they commissioned from a firm of leading management consultants. The message was clear: the order handling line of business had to be improved — and quickly. The organization had lost a number of order handling deals that were thought to be in the company's 'backyard'. The executives were aware of this state of affairs, and according to one at that time:

We are unable to deliver much of what our customers want today and we are even less capable of delivering what they will want in the future. They want integrated solutions and a seamless service offering. Our processes and systems are fragmented, redundant, and inconsistent around the globe, contributing in part to our falling revenues and market share while our biggest competitors are growing both in terms of actual revenues and market share.

Following on from their initial meeting, the executives held further discussions between themselves and with managers in the organization. From these discussions the Alpha Project was established.

In Phase 1 of the Alpha Project, the PharmaCorp Managing Board commissioned the external

consultants to undertake a further study and subsequently write the business case. Phase 1 objectives were stated as follows:

- Provide a rapid assessment of the strategic implications of an order handling services line of business
- Assess the viability of an order handling services line of business

Two essential conclusions were drawn at the end of this phase:

- (1) PharmaCorp order handling services should move from a reliance on country-specific platforms to a focus on individual client requirements. Instead of creating unique, order handling platforms for each potential client, the company intended to create a *library* of service offerings that could be combined to customize solutions for each client.
- (2) PharmaCorp needed to provide seamless global order handling services that built on common processes and systems capabilities.

The scope of these conclusions led the executives to redesign completely PharmaCorp's global order handling line of business. They recognised that, in moving ahead, the Alpha Project had to have a clear strategic direction. Therefore, they established the following vision for the Alpha Project:

The organization will build a profitable global business in order handling services. The Alpha Project will deliver:

- (1) Order handling services
- (2) Advisory services linked to order handling
- (3) Integrated information and knowledge of clients, translating data into information and then knowledge

The organization will become one of the top two order handling services firms globally, dominating targeted market segments and benchmarking its services against best-in-class company and non-company competitors.

Having decided Alpha's scope and vision, the executives and senior managers recognized the need to manage knowledge holistically across the organisation. Knowledge management became a central plank of the Alpha business case, vital to the Project's overall success. The business case stated that:

PharmaCorp's success in the order handling business will depend ultimately on how well it

manages to leverage the aggregate knowledge and experience of staff world-wide.

Phase 2 of the Alpha Project began once the business case had been approved. The business case specified the Phase 2 objectives as 'creating a detailed blueprint for gaining and maintaining global order handling services market leadership', specifically:

- Creating standard global order handling processes
- Evaluating and selecting an integrated information technology system
- Testing new value propositions for specific client segments
- Implementing shared knowledge and learning
- Designing and piloting a new organizational model and reward structure.

Alpha's staff

In Phase 1, the Alpha Project Team consisted of three external consultants for each PharmaCorp employee. Not surprisingly, one executive described the Alpha Project as 'very consultant driven' and added that:

In Phase 1 Alpha was staffed by people who had a certain passion in this field, which was helped by the enthusiasm of the consultants. Their enthusiasm was likely driven by their own motivations, but still — a very positive atmosphere. [There was a sense of] 'Hey guys, we've got to do this!'

In the months that followed the business case approval the total Alpha Project Team grew to approximately 100 members, and the staff-consultant ratio reversed to three PharmaCorp staff for each external consultant. The Project Team's focus included business strategy, IT, knowledge management and order handling products. The goal of the project team was to make the Alpha vision become a reality.

Alpha's knowledge management objectives

In relation to knowledge management, Alpha's objectives were to put in place the mechanisms to meet client needs faster and more effectively by:

- having better and consistent access to and use of PharmaCorp knowledge across the globe
- creating support tools to ensure tasks are performed consistently

- developing and implementing processes that support knowledge management.

The structure for managing knowledge within Alpha: Function, Stream and Sub-stream

A structure chart for the Alpha Project is displayed in Figure 1. A Knowledge Management function was added to the Alpha Project. It was to become the focal point for managing knowledge in the organization. In addition to the Knowledge Management function, three sub-streams (or teams) were formed. The three sub-streams (known collectively within the organisation as the Kappa Stream) were:

- (1) Business architecture
- (2) IT and
- (3) Knowledge content and design.

The business architecture sub-stream set out to design Alpha's processes. They identified five business processes: sales, product implementation, customer service, product management, and operations. These processes mapped to Alpha's constituent functions; in other words, functions and processes were defined to be exactly the same. The business architecture sub-stream reported into Alpha's IT function rather than the Knowledge Management function.

