KuDrink and IT Project

1 Introduction

The International beverage brand KuDrink had a global presence in more than a hundred countries. In terms of size and geographical penetration, KuDrink was one of the market leaders in the beverage industry. KuDrink's Enterprise Resource Planning (ERP) composed of software that automated business functions such as Product Planning, Accounting, Sales and Distribution, Human Resource, etc. KuDrink implemented SAP at the corporate headquarters in Europe. As the group had multinational subsidiaries, it faced varied financial situations and different strategies in a diversity of local environments. Its overseas sub-companies, therefore, were allowed to make their own decisions on running SAP as their core business operation systems. Still, many of its subsidiaries preferred to follow this informal IT strategy.

The IT strategy of KuDrink was to implement SAP in Hong Kong first and in China later. The management expectation was high: the system would allow marketing executives to gain insight into every change of the market upon completion. Although senior management did realize business process improvement by SAP, they did not comprehend the differences of project management between KuDrink's marketing projects and software projects. In addition, they tended to communicate IT managers of hands-on technical experience well but were not interested in learning what problems of managing software projects could be. In fact, KuDrink's senior management did not expect any failure of their SAP project. Moreover, KuDrink's SAP projects did not bring any immediate harm to their business because their batch-based system was quite handicapped to current business practices.

KuDrink's management also boosted SAP to its Board of Directors: with SAP, KuDrink would be able to analyze every change in the market, to allocate effectively their sales forces to different sectors of clients, and to monitor their performances against competitors - a high profile from the belief in which the project should be very successful.

In spite of the increasing demand for an ERP package in the past years, most companies lacked project management skills. KuDrink was no exception. Thus, KuDrink's senior management always turned their ears to the ERP vendors.

The backgrounds of KuDrink and the management's expectation of their ERP project (i.e. SAP) were elaborate. In KuDrink, the ERP implementation was different from many previous IT projects. It was the first time that three functional heads and a number of line management of the company were heavily involved in the project. KuDrink fully understood that the project was not only an ERP but also one for Business Process Re-engineering (BPR).

2 KuDrink's SAP Project

2.1 Project Team

In accordance to KuDrink Corporation's IT strategy, KuDrink Hong Kong went for SAP R/3. They selected MirageTech Ltd, a company that was granted by SAP in 1999 as TeamSAP partner collaborating with SAP to deliver business solutions and services to SAP clients. Veterans from SAP and gurus from MirageTech established an on-site hybrid consultant team for the KuDrink's Project, with the team lead from MirageTech. The term "ERP vendor" indicated this hybrid team. "ERP consultants" referred to members from the team, and "ERP manager" was the team lead.

Roles and responsibilities were clearly addressed in the Project Charter by the ERP vendor, including skills and experiences required to perform the jobs. However, the ERP vendor did not check whether those people from KuDrink were actually qualified as stated in the Project Charter. For example, a Module Owner must be technically competent in programming, database system design and analysis. Although the Module Owners and the MIS Programmers of KuDrink's project team received training on SAP programming, the Module Owners had not written any SAP programs. Obviously, neither the ERP vendor nor the project manger had assessed (or controlled)

the qualification criteria of Module Owners according to the Project Charter. Hence, nothing reflected the actual competence of KuDrink's team at the beginning of the project.

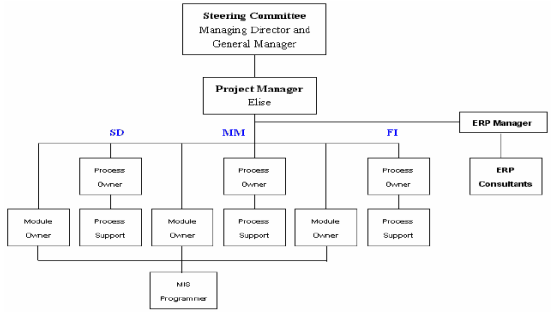

Figure 1: Project Team Structure, where SD denotes Sales and Distribution; MM, Material Management; FI, Finance

Figure 1 illustrates the organization structure for the project. Here were brief descriptions of each role. The Steering Committee consisted of senior executives from KuDrink and ERP vendor representatives. The project team was headed by a Project Manager, who provided management direction, resolved escalated issues from the project team and ensured project resources were adequately allocated for all the tasks to be undertaken at each phase of the project.

A Process Owner had ownership of the process area(s) and the project deliverables, along with day-to-day management of the business area(s). Many of the Process Owners had directorships of the company.

