BMA 5006 Management of Information Technology

ENTERPRISE RESOURCE PLANNING SYSTEMS
A CASE STUDY

Agarwal, Anand
Le Thi Hong
Kumar, Nitin
ACKNOWLEDGMENTS

We would like to express our sincere gratitude and thanks to Ms. Liu Xiao, Director NetWeaver (Asia Pacific), SAP for her time and valuable insights in helping us put together this report. We would like to thank Mr. Ankur Saigal, Business Consultant, SAP for helping us liaison with SAP and make this project a reality.

We would also like to express our sincere gratitude and thanks to Mr. Chris Ip, Partner, and Mr. Dino John Ho, Engagement Manager at McKinsey and Company, Hong Kong for their time and insights on the FoxMeyer case and ERP implementations.

And finally we would like to thank Dr. Hsiao Rueylin for his invaluable insights into this report and for imparting us some very valuable knowledge on Information technology & Organizational change.

15th November 2004

Agarwal, Anand
Le Thi Hong
Kumar, Nitin
# Table of Contents

Acknowledgments........................................................................................................ 2

Table of Contents.......................................................................................................... 3

Part I - Experts............................................................................................................. 4

1. Expert 1 – Ms. Xiao Liu, SAP......................................................................................... 4
   1.1 Expert’s Background................................................................................................. 4
   1.2 Interview Abstract ................................................................................................. 4

2. Expert 2 – Mr. Chris Ip and Mr. Dino Ho, McKinsey and Company..................... 8
   2.1 Expert’s Background................................................................................................. 8
   2.2 Interview Abstract ................................................................................................. 9

Part II ........................................................................................................................... 13

1. What is the case about? ...................................................................................... 13
   1.1 FoxMeyer Drug Co. ............................................................................................... 13
   1.2 SAP – the software vendor ................................................................................... 13
   1.3 Andersen – The Implementation Partner ............................................................... 14
   1.4 Pinnacle – The Warehouse Automation Systems Provider ............................... 14
   1.5 Synopsis of the Problem ....................................................................................... 14

2. What does the expert say? .................................................................................. 15
   2.1 Expert 1 – Ms. Xiao Liu, SAP.................................................................................... 15
   2.2 Expert 2 – Mr. Chris Ip and Mr. Dino Ho, McKinsey and Company ............... 16

3. What is OUR opinion? ......................................................................................... 17
   3.1 Who is to blame? .................................................................................................. 17
      3.1.1 MIT 1990s Alignment Model ........................................................................ 17
      3.1.2 Andersen 2003 Information Systems Success Model .................................. 19
   3.2 How would we re-do it? ......................................................................................... 23

References: ................................................................................................................... 26
PART I - EXPERTS

1. Expert 1 – Ms. Xiao Liu, SAP

1.1 Expert’s Background
Ms. Xiao Liu is currently Regional NetWeaver/Technology Consulting Director, Asia Pacific, SAP Asia Private Limited. She has an extensive experience in US and Asia Pacific. She currently handles the SAP implementations over NetWeaver platform in Asia Pacific Region. She has masters in AI and has prior experience with HP before joining SAP in 1996. She can be contacted at SAP Asia Private Limited, 47 Scotts Road, #16-00 Goldbell Towers, Singapore – 228233, or, by mail at xiao.liu@sap.com.

1.2 Interview Abstract
SAP was founded by 5 former IBM engineers in 1972 in Germany. At that time, there was a need for software to manage isolated business processes and databases and integrate them into a single database. Different companies maintained different development teams to analyze their business processes and develop software to integrate them according to their own requirements, which resulted in costly and asynchronous applications for businesses. These five engineers’ idea was to develop standard software for integrating business solutions which could be configured to suit the needs of different enterprises.

Nowadays, there are several ERP vendors in the world, each with a different focus. SAP focuses on the full-blown ERP. Its solutions comprise of many modules, from Finance (FI), Material management (MM), Sales and Distribution management (SD) to Product management and warehouse management. These modules are standard and operate on a flexible, open technology platform that allow enterprises to customize and upgrade their systems as required and integrate SAP and non-SAP systems as well.