The IT sub-stream were responsible for developing 'Worktable', an integrated end-to-end system that would support PharmaCorp's global order handling services that were cross-functional and that would enable knowledge to be captured, shared and leveraged across countries and functions. This sub-stream also reported to the IT function.

The knowledge content and design sub-stream took responsibility for content development and the definition of a project-based approach for implementing knowledge management throughout individual country operations. Unlike the other two sub-streams, this one reported into the Knowledge Management Function.

However, even though both the business architecture and IT sub-streams were part of Alpha's IT function, most people in the Alpha project associated the three sub-streams with the Knowledge Management function. The phrase 'knowledge management' became synonymous with the three sub-streams and the Knowledge Management function.

Jack McKay was made responsible for managing Alpha's Knowledge Management function i.e. the knowledge content and design sub-stream of

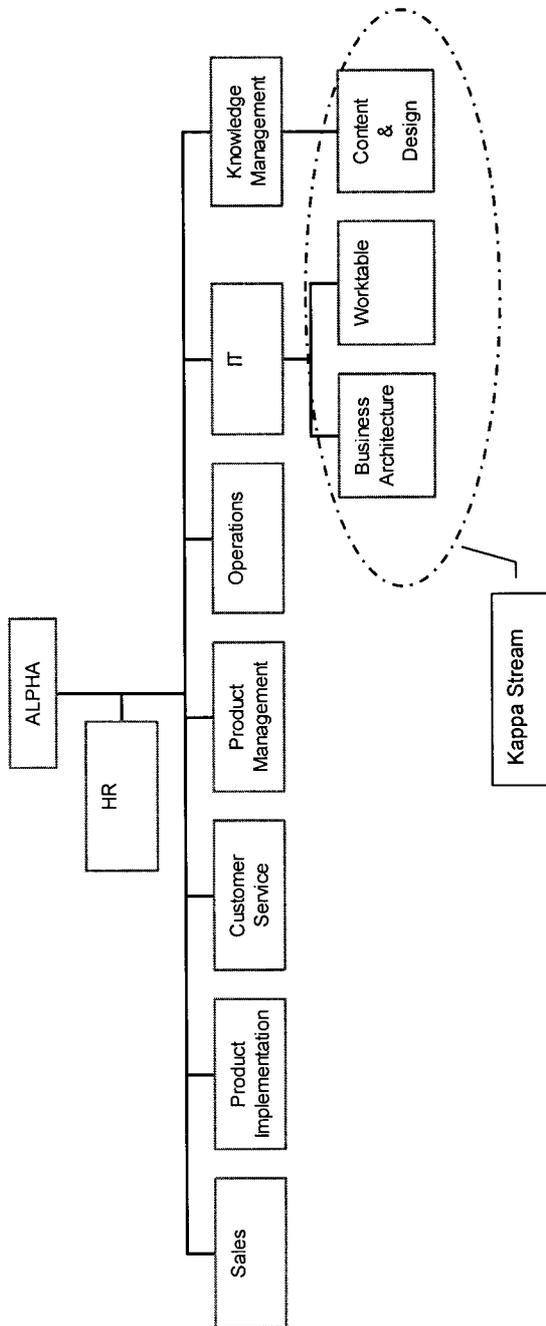


Figure 1 The structure of the Alpha Project

Kappa. He set out to establish a team and hired five new staff. The first three were taken on as Knowledge Analysts and the other two were recruited as Knowledge Consultants. Shortly after setting up the team, Jack McKay returned to one of PharmaCorp’s operational divisions. On an interim basis, an external consultant took over the Kappa’s managerial reins, including the knowledge content and design sub-stream. Alpha executives moved to fill the vacancy and eventually appointed Samuel Parsons Head of the Knowledge Management function. External consultants continued to play leading roles in nearly all knowledge management activities within Alpha. One PharmaCorp team member described the dynamic as follows:

From the start of the project the consultants were the visionaries. We were ‘working together’ but at the end of the day, the consultants were running the show. They had the most experience — nobody on our side had done any knowledge management before this.

Senior executive commitment

The strategic importance of the overall Alpha Project was clear to PharmaCorp’s board-level executives and senior managers. They made the Project one of their ‘highest priorities’. The board knew that to achieve Phase 2 objectives they would have to appoint a successful and trusted senior manager as Alpha’s project manager. They identified Wilco Smith, and gave him direct access and reporting line to the board.