A Process Support was responsible for the execution of the detailed design and configuration of the company's business processes with SAP. The Process Support was also responsible for the execution of the system unit and integration testing. This included performing the test, making changes in configuration based on results, and error resolution. The Process Supports were either line managers or supervisors of KuDrink.

A Module Owner had the technical ownership of the process area(s).

An MIS Programmer was responsible for the data mapping, design, development, and testing of conversion programs, interface programs, SAP custom reports and forms. Both the Module Owners and MIS Programmers were from the IT Department of KuDrink.

The ERP Manager from MirageTech assisted the KuDrink Project Manager in the definition and execution of project deliverables and the weekly management of the entire project. The ERP consultants provided SAP software expertise. As mentioned, some were from SAP; the others were from MirageTech.

2.1 Project Budget

Figure 2 illustrates a breakdown of the total investment of USD$1.1 million in KuDrink's SAP project. Training, software and hardware equipment were almost constant. Two items, consultancy and temporary staff would vary over a wide range if the project schedule slipped. This suggested that controlling the consultants' activities against the plan was prudent.

Figure 2: Costs of a 1.1. million SAP project

9 % of the total investment was for training. Thus before the project started, all project members of KuDrink received proper classroom training. In-house IT people, the Module Owners and MIS Programmers attended professional SAP programming workshops. In addition, the Process Owners and Process Supports attended SAP application workshops

2.3 Project Methodology

The ERP vendor provided fastidious electronic documents on how to implement an SAP R/3, called AcceleratedSAP (ASAP). The method required the project team to define details of project scope, to establish a project organization for roles and responsibilities, to produce a set of business process blueprint documents, and to control project progress including quality management, acceptance procedures, regular meetings, and distribution of the minutes. Figure 3 illustrates an overview of AcceleratedSAP.

The AcceleratedSAP framework divided an implementation project into five sequential phases, each of which indicated a specific purpose toward the achievement of project goals. The first phase, "Project Preparation", provided initial planning and preparation for an SAP implementation project. This included defining a unique objective, scope, priorities and so on. The second phase was called "Business Blueprint." As the name suggested, the purpose of this phase was to create a business blueprint, which was a detailed document describing how the company would run its business before it implemented the SAP applications and how it intended to do so afterwards. The third phase, called "Realization", was about implementing the blueprint or realizing the planned business processes. The phase ended in signing off an integration test that simulated a re-engineered business model and confirmed that it worked as expected. "Final Preparation", the fourth phase, finalized everything in readiness for going live with the new systems and processes. This covered end-user training, data migration and "cut over" activities, etc. On successful completion of this phase, a client was ready to run their business with their live SAP system. "Go Live and Support" was the last phase of the AcceleratedSAP roadmap

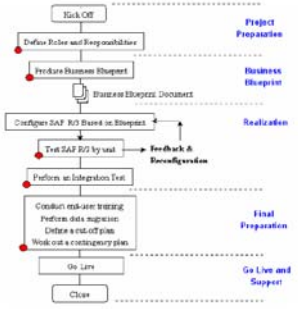

Figure 3: An overview of SAP implementation (where • denotes quality check and signing off at the end of each process)

3 SAP Implementation

The Consulting Services Agreement between the ERP vendor and KuDrink was signed off on 10 September 2001. The Agreement stated that the project started tentatively on 10 September 2001 and had an estimated productive operation date at the end of March 2002. Seven months after the kick-off meeting, the project encountered a number of unknown problems to KuDrink's senior management. They asked an independent staff member, Ian, to investigate what had happened. This section reports Ian's findings.

3.1 Project Plan

The original plan shown in Figure 4 indicated that the project would last for seven months, from September of 2001 to March of 2002. The system SAP would go live on 1 April 2002. The project schedule was revised several times: in January, early March, late March, and May of 2002.

The reported reason for extending the project duration was that users (i.e. Process Support) could not complete their tasks on schedule. These tasks include developing business blueprint documents, changing their requirements, requesting non-SAP standard reports, performing system tests and signing off their works.

The users, on the other hand, complained about their high workloads such as producing lengthy documents and drawing flow diagrams and encountering unknown SAP configuration problems during testing. For many times, Process Supports reported that previous testing cases were tested all right, but the same cases failed after some settings were changed by the ERP consultants. They felt frustrated and lost their confidence in the system (or in those consultants and the Module Owners).

In March, an announcement was formally made by the General Manager of KuDrink that a special project bonus would be awarded to the whole project team if the system could go live in July. However, no significant progress was achieved ever since. No team member discussed his or her interest in the project incentive. By the end of April, not only the project schedule just seemed a tentative plan, but team members were also confused of their responsibilities and the overall schedule, because April, May, June, and July were once claimed as an unchangeable project deadline.