SAP, being a German product, is solid, but might not be very user-friendly, just like a German car compared to a Japanese car. A German car has a good engine but the interface may not be very user-friendly whereas, the Japanese car looks very good overall but its engine may not be as durable. Similarly, SAP focuses on the engine side of its product, i.e. the business process design, and not so much on user interface. Therefore, it requires implementers to understand it and users to know how to use it in order to benefit from the product. The company realized this shortcoming and made efforts to improve the product. From the earlier version of SAP, SAP R/2, which was based on mainframe platform, the company has moved to an open technology platform, enabling it to run on computers from different vendors.

ERP does not represent the technology. It represents a solution to manage the business process. So I would say that ERP was “the business fix” in 1990’s. Many companies have applied it and benefited from it. Chevron was the first adoptee and the implementation was very successful. Following Chevron, other success stories contributed to the growing popularity of SAP, making it a hot product. With such demand, issues can easily arise, from both Supply and Implementation perspectives. With respect to the supply, SAP itself was probably not prepared
for such a fast growth. With respect to the implementation perspective, the biggest issue was that there were not many competent consultants who knew SAP as a product well enough. They knew how to optimize the business processes but probably didn’t have the right expertise to implement SAP to achieve that optimization.

SAP invests a lot in developing technology layers and has been able to do so successfully thanks to its own ABAB programming language. ABAB is superior to other languages. It has so many functions and modules ready for you to apply and further develop rather than starting everything from scratch as with other languages. In fact, these technology layers gives SAP the strength of a product with reliability and scalability and brings the company to the position of the market leader in ERP solution. If you want to increase the scale, you just have to add an application server, and the central instance will take care of the entire communication job and so on. Today, with NetWeaver – an open and flexible platform that SAP developed – the company offers a wide range of products that are easy to integrate and develop, even with heterogeneous applications.

In general, R/3 is very capable and volume should not be a bottleneck. If the bottleneck is there then it would be there for all vendors. Scalability is one of the main strengths of SAP. In my opinion, the problem could be the interface with the legacy system or Pinnacle system, rather than volume. We have clients with truly high volume and SAP can handle it well.

SAP implementation involves several phases: blue print, realization, go live and post go live. For any SAP implementation, if you can combine the business re-engineering expertise with the SAP product expertise, you can have a lethal combination. That’s why today at SAP we recommend our clients to involve our consultants to provide in-depth knowledge of SAP, which when combined with the implementing partner’s business process knowledge, can deliver to the client the best ERP solution. In reality, even today we have clients coming back to us and telling us that SAP can’t do something they want it to do because their implementation partner told them so, and we tell them “SAP can do it!” To prevent such scenarios, as I said, the involvement of SAP consultants is highly recommended, to provide the product knowledge to the client who then combines the best practice of the implementation partner, as most of these consultants are former SAP developers.

To a certain extent, ERP implementation leads to changes in the existing business process. And changing a business process is like asking people to change their everyday life. Naturally, there will be resistance, regardless of whether such changes are desirable or not. So, the Company needs to make a critical decision on the implementation approach. Do they want to change the business process to accommodate the ERP software’s requirements and come out with something useful for the company or stay with the same business model and change the ERP to suit the business model, the latter of which somehow does not make much sense. This dilemma causes a lot of confrontation within the company. Company culture is always the biggest hurdle to change.

Another noteworthy thing is that an ERP implementation project requires the involvement and commitment of everybody in the company – IT, Finance, Manufacturing and Product, Sales, Distribution and Warehouse, etc. Without their commitment, the implementation consultant can not do the job by himself. In addition, it also needs someone who knows the industry and the
business process from one end to the other. From my experience, an end-to-end business process is not clear for most organizations. My point is that the key to success is the right approach and right resources. In the case of FoxMeyer, I am not sure which implementation approach they took and if there was any business re-engineering involved.