The board committed a significant amount of investment funding to Alpha: US\$300 million over five years. They accepted that this would be a long-term investment and were willing to absorb a reduction in gross profit before tax of US\$65 million in the year 1 profit and loss account.

This financial backing gave knowledge management a high profile in the organisation. As the Alpha Project progressed, the executive went beyond financial commitment. They raised Alpha’s status by making it a formal part of the organization structure rather than a project. Alpha became an official line of business. Its name changed to Global Order Handling Services.

Work environment and organizational culture

During Phase 1, the Alpha Project Team worked out of three open-plan floors in existing PharmaCorp office space. However, shortly after Global Order Handling Services was established as a

line of business, people were moved to a new purpose-built location. This significantly changed the informal nature of communication and team atmosphere. One of the Alpha team members described the organizational dynamic in the following way:

The premises were very poor, everybody was sitting on huge [open] floors, few had their own offices, it was not required. A lot of attention was put to communication, the organized communication had not met the standards that you would expect — but communication among people was very open, people were very open, very informal. That totally changed when the PharmaCorp executive declared us a line of business. As a project based organization the PharmaCorp Alpha project was very dynamic, there were not fiefdoms — it felt innovative and had a big team spirit. When we moved to our new facility, communication broke down, walls were built, and people in management didn't feel like they needed to know about what the other management team members were doing.

Systems for managing knowledge

The executive recognized that global order handling services were highly information intensive. The development of a dynamic IT infrastructure was of central importance to knowledge management.

An integral part of Alpha's Business Case was the development of an IT solution known as the 'Knowledge Enabled Worktable' (see Figure 2 for a schematic of the Worktable concept). *The Alpha Worktable Project Initiation Document* described the concept as computer systems that allow users to access, add and use knowledge. The *main* Alpha Worktable was designed to integrate 'seamlessly and through an easy-to-use interface', with other Worktables. These 'other Worktables' were scoped and designed to support each business function (refer to Figure 1). Hence, the Sales Worktable targeted sales people, the Product Implementation Worktable supported people in that function, and the Operations Worktable supported back-office people and so on for each function.

The Worktables would be easy to use and would store relevant information automatically, simplify user tasks, support decision making and allow users to quickly and easily enter feedback, comments and informal insights. This would, in turn, help content owners to identify new needs, and/or out of date or inaccurate content. Underpinning the 'seamless' interface was the Alpha 'Knowledge Base' — or the 'Library'. The Library was a large data repository of documents, information, and other knowledge from internal and external sources, exemplified by competitor intelligence reports. Organising access to the Library would be a dynamic document management system.

The IT function also planned to develop an externally facing Customer Worktable, which would be linked both to the yet-to-be-built PharmaCorp's