	2001				2002								
	9	10	11	12	1	2	3	4	5	6	7	8	9
Original Project Plan													
1st Revision by Project Manager					*								
2nd Revision by Project Manager							*						
3rd Revision by Project Manager							*						
Proposed Revised Plan by voting									*				

Figure 4: Project Schedule (* denotes the moment that the project plan was revised)

At the end of April of 2002, the KuDrink Project Manager (Elise) requested all Process Supports and Module Owners to vote for the date of the system going live. She elaborated that they should commit their responsibilities to this project, and her role was to help them. The project manager provided them four options: (a) August, (b) September, (c) October and (d) unforeseen. Elise did not count herself in the vote. Following was her email.

From: *Elise (Project Manager)*
To: *Process Supports and Module Owners*
Sent: *April 26, 2002*
Subject: *Revising project schedule*

I am concerned of your confidence in implementing the system on 1st August. I realized we encountered a number of new problems and we have been running out of time. If we fix those major problems as fast as possible, we can manage to go live on 1st August.

Before we are moving forward, I would like to have opinion polls. My role is to set up the achievable goal for the project team; therefore, you must agree on it. Our consensus is crucial.

My philosophy is that we are ourselves enemies. If many of us have lost faith in this project, we are losing our team spirit.

Quality may not balance productivity. I will not give up quality. However, you have your own choice. Please select one of the following go-live dates:

(a) 1st August, 2002
(b) 1st September, 2002
(c) 1st October, 2002
(d) I cannot say as it is unforeseen at this moment

Please return me your vote by tomorrow. Then I will readjust our strategy. Thanks and Regards,
Elise

--- End ---

Since all Module Owners were subordinates of Elise, they all voted 1st August. However, almost all Process Supports voted null.

3.2 Project Management

Ian discovered a number of events about project management and technical skills. To eliminate Ian's personal bias, related project emails were included for reference.

3.2.1 Meeting

The ERP Project Manager suggested that Process Supports should take the minutes of their own areas. However, this increased unnecessary workload (or confusion) because two Process Supports probably recorded the same event in duplication that required both of them to follow up. For instance, many inventory operations would involve both FI (Finance) and MM (Logistics) Process Supports. Taking minutes according to the suggested way would cause some confusion. In addition, different parts of the minutes then need to be consolidated on a single record for filing and distribution. Following was the email regarding to the meeting minutes.

From: *ERP Manager*
To: *ERP Consultants*
cc: *Elise (Project Manager)*
Sent: *October 11, 2001*
Subject: *Meeting Minutes*
Elise just called me for meeting minutes. As we agreed before, the minutes would be taken by Process Supports of KuDrink. However, considering the workload for them, Elise and I have agreed that the minutes may record summaries of several meetings. Therefore, Process Supports do not need to provide the minutes every meeting.
Regards,
ERP Manager

- --End---

Later it was agreed that the project manager, Elise, would take all the minutes.

Ian also discovered that regular meetings took about two hours. There was no meeting agenda

distributed beforehand or review session of the previous minutes. Moreover, the minutes were not taken appropriately and some unfavorable action points were not clearly addressed. The following email reflected that situation. In addition, the minutes did not record the progress of ERP consultants.

From: *Finance Director*
To: Tom (Finance Manager *and Process Support)*
Sent: *March 01, 2002*
Subject: *RE: Bi-weekly meeting minutes on 27/02/2002 (Revised)*
As the cost allocation of full-time promotion girls was not recorded in the minutes, Tom, please post it to the project issue log and ensure it to be followed up.
Regards,
Finance Director

--- End ---

3.2.2 Work Allocations

Although responsibilities could be a lead for work allocation, it should not restrict knowledge management. The MIS programmers may not be involved in the tasks of Module Owners; however, it would be nice that knowledge was always shared by members even they had different responsibilities.

Work allocation involving Inter-group coordination and knowledge management was always the key to understanding how well a project was organized and how the process flow was combined to work in place. Ian investigated into a detailed flow of how an invoice note was developed
(1) Request an invoice note from the Process Support and the Process Owner since the standard SAP invoice note could not fulfill KuDrink's requirements.
(2) Develop a programming specification (Module Owner)
(3) Review and confirm the specification
(4) Sign off the specification (Process Owner and Process Support)
(5) Module Owner to prepare a set of sample data for the MIS programmer
(6) Module Owner to pass the sample data to MIS programmer
(7) MIS Programmer to code (or Revise) that invoice note
(8) Test that report using that sample data
(9) Install the invoice note in the system in the testing environment
(10) Inform Module Owner that the note was ready in the system
(11) Module Owner to perform a unit test such as
    11.a Issuing several invoices
    11.b Printing the invoice notes
    11.c Checking with the correctness of those notes
(12) Module Owner to ask Process Support to test the report; otherwise, ask the MIS programmer to revise the invoice note
(13) Process Support to perform a unit test (similar to Point 11)

Figure 5 visualizes the above procedure series.