In implementation, integration with third party represents 60% of the effort. Third party here can be the legacy system or a new system, in this case the warehouse automation system of Pinnacle. The more the third party, the more effort you have to put in integration, and the less value added to your business. I don’t know exactly how many modules of SAP FoxMeyer implemented at that time. If it was one or two modules, this would imply integration with third party, which I think could cause problems. My recommendation is to retire the old systems and minimize the number of interfaces as much as possible, to prevent possible problems from integrating different interfaces.

Regarding the warehouse automation system of Pinnacle, if it were today, I would recommend they use our PW. PW and SAP are two different types of products. The former is an analytical system used for data processing and automation purposes, while the later is a real-time online transaction system. But they come from the same vendor, so there would be no difference in interfaces. Implementation would only involve configuration process, and integration with the legacy system, if any. However, at that time, I believe PW was not ready.

So in the case of FoxMeyer, I feel that the need was there, but the capability was missing. The implementation partner really needs to know where to go and how to implement. So he needs to know the product well and the specific processes to which he is applying SAP. Andersen had good expertise in business re-engineering. But business re-engineering gives rise to internal politics and upsets organizational cultural in the client company. This creates resistance to change from individuals, departments, owners etc. This resistance has a direct impact on the success of the project as it determines the level of cooperation, coordination and support which various components/departments of the client organization provide to the implementation partner. Perhaps Andersen encountered some of this, but we don’t know for sure.

I would also like to mention something about the implementation methodology. This concept refers to the sequence of steps followed in implementing SAP. Implementation partners have their own common methodology, and this sometimes may not match the business processes well enough. SAP now provides a generic implementation methodology, called ASAP (Accelerated SAP), which provides guidance on this whole process – what approach should be followed, what is the landscape, what team should be created, when it should be created, roles and responsibilities of the senior directors and consultants, etc. This methodology tries to optimize the product’s abilities with the business processes of the client. But at the time of FoxMeyer, ASAP was not there. So implementation methodology might be one of the problems as well.

Another key factor in the success of SAP implementation is the extent of implementation. There are two types of implementations – the big bang and the phased implementation. Under the former, you integrate and implement the whole thing at once. Thus testing can be done together and time is saved. However, this increased scope has risks. If you don’t have good coordination, things might fall apart. Here it seems that this model of implementation was followed.
FoxMeyer alleged that Andersen used the project as a test-bed and a training ground. It could be the case, since there was a shortage of consultants as I mentioned earlier. As regards FoxMeyer’s claim that Andersen used fresh graduates to do the coding etc, well in my opinion, it’s not that much of an issue if you can make sure that there are senior consultants who supervise and guide their work. They don’t need to be hands-on, but they have to ensure the overall basic stuff. They don’t need to do the coding but should be there to review and oversee it. They need to act as gatekeepers to ensure quality. However, we can’t say anything for sure here.

In the final analysis of Andersen’s role as an implementer, I would say, they had good intentions to add value, leveraging their business re-engineering expertise. But how they could leverage their knowledge of SAP as a product for their client, I am not too sure.
2. Expert 2 – Mr. Chris Ip and Mr. Dino Ho, McKinsey and Company

2.1 Expert’s Background

Chris Ip is a partner at McKinsey & Company. He is leader of Business Technology Office in Greater China, based in Hong Kong.

Mr. Ip serves clients in the financial services and telecommunications sectors across a broad range of strategy, technology, business process redesign, operations and organization issues. He has experience working with many companies across Europe, North America, and the Emerging Markets in Asia and Latin America.

His work has involved the use of technology to transform businesses by redesigning core business and organizational processes both in the front office (e.g., new product development, customer relationship management and multi-channel distribution) and in the back office (e.g., cost reduction, operations consolidation and business process off-shoring).