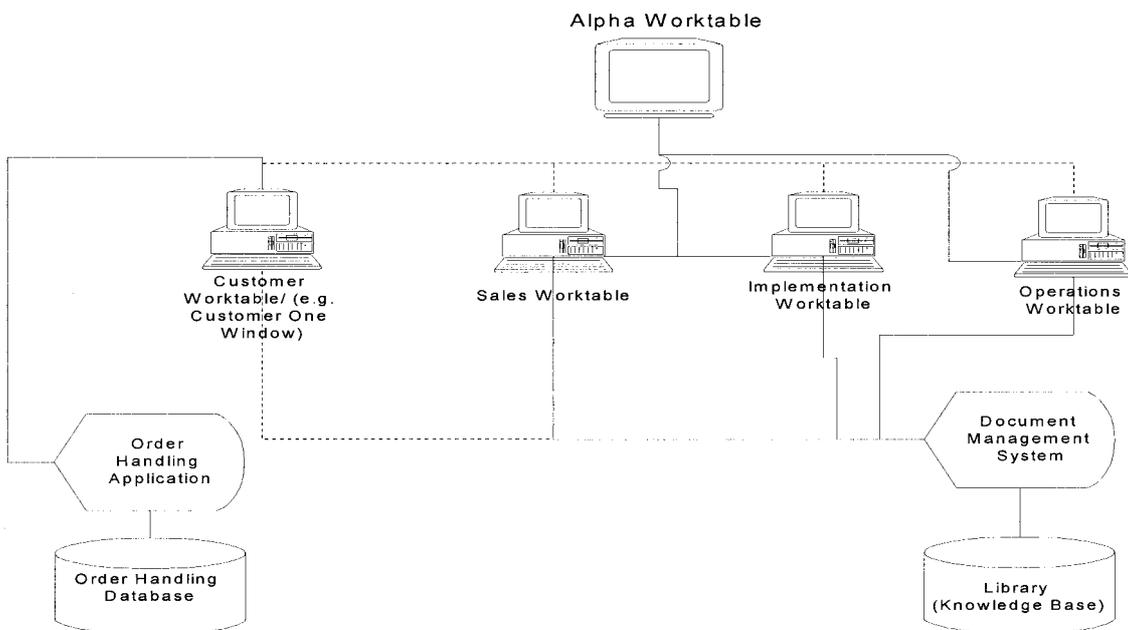


Figure 2 The knowledge systems within Alpha

order handling back office system and the Library. This fully linked configuration was called the 'Customer One Window'. By design, the internal Alpha Worktables would have varying levels of access to the data within the customer facing order handling system.

The comprehensive nature of the integrated Worktable, order handling system, and Library — referred to within PharmaCorp as *the clear solution* — was to develop a global order handling service that would deliver cost savings, revenue improvements, high levels of customer satisfaction, and enable the exploitation of knowledge across the countries.

Building the Worktable

The first Worktable to be developed by the IT sub-stream was for the Sales function. The major components of the Sales Worktable would be a sales force automation tool (SFA) and the Knowledge Library — to be accessed via the 'dynamic document management system'. According to original planning documents, the target date for the first significant release of the Sales Worktable was the 'late third quarter of 1997'. This would enable sales people to leverage PharmaCorp's knowledge. The first release was expected to have both a functioning Customer One Window and Sales Worktable. However, due to bottlenecks attributed to the use of new technology and poor translation of design requirements to system functionality, the Sales Worktable development was dogged by delays and, consequently, time-scales began to slip.

Concurrently, people working in the knowledge content and design sub-stream focused their activities on identifying content for the Sales Worktable and developing a project management methodology for implementing knowledge management in each country. For people in this sub-stream, 'Content' became the all-inclusive term used to describe the data, documents, and other information. The Knowledge Analysts used a proprietary approach developed by external consultants to analyse and determine PharmaCorp information requirements for the functions, countries, and regions. The aim was to design overall content that could be delivered across the Sales Worktable.

Parallel developments

The content and design sub-stream identified drug formulae information as a particularly important area of content. They developed a considerable

amount of such content, which was to be housed in the Sales Worktable Library. However, because the IT sub-stream delayed the delivery of the Worktable systems, the content and design sub-stream chose to design an Intranet-based tool, Knowledge Across the Net (KAN), to publish the content they were developing.

In developing KAN, Samuel Parsons was addressing his concern that delays by the IT sub-stream in the Worktable system development would lead to people in the organization losing interest in Knowledge Management generally, and the Library Content, in particular. Parsons justified KAN as being the means to maintain 'peoples' buy-in' for the Library concept. The Knowledge Analyst who developed the KAN application explained its rationale as follows:

When you are doing content development you want to show the audience that what you are developing is helping them. So, KAN was made as a preliminary tool to publish all the content being developed for the Worktable Library.

KAN would be piloted using with drug formulae information. Ultimately, KAN was intended to replace PharmaCorp's existing Lotus Notes application that served as a repository of valuable and diverse knowledge, ranging from sample sales proposals and product information to country-specific data pricing data. The decision to use Intranet technology to replace Notes was based on three factors:

- Real-time information availability — replicating PharmaCorp's US and European Notes databases involved a lag of as much as eight hours.
- Scalability — Notes database capacity limits posed content size restrictions.
- Flexibility — content access and searching capabilities were far too cumbersome using Notes technology

However, while piloting KAN, it turned out that many of PharmaCorp's country locations did not have Internet access and/or the minimum required hardware to do so. This helped to explain why KAN was not as widely accepted as initially hoped. Therefore, given that Notes was globally accessible and company-wide, the KAN content — particularly the drug formulae content — was transferred into Notes.

The knowledge content and design sub-stream was also occupied with designing the project plan to begin the global implementation of the knowledge-enabled Worktable. Kappa staff members

would deliver the plan to colleagues in different countries. The plan included:

- Appoint a Knowledge Management Coordinator (KMC), who would facilitate the in-country KM activities.
- Determine the local, knowledge enabled Worktable-specific content needs through content analysis and content mapping (e.g. determine what documents, processes, information, etc; should be published on the Intranet).
- Identify and assign Content Owners, responsible for creating and updating assigned content.
- Create and implement a process to ensure that content is maintained.
- Prepare the technical infrastructure and provide tools training (e.g. Lotus Notes, Person Locator)
- Assign content management responsibilities to KMC
- Publish content.