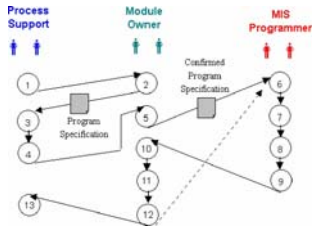

Figure 5: Work Allocation and Work Flow

Such a clear-cut work allocation caused an unexpected situation in which the MIS programmers did not know how to issue an invoice from SAP. What they only knew was to develop the invoice note. They could not perform step 11 (a unit test) by themselves. Therefore, they could only test their programs with a sample data prepared by the Module Owners. Moreover, the Module Owners had never programmed any report. Thus, many reports problem could not be identified in the presence of both the Module Owner and MIS Programmer.

3.2.3 On-site Consultants

3.2.3.1 A Mythic Issue

In a Process Owner meeting on 28 February, Elise (Project Manager) and ERP Manager addressed the necessity for a system refresh (i.e. re-installation) due to the significant changes in the Chart of Accounts. The refresh would take four working days and incurred extra costs (from US$3,500 to $18,000).

The case was later challenged by the query of a Process Support who was responsible of the Chart of Accounts while both managers were formally announcing their refresh plan to all project members. On the same day, that Process Support wrote an email explaining that changes of the Chart of Accounts did not cause any conflict to the previous version of Chart of Accounts. The issue was then gone over a night, and two managers did not provide any explanation of how the issue was resolved.

From: *Finance Manager*
To: *ERP Manager, Elise (Project Manager)*
cc: *Project Team*
Sent: *March 01, 2002*
Subject: *RE: Bi-weekly meeting minutes on 28/02/2002 (Revised)*
Referring to the meeting on 28 of February, I would like to address some remarks.

The Chart of Accounts (COA) was not changed much. Some accounts were added into COA (version 7). When I heard of COA (version 8) could cause a refresh which resulted in a project delay of system go-live, I immediately raised a question to you that we should investigate the root problem. So far, I realized that the problem could easily be solved by revising the codes of those added accounts and putting them at the end of sub-groups. In short, it should be straightforward.

In fact, only were ten accounts afected. My assistant already took 2 hours to complete revision this morning.
Regards,
Finance Manager

--- End ---

3.2.3.2 Overwhelming documentation

In a regular meeting, a Process Support requested to have a related hard-copy system manual for their reference. The ERP manager replied that all manuals were only available on CD. She strongly advised that they should ask on-site ERP consultants for help. This was a faster and better way.

In addition, the same Process Owner requested for some references such as other companies' "Business Blueprint", "SAP Business Processes and Procedures (BPP)", "End-user Training" documents. The ERP manager argued that their works were irrelevant due to different nature of business. KuDrink Process Supports might be misled or be accused of plagiarism. This could be unexpectedly detrimental to successful SAP implementation and thus the request was refuted.

It ended up in piles of documents produced by Process Support from scratch.

3.2.3.3 Untold System Limitations

In the Finance module, Process Owner and Process Support defined more than 200 value fields for

profit analysis. This requirement was documented in the Business Blueprint in December 2001. Note that the final Blueprint should have gone through the feasibility study (or quality review) by the ERP vendor. However, in March 2002, when the ERP consultant attempted to configure that part of SAP R/3, he found out that the maximum number of value fields was 120. The error resulted in reworking part of the Business Blueprint. No one could know how detailed the ERP consultants reviewed their clients' work products.

Some untold limitations were discovered by users that caused unexpected time-consumption. Following were two events for reference.

(1) Maximum Line Items of Sales Order: There was a system limit that line items of a sales order and their rebate terms could not reach 1000 terms. This was found during the unit testing when the Process Supports attempted to issue an order with full-line products and all their rebate terms. The constraint halted the test and the Process Supports needed to rework the testing cases.

(2) Transaction Lock: In May 2002, a user reported that the system halted his operation while he attempted to issue a sales order with product 1101. Much time was spent on error investigation and eventually they understood a phenomenon, in which the system paused to issue any sales order with those products that were in warehouse operation.