Before joining McKinsey, Mr. Ip worked at Cambridge Technology Partners, a global systems integration firm, now owned by Novell, at GlaxoSmithKline in Philadelphia and London, and at Siemens. He is a graduate of University of Cambridge and a Fellow of the Cambridge Commonwealth Society.

Dino John Ho is an Engagement Manager with McKinsey & Company, based in Hong Kong. He is a core leader of Asia Business Technology Office, McKinsey’s Information Technology (IT) practice. His main industry expertise is in Basic Materials and Energy; however his Clients include a broad range of industries including Power and Natural Gas, Pulp & Paper, Banking, High-Tech and Media & Entertainment over diverse geographical locations.

Dino has specialized expertise in the areas of IT strategy, Enterprise Resource Systems (ERP), business process re-engineering, outsourcing, system analysis and design, IT operations and project management.

Before joining McKinsey, Dino worked as a management consultant in one of the Big 5 accounting firm and in a US-based telecommunications company. He holds a Ph.D. in computer science (majoring in biomedical imaging) from the University of Sydney, Australia, and a B.Sc. (first-class honors) in Computer Science. In addition, he has been elected to the Biomedical and Community Services committees for the Hong Kong Institute of Engineers.
2.2 Interview Abstract

ERP is a fundamentally sound software concept that creates value to companies through process standardization. It was initially used by corporations to support back-office functions such as management, HR, payroll, finance and accounting. Later, it moved into the core businesses like manufacturing, supply chain management and customer relation management. ERP can add values to an enterprise in three direct ways.

First, it is an enabler for operations consolidation, which generates cost saving through economies of scale and improved quality of services. For example, with ERP, a global industrial company has been able to restructure its Finance and HR functions as shared service centers and the potential recurring benefit is expected to be USD 14 million.

Second, with its pre-configured processes, ERP enables a company to adopt the best practice efficient processes, especially in Asian context. The application of best practice improves operational efficiencies through streamlined processes. Also, improved data sharing across departments helps companies to make better and timelier decision.

Third, ERP rationalizes company’s IT legacy by replacing multiple IT legacy applications with an integrated ERP system and centralizing IT service, thereby reducing IT cost. This trend was driven by big changes like Y2K – the millennium bug, and Euro Currency conversion, which required new systems and ERP was the enabler for these changes.

Looking back to the 1990’s and early 2000’s, we can see numerous companies launching big, gigantic ERP systems. This trend can be attributed to three main causes. First, there had been no appropriate IT system and enterprises were in need of integrated IT solutions like ERP, SCM, CRM to facilitate or automate their current business processes. In countries like China, ERP was a first wave of automation. The second driving force was the instability of the existing IT system which needed to be replaced because it was either at the end of its life-cycle or incompatible with new functionalities. Third, changing business conditions triggered investment in ERP. Globalization, merger and acquisition, business reorganization all needed IT systems to support them.

However, I would also like to mention that there is a tendency in companies of emerging economies to consider that best practices come only from the West. This causes these companies to go ahead and implement without understanding the cultural context of either the software vendor or their own. ERP software from the western world tends to focus on labor cost reduction and automation. In emerging economies, labor cost is not such an issue. Therefore, companies should be very clear on the economics of the implementation and not just follow the trend.

To date, a combined investment of USD 350 billion has gone into ERP programs. 54% or over 60,000 companies worldwide have implemented it, with investment averaging USD 6 million. In the early 1990s, ERP was in such a great demand that there was a shortage of ERP consultant, and those who were could make a lot of money.

The theoretical benefit from all ERP implementations so far is estimated to be in excess of USD 1.2 billion annually. However, the dynamics of the “first wave of ERP” could capture only less than 40% of this expected value. There were many painful experiences in the past and Fox Meyer was not the only example of companies going bankrupt because of IT system failure. Chemicals industry in 2002 had many similar examples. Most recently J Sainsbury has announced a profit warning and wrote off USD 600 million IT investments and terminated the
contract with the vendor company. So, why something which is fundamentally sound did not deliver the expected value?