The intention of this project management plan was to build a global network of KMCs who understood the rollout plan and tools of knowledge management. A well-functioning KMC network could play a leading role in linking together the different parts of the Global Order Handling Services business. Throughout 1998, Kappa managers and staff 'implemented knowledge management', beginning with the following Pharma country offices: Portugal, Spain, the UK, Germany, Czech Republic, the UAE, Bahrain, South Africa, Belgium, Sweden, Austria, Luxembourg, Ireland, Denmark, and Poland.

Additionally, Parsons initiated the creation of an Intranet site — the PharmaWeb. KAN notwithstanding, the primary driver for PharmaWeb was the need to house the Worktable-ready Library content, while the Worktable application was under construction. Parsons viewed the creation of an internal Website as a viable and quick solution to the problem of making content available to users.

However, during PharmaWeb's development, internal resistance began to surface. Managers in the IT function considered the PharmaWeb development as simply 'going for the quick win', while they (in the IT function) were working on the actual Worktable solution. The sentiment in the IT function was that the knowledge content and design sub-stream was stepping onto their 'turf', and, they should focus their energies on the Worktable content development.

An external consulting firm was hired to deliver PharmaWeb, which was launched seven months later. The site contained links to HQ information,

PharmaNetwork information, knowledge sharing forums, and a functioning Library. However, the PharmaWeb received a frosty reception from the other functions. According to one senior manager:

The first criticism was that the knowledge content and design sub-stream should be doing knowledge management — whatever that was. Concerns were built up because content and design should not have been building the Web, IT should. Tools development was a threat. IT saw the PharmaWeb launch as a counter move to the Sales and Service Worktables and saw content and design as attempting to position themselves as coming up with a product. Rather than be enthusiastic about it, they (IT and other functions) were not and the PharmaWeb was not embraced by the organization.

Despite the cold reception, in the months following the PharmaWeb launch a demonstrable increase in both usage and content was realized.

The knowledge content and design sub-stream also concluded that a directory tool that listed employee competencies, skills, order handling experience, and contact information would be useful for Pharma employees. Hence, a Notes-based, web-enabled 'Person Locator' directory was to be built. An external consultant was hired to build the Person Locator and he was subsequently partnered with a Knowledge Analyst. A managing partner of the contracted consulting firm promised Parsons that his 'best programmer would deliver the tool in three weeks'. Yet after four months of effort, the consultant was unable to deliver the envisioned Person Locator and was replaced by a different 'expert' from the same firm. Concurrently, Parsons decided to forego the web-enabled functionality and to proceed with a Lotus Notes only tool.

Regaining control

In late 1998 the viability of achieving a 'seamless and easy-to-use' IT enabled Worktable, in the short term, was in grave doubt. The sense of concern reached the highest levels of PharmaCorp management. It was concluded that given the high-level of dependency on and unsustainable expenditure on external IT resources, Global Order Handling Services's management was losing control over its IT-related projects. Thus, the year ended with the following top management directive: the Worktable initiative, as originally envisioned in the Alpha business case would be curtailed — and Global Order Handling Services's IT function

would be dissolved. Its activities were absorbed by other functions, and PharmaCorp's central IT department was given responsibility for Global Order Handling Services's IT strategy.

The three sub-streams were inextricably tied to the development of the Worktable solution. As the Library was the only Worktable deliverable from the now dissolved IT sub-stream, it (the Library) was handed over to the content and design sub-stream in the Knowledge Management function.

The Knowledge Management function took responsibility for the Library application and started a 'Library re-work project'. It was thought that with some rework, an acceptably functioning Library could be delivered to PharmaWeb users. However, maintaining a re-worked Library using the largely 'hard-coded', customized application, necessarily meant retaining the costly services of external consultants over the long term. Given the significantly greater amount of content in the Notes application, compared to that of the Library, serious cost/benefit questions arose. This led to the Library being reassessed, which was conducted by an external consultant and Kappa staff. After an extensive study they concluded that 'the Library content was growing, but the functionality of the application did not meet the necessary requirements'.

This resulted in considerable internal debate. The executive decided that the Library application itself would be temporarily shelved 'until such a time that the underlying application has an acceptable, well-tested application on the market'. In a compensating move, certain Library content would move to Notes, which would be up-graded to become web-enabled, thus allowing access to the content via PharmaWeb.