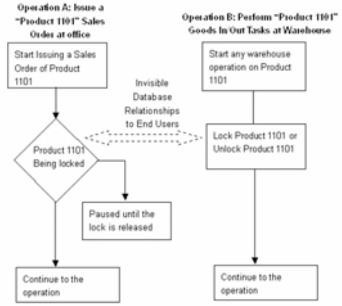

Figure 6: Hidden Internal Relationships between two individual operations

Like other multi-user systems, SAP R/3 allowed more than one user to access a database (see Figure 6). Therefore, a concurrency control mechanism was required to make sure that concurrent transactions did not interfere with each other's operation. Locking was the most common strategy for handling the concurrency problem. When a transaction (say receiving goods of Product 1101 at warehouse) needed an assurance that some objects that it was interested in would not change while the transaction was executing, it acquired a lock on that data object. This prevented other transactions (say issuing any sales order with Product 1101) from making changes to the object that was locked until the lock was released. Whether the above limitations were acceptable or not, the ERP consultants knew about it and they seemed not to review any user testing cases.

Substantial resources on testing avoidable system constraints were squandered.

3.2.4 Peer Review

There was no mechanism to measure the quality of the ERP consultants' work products and services. In fact, the ERP vendor's unilateral suggestion did not sound reasonable to the Process Supports. However, this was quite subjective as believing was normally involved into mutual trust.

Ian attempted to unveil why those Process Supports could not trust the ERP consultants. He soon discovered that the ERP consultants and their manager were not able to provide many supporting points for decision-making and direction guidelines. They always said, "From my previous experience, my clients also encountered the same situation and they used this technique to solve

it." Unfortunately, the ERP manager could not provide more information about how the previous case was related to KuDrink and how the result could be measured for its success criterion after applying the technique. The following email demonstrated a way in which the ERP manager gave professional advice.

From: *The ERP Manager*
To: *Elise (Project Manager)*
Sent: *March 01, 2002*
Subject: *RE: minutes for Jan/2/2002*
Elise,
Regarding to the parallel run of straight cutover, here is my suggestion. Some of my clients preferred a partial parallel run during the user acceptance test (which I will also recommend to KuDrink), in which they gathered existing data from legacy systems and imported it into SAP R/3 for testing.

Elise, honesty I cannot estimate how much effort we will need to do for a parallel run because I don't know your existing AS400 (ERP) system. However, from my experience, we should put more efort in doing USER ACCEPTANCE TEST and USER Training to prevent errors during system go-live.

For a contingency plan, no matter which approach we take, it is a required task during the realization phase.

If you have any question or concern, please feel free to let me know.

Regards,
ERP Manager

--- End ---

Note that the parallel run was a system implementation approach in which a new ERP system was operated along with the old system for a short period before the old system was shut down. On the contrary, the straight cutover was to implement a new ERP system in operation after shutting down an old system (Hiquet, 1998). The two approaches are depicted in Figure 7.

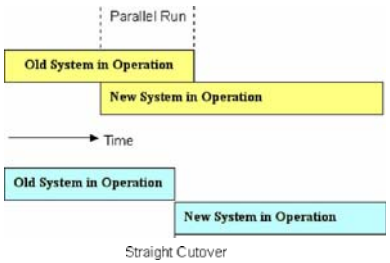

Figure 7: The Parallel Run vs. The Straight Cutover

3.2.5 Project Report to Steering Committee
The Project Charter clearly stated that the project manager was required to complete a monthly project highlight (PowerPoint) report, which would be circulated to the Steering Committee members. The report defined progress to-date against the project activities and highlighted any actual or potential problems identified during the period.

On 11 March 2002, Elise reported the status of the project. However, those PowerPoint slides

tended to galvanized Senior Management into accepting the difficulties. The slide illustrated human resources and potential issues are shown in Figure 8.

Figure 8: A PowerPoint Slide: The problem and its solution were reported to the Steering Committee

The slide illustrated that the project suffered from a human resource problem because of an overwhelming number of reports requested by the users. The solution could be either to increase seven times of the existing resources (i.e. 3 programmers x 7 = 21 programmers) or to prolong the development to seven months.

4 Challenge

A recent study indicated that 40 percent of all ERP projects were only partially completed and 20 percent were discarded as total failures. It was also reported that 60 percent of ERP projects could not achieve the expected (or required) return on investment (e.g. they overran their budget). Finally, for those students who would be interested in the failure rate of SAP, please search Google Group for "+SAP" and "+failure rates".

What are your suggestions using Agile Teaming Principles?