There are five key reasons why companies have not realized value from ERP implementation. Some are business issues, not ERP or IT systems related.

First, fundamentally misguided efforts result in significant cost overruns. Many companies adopted ERP with the wrong motivations. Successful ERP implementations depend a lot on the ability of the company to know what it wants from the ERP. In the 1990s, some companies even did not understand technology, and therefore implemented technology in hope that it would solve their problem by itself. My recommendation is that a decision to adopt ERP should not be driven by the trend. Only companies which know how much of ERP they want, which processes will be impacted, and what they can get out of it, will be able to realize the full value of ERP.

Another misguided effort is over-customizing ERP system to fit the company’s habitual “bad practices”. In fact, ERP is a counter-intuitive concept. It comes with built-in configurable processes and requires companies to change their business processes to fit it. Direct benefits from ERP come from business process improvement. However, enterprises generally identify their business needs first and then IT needs to support business. In ERP, it is the other way round. So when you try to over customize your IT systems to your business needs, more often than not, they fail.

The second reason for failure is wrong scope, which can be either a too broad, or too narrow scope, or too deep or too shallow data structure. When a company tries to do global projects, e.g., oil companies who were the first adopters of global ERP projects, the effort may be too broad to manage. At the other end, some data sharing systems such as single billing information or marketing process are too narrow to reap any benefits from ERP even though it is properly implemented.

Data model is one of the key enabler for a successful IT system. One telecom company in China had half of their systems built around customer and the other half around mobile phone number. As data could not be shared across, it was difficult to implement a CRM software with a single database. The same thing happens to banks. So you might have the best systems or business processes, but they will be useless if data is not captured properly. In my experience, I observe that data sharing between departments is a problem for most companies, unless it is an operational requirement.

Third, implementing ERP project is as much about leading a change program as it is a program of building systems. However, companies tend to focus on implementing the system rather than on changing the business. They did not pay enough attention to organization change management regarding processes, skills, culture and value and as a result, their legacy systems prevailed. It is important to note that change management is not an IT process and ERP is not solely in the scope of IT. It involves people from other departments as well. For example, it requires people from HR to be involved in job redesign and training. As far as the implementation consultants are concerned, since they do not know about the business process and culture of the client, they need the client’s support to make sure all the components of the project are there. And if these components are not there, it is the consultant’s responsibility not to undertake the project. In FoxMeyer’s case, I am not sure which the case was.
The fourth reason is the lack of or ineffectiveness in complexity management. This results in high process complexity or cost or time overruns in the implementation process. In implementing an ERP project, a company should know what skills are needed, where it stands in terms of its capabilities to cover the projects and then contract out what it does not have. In this particular case, it is unknown to me if FoxMeyer expected this service from Andersen.

The fifth reason for failure is the mismatch between objectives and motivation of different players involved. The client focuses on extracting the maximum value from their investments while the vendor focuses on selling additional solutions. The system integrator wants to implement more projects, extend the scope and place more staff on a project as their revenue model is built around that. So, it is essential for the buyers to understand what drives the economics of different parties involved. They should also understand the dynamics of the service they purchase as well. In the past, there have been many cases where the client, due to lack of knowledge and experience on ERP, trusted the system provider and implementer because of their prior experience in ERP. Therefore, when they signed the contract, there would surely be a degree of trust in it. And basing solely on this judgment called “trust”, many clients did not achieve the result they expected. In this particular case, I would not put all the blame on FoxMeyer. Given the timeframe of the case, it should not be the entire client’s fault for not knowing.