However, there were serious defects in the quality of the information being stored in the system. One person in the Knowledge Management function estimated that only 10-15% of the Content was being maintained systematically. One of the principal tasks of the stream is described in the Worktable section of business case as 'designing the underlying knowledge management processes and support tools for maintaining and enhancing the content of the Worktables'. Thus, improving content quality was seen as a clear requirement and Knowledge Analysts, along with external consultants, designed a project management plan to improve this.

Knowledge management function dissolved

During 1999 budget preparations, Wilco Smith, Head of Pharma Global Order Handling Services,

was under considerable pressure from the executive to cut costs. He began to raise specific concerns regarding the 'value-added' of the Knowledge Management function. According to one executive, the Head of Knowledge Management, Samuel Parsons, had not linked knowledge management with the actual jobs people carried out in the business. These sentiments, coupled with the absence of any PharmaCorp senior executive coming to Knowledge Management's defence, led to Smith's ultimate decision.

In mid-July 1999, Samuel Parsons, Head of Knowledge Management, invited key team members into his office for the regularly scheduled team meeting. Rather than attend to the agenda however, he made two administrative announcements and then, in an understandably melancholy tone, came to the point:

Last Friday evening I was informed that Wilco Smith, Head of Pharma Global Order Handling Services, no longer wants knowledge management. His only question now is how to off-board the knowledge management staff.

Thus, even as the Global Order Handling Services continues as a line of business, what did end was the three-year global initiative that at the outset was considered to be 'the knowledge management showcase for the firm'.

LESSONS FROM THE ASHES

Pharma's knowledge management initiative had many positive aspects: executive commitment, funding, resources, and competent people. So what lessons can other organisations learn from the experiences of PharmaCorp? In this section we highlight key aspects of the case and explore issues managers should consider to avoid Pharma's pitfalls.

1. Manage knowledge interdependencies across communities of practice

Within the Alpha Project, knowledge management is operationalized through the functions, exemplified by sales, product implementation, customer service and so on. Consequently, each function would have its own Worktable i.e. its own IT interface to the knowledge repository or Library. A 'main Worktable' would be built in order to bridge the functional Worktables.

Defining knowledge within functions led to two main problems. One, people could define content,

to be stored in the Library, in very generic terms, as evidenced in the scope of the Worktable project initiation document. In effect, people would be able to store and, later, access everything from personal insights to facts about customers. The relevance of the content to others is hardly considered. Two, the technology infrastructure became too fragmented and complex for the IT domain to deliver. Promises of 'easy to use interfaces' that enable interconnectivity were not fulfilled. Executives and senior managers withdrew their support, eventually disbanding it. As a result the Knowledge Management domain were unable to deliver the content they had developed, and it too was disbanded.

A review of the literature shows that knowledge can be considered at within several units of analysis (Braganza *et al.*, 1999). The broadest unit is the industry and the narrowest is the individual. Units that lie in-between include the organization, function, business processes, group, and team. The Alpha Project's unit of knowledge analysis was the function.

It is increasingly common to find organizations' communities of practice to generate and share knowledge. In Ford, for example, communities of practice are central engineering, body assembly, paint, materials planning and logistics (Stewart, 2000a,b). These communities of practice are formed, in effect, by bringing together people from the same function. However, when one considers how vehicles are made, knowledge leading to an improvement in the paint function can have consequences upon other functions such as materials planning and central engineering. As Stewart points out, while Ford's knowledge sharing scheme based upon these functional communities has yielded significant savings, it did not prevent the Firestone tire fiasco (Stewart, 2000a,b).

The danger of creating functional 'communities of knowledge' is that knowledge interdependencies are neglected and poorly managed. This leads to knowledge, and its supporting IT systems, being defined in broad, generic terms because each function focused upon its own knowledge management developments.

The context for specifying knowledge should be the business process and its constituent natural groups of activities. These activities are the 'day jobs' people and, increasingly systems, perform in order to satisfy customer expectations. People in natural groups should not only share the knowledge sited in their activity but also combine knowledge that is dispersed across several activities in order to improve the business process on a 'holistic' basis. Knowledge, in the context of

business process based natural groups of activities, becomes visible to the right people, in the right function, at the appropriate time. This is because people creating knowledge in one function (within the process) would understand why it needs to be shared with colleagues in another function in the same process. They would also know the implications upon colleagues' 'day jobs' were the knowledge not to be shared. Moreover, people who need knowledge from another part of the process are better able to express their knowledge requirements. This is vital as the same knowledge can have quite different meaning and relevance to different people in different functions that are nonetheless in the same business process. By examining and managing knowledge in the context of natural groups of activities within a business process, people understand changes of meaning and relevance that the same knowledge has to colleagues in different functions. This visibility and understanding of the importance of knowledge to others in the business process should lead to greater efforts to share knowledge.