Market conditions also predominantly determined failure of the “first wave of ERP implementations”. On the supplier’s side, the software was not fully developed. There was a lack of implementation skills and good coordination among buyer, vendor and implementer to capture the value of ERP. On the buyer’s side, neither did they have experience with ERP implementation. As a result, there was no clear understanding of ERP’s value and how to capture it. The implementation project was conducted as an IT project, and as analyzed above, ERP’s value could not be realized. On top of that, big changes such as Y2K, the Euro rush, dot-com and the e-business stampede drove companies to adopt the technology. Meanwhile, the business cycle in its growth phase tended to make companies to focus on decentralization and diversity rather than ERP style standardization. However, market conditions have changed and now encourage “the second wave of ERP” in which companies can regain their return on investment and clean up the remaining value that has been “left on the table”.

Regarding the question of phased or big bang implementation, we would recommend companies to consider the following aspects before making decision:

- Risk management: The project is preferably rolled out in small pieces, tested and perfected before the final rollout across the company. The smaller the project, the lower the risk. In my experience, I have seen global companies rolling out the whole implementation across 20 countries at the same time and it did not make much sense. Contingency should be managed by “role separation”. An independent “risk management team” is created, attached to the project, to oversee quality issues and make correction as and when necessary.

- Prioritize the functionality: Companies should focus on areas of their business which give them the maximum value. This will allow them to invest a little first, and then see a quick return in these areas. This way the project not only can finance itself, but also show its relevance.
Cost-benefit analysis: Companies should undertake a cost benefit analysis of the project not only in its entirety but also by each module they intend to implement and across each geographical location.

Finally, I would like to say that in outsourcing an ERP implementation project, it is important to split the scope of services and identify the ones you need. There are different categories of services. The first category of service is IT system configuration which involves coding and configuring ERP components. The second type is related to business process design, i.e., looking at the current business process, detecting its issues, comparing it with the business processes under the new technology and finding out how to move from the existing to the new processes. The third category is change management. This is actually an organizational project, in which companies have to ask questions such as what skills they need in the future, what skills they have today and thus, what kind of restructuring they need to do. The fourth service type is for combining all these together, or project management. A company should look into its capabilities and contract out those it does not have. But when you contract out, you can not outsource your problem. In this particular case, I am not sure about the scope of the services that Andersen was contracted. If it was purely configuring and integrating the system, then their mandate was to provide product expertise only, not to do the change management. But I do not know for sure here.
PART II

1. What is the case about?

1.1 FoxMeyer Drug Co.

FoxMeyer Drug Co. was the fourth largest distributor of pharmaceuticals to drug stores and hospitals in the USA till August 1996, after which it filed for bankruptcy citing a failed ERP implementation as the cause.

In the mid-1990’s, FoxMeyer planned for upgrading its ageing Unisys systems using ERP for managing the expected increase in volumes coming from surge in pharmaceutical sales. It decided to also upgrade its warehouse operations simultaneously to develop cost advantages over the competitors and successfully under-bid contracts. This made the ERP and warehouse automation project, code-named Project Delta, very critical.

For Project Delta, SAP provided the ERP software, Pinnacle Automation provided the warehouse automation system and Andersen Consulting was hired to integrate and implement the two systems within 18 months. Meanwhile, FoxMeyer successfully bid for the US$ 1 billion a year University HealthCare contract, taking into account the projected savings from Project Delta. This prompted the management to expedite the project by three months. This increased the scope of the project – from giving the existing systems headroom to satisfying the needs of the new huge contract as well. The new contract would severely increase business volumes, necessitating an increase in the throughput capacity of R/3.

By early 1996, the project was completed and the new systems were online. But things began to go wrong. The newly constructed automated warehouse began to mishandle orders. The packaging equipment often broke down, leading to manual operations which were costlier, error prone and time consuming. Eventually, FoxMeyer had to give away certain portions of its University contract to its competitors due to such repeated system failures.

In August 1996, desperate to save the situation, the company brought in Robert Peiser, renowned for his turnaround expertise, as CEO to help handle the situation. Peiser filed for protection from creditors under Chapter 11 of the Federal bankruptcy laws and unable to solve the depth of the problems, departed in November 1996.