2. Contextualize knowledge within natural groups of activities

Knowledge management within the Alpha Project was associated with the IT and Knowledge Management domains. Within these two domains, knowledge management was to be operationalized through the Kappa sub-streams. People in the sub-streams lacked a clear context for specifying which specific knowledge-elements, e.g. data, competitor intelligence, personal informal insights, or data about sales personnel in the Person Locator, were business-critical. Hence, each knowledge-element was assigned implicitly equal weighting. The pitfall is that without a clear context knowledge is defined in general terms, and specific elements that are business critical get insufficient attention.

3. Too heavily focused on explicit knowledge

Pharma's attempt to manage knowledge very quickly became associated with IT developments, exemplified by Worktable, Person Locator and KAN. The types of knowledge content being retained in these applications included data, e.g. customer name and address; competitor intelligence, e.g. sales data; and personnel details, e.g. names and contact phone numbers. The knowledge repository was being created so that eventually people could search on a particular 'term' and identify what was known or being done about

that subject. Once people had the information they could then decide an appropriate course of action.

There are three lessons to learn from Pharma's experiences. First, defining content to be held by the knowledge management systems can become unfocused, leading to people wanting every item of data in the system. Hence, in order to retain focus, content should be identified by people from the activities that form natural groups in a business process. Aligning content to be held in a knowledge repository to activities requires people to identify the information they specifically need to be able to do their 'day job'. The need for a particular piece of information can then be scrutinized in the context of other activities that form the business process to assess its importance. One sanity check that can be placed upon the criticality of a piece of information to be held in the system is to see the effects of withholding the information.

Second, there are two types of knowledge: tacit and explicit (Polanyi, 1966). Tacit knowledge is highly personal to individuals. It is steeped in experience, commitment, and involvement. Tacit knowledge is specific to a context, which when considered together with its specificity to individuals makes it difficult to share through formal, structured communications. Tacit knowledge is embodied in people's behaviours and know-how. Explicit knowledge refers to knowledge that is transmittable in systematic language. Explicit forms of knowledge are codified and structured, and hence easily communicable. Explicit knowledge is contained in documents, manuals, and information systems such as databases (Leonard-Barton, 1995; Madhavan and Grover, 1998; Nonaka, 1994; Nonaka and Takeuchi, 1995; Seely Brown and Duguid, 2000).

IT systems that purport to support knowledge management are better focused upon explicit knowledge, which needs to be configured and re-configured by people in order to do their 'day jobs'. By defining explicit knowledge in the context of natural groups of activities, systems developers and users can share a common vision of the relationships between data that people need to perform their job.

Third, Pharma focused primarily upon explicit knowledge. This is a common feature of many knowledge management projects that yield poor results (Davenport *et al.*, 1998). Tacit knowledge, especially peoples' behaviours, is often neglected as an issue. This suggests that in addition to defining explicit knowledge and the supporting IT systems in the context of natural groups of

activities, peoples' behaviours should also be aligned to these natural groups (Cohen *et al.*, 2000).

4. Let knowledge management recipients determine tacit and explicit knowledge

The lesson to be drawn is deeper than the rhetoric of involving people. At its heart, knowledge is integral to people. The knowledge that people have, the ideas they generate, what they share and how they utilize it, needs to be managed with care. Knowledge is highly personal: gained over long periods of time, through an individual's experiences, background and cultural heritage. People at all levels of the organization must feel part of the knowledge management initiative. They must be able to contribute their ideas, shape knowledge in a way that enables them to improve their activities and feedback the results for others to benefit. People in natural groups should be able to balance and align explicit and tacit knowledge across their business process. This requires senior managers to create a space within which people from different functions can come together to forge knowledge across each business process (Seely Brown and Duguid, 2000; Fahey and Prusak, 1998; von Krogh, 1998).

5. Manage external consultants

The Knowledge Management and IT domains had three different consulting firms involved at different times. Each firm supplied its own people, who brought with them different (and often conflicting) methods, techniques, and language. The input from these firms overlapped at times, and at other times they operated independently. Although there were fewer consultants than Pharma staff working on the Kappa sub-streams, the external consultants held key roles. They often positioned themselves between senior managers and project team members. This placed team members at a disadvantage when the consultants left.

The lesson to be drawn is that people in the organization must own and manage knowledge management initiatives. While consultants may be used to guide and provide analytical tools, the onus remains on executives and senior managers to tailor generic tools to their organization's situation. Senior managers in the organization should develop a common language for understanding and sharing what knowledge management means for their organization. They should then personally communicate their interpretation of knowledge management throughout the organization (Stewart, 2000a,b).

SUMMARY

All too often knowledge management 'success stories' appear which reveal how one manager tapped into a knowledge repository or dynamic database library, found a clue, followed it up and found *the* solution. This individual is reported to have saved \$50,000 based upon use of knowledge. We are then told that the knowledge management initiative saved the organization hundreds of millions if not billions of dollars. Perhaps someone somewhere can reconcile \$50k with \$1bn.

Our research set out on a different track. We wanted to study a knowledge management initiative that had clearly failed. Having done the study, this paper describes the case and develops lessons that CKOs and managers with a responsibility for managing knowledge can learn to avoid the pitfalls that PharmaCorp helped identify. In particular CKOs should ensure that the following points are included in knowledge management initiatives:

- Avoid defining knowledge within functions or silo-oriented communities of practice; instead define knowledge at the level of business processes.
- Remember that knowledge is operationalized by people; hence, a knowledge management initiative must relate knowledge to people's day jobs.
- Tacit knowledge resides within people and their behaviours; hence attempting to apply Information Technology to tacit knowledge is fraught with difficulty. Instead, it is explicit knowledge that is most susceptible to the application of Information Technology.
- Knowledge is context-specific. It should be owned and maintained by people within the organization. Hence, external input to knowledge management initiatives must be carefully managed to ensure people within the organization are in control of the initiative at all times.
- Implementing knowledge management involves change in the organization. Understand the organization's willingness to change and manage people's expectations appropriately.

AUTHORS' NOTE

While based upon the study of an actual organization, the names of the organization, its industry,

and people mentioned in the case are fictitious. As written it is hypothetical. Nevertheless, the lessons learned from our research of the case are practical in nature.

REFERENCES

- Anon. 2000. How to be an e-manager? *The Economist*, E-management survey 50–52.
- Blaikie N. 1995. *Approaches to Social Enquiry*. Polity Press: Cambridge, MA.
- Braganza A, Edwards C, Lambert R. 1999. A taxonomy of knowledge projects to underpin organizational innovation and competitiveness. *Knowledge and Process Management* 6: 83–90.
- Braganza A, Lambert R. 2000. Strategic integration: developing a process-governance framework. *Knowledge and Process Management* 7: 177–186.
- Cohen MA, Cull C, Lee HL, Willen D. 2000. Saturn's supply-chain innovation: high value in after-sales. *Sloan Management Review* 41: 93.
- Davenport TH, de Long DW, Beers MC. 1998. Successful knowledge management projects. *Sloan Management Review* 39: 43–57.
- Eisenhardt KM. 1989. Building theories from case study research. *Academy of Management Review* 14: 532–550.
- Fahey L, Prusak L. 1998. The eleven deadliest sins of knowledge management. *California Management Review* 40: 265–275.
- Lahti RK, Beyerlein MM. 2000. Knowledge transfer and management consulting: a look at 'the firm'. *Business Horizons* 43: 65.
- Leonard-Barton D. 1995. *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation*. Harvard Business School Press: Boston, MA.
- Madhavan R, Grover R. 1998. From embedded knowledge to embodied knowledge: new product development as knowledge management. *Journal of Marketing* 62: 1–12.
- Nonaka I. 1994. A dynamic theory of organizational knowledge creation. *Organization Science* 5: 14–37.
- Nonaka I, Takeuchi H. 1995. *The Knowledge Creating Company*. Oxford University Press: New York.
- Polanyi M. 1966. *The Tacit Dimension*. Doubleday: New York.
- Seely Brown J, Duguid P. 2000. Balancing act: how to capture knowledge without killing it. *Harvard Business Review* 78(3): 73.
- Stake RE. 1994. Case studies. In *Handbook of Qualitative Research*, Denzin NK, Lincoln YS (eds). Sage Publications: Thousand Oaks, CA; 236–247.
- Stewart TA. 2000a. Knowledge worth \$1.25 billion. *Fortune* 142(12): 120–121.
- Stewart TA. 2000b. The house that knowledge built. *Fortune* 142(7): 278.
- von Krogh G. 1998. Care in knowledge creation. *California Management Review* 40: 133–153.