1.2 SAP – the software vendor

In the mid 1990’s, SAP was considered to be the leading supplier of ERP systems. ERP systems provide an overview of the various aspects of a business - production, development, sales etc; by providing a common database for every function and department, across the company, to use in a real-time environment. ERP is ideal for capturing and storing data across the organization, thus easing the decision-making process of an enterprise. ERP allows the company easier access to more reliable and timely information, opportunities to eliminate redundant data and operations, and hence increase efficiency and reduce cost. An ERP project, in many cases, involves business reengineering. However, the software itself does not bring the magic of transforming the
business and increase its efficiency. Unless the company makes an effort to transform its business processes, the ERP project can fail.

With volume being the key issue at FoxMeyer, SAP’s software was successfully tested on client-server hardware supplied by HP. Till FoxMeyer implemented it; R/3 had never been tested live at such business volumes. Despite this shared concern by all parties, the project received a go ahead. Facing FoxMeyer’s challenge, SAP explained that the installation in McKesson proved that the system was sound. FoxMeyer selected the warehouse system from Pinnacle Automation, despite SAP arguing that it could have provided both systems.

1.3 Andersen – The Implementation Partner
Andersen, one of the major IS consulting firms in the world that time, was selected as the implementation partner. Andersen’s role was to install SAP and align it with FoxMeyer’s business processes. As per Andersen, the project was successfully completed.

1.4 Pinnacle – The Warehouse Automation Systems Provider
Pinnacle was a leading provider of Warehouse Automation Systems. It was a stable system, which prompted FoxMeyer to choose it.

1.5 Synopsis of the Problem
The new warehouse began shipping goods in August 1995, triggering a mass exodus of warehouse workers. This prevented a smooth transition between the old warehouses and the new automated warehouse. The declining morale of the departing workers caused them to carelessly handle inventory transfers between the warehouses, leading to US$ 34 million in inventory losses.

FoxMeyer was the price cutter in the industry. This factor, combined with the information-system and warehouse-management initiatives, pushed the company over the edge.

SAP and Andersen contended that the problem appeared to be that FoxMeyer did not think through the project. They blamed FoxMeyer’s business strategy decisions in a highly competitive industry and maintained that the project was successfully completed from their end. They regarded it not a failure of commercial software per se, but a management failure due to over optimism. FoxMeyer on the other hand, placed the blame squarely on SAP and Andersen. They contended that SAP oversold R/3’s capabilities, and Andersen used inexperienced staff, which bungled data conversions and built faulty interfaces between the old and new systems.

So, who was to blame? Was FoxMeyer too aggressive or was it simply misled? Was the SAP system a defective product? Was Andersen’s consulting practice negligent and unethical? Or was it a case of corporate greed over taking the need for social responsibility?
2. What does the expert say?

2.1 Expert 1 – Ms. Xiao Liu, SAP

ERP implementation project requires the involvement and commitment of everybody in the company. It needs an expert who understands the end-to-end business process of the organization to help in the implementation. We agree that success depends on the right approach and right resources.

Most technology intensive products need a manual, a step by step guide of how to use the product and exploit its features. Especially with a complex product as ERP, such a manual is of great importance to both the user and implementer. Although the interviewee objectively admits that SAP ERP at that time lacked in user-friendliness, she feels that it is the implementer and user’s responsibility to understand SAP and know how to utilize it. SAP now provides such a manual known as Accelerated SAP (ASAP) in an attempt to recommend a standard implementation practice for consulting firms. In our opinion, SAP, as the developer and vendor of the product, is supposed to have the best knowledge of ERP and thus should provide a step-by-step guidance manual (Explicit Knowledge) for both the integrator and customer.

Integration between various systems represents about 60% of total time and cost. To minimize the risk of integration, software should be chosen from the same vendor. SAP had both ERP and warehouse automations systems available. Although, SAP was not an industry expert in warehouse automations at that point of time, it should still have been chosen over Pinnacle for limiting the risks. We agree with the expert, that it would help in a better configured system, easier integration between systems, and simpler training requirements.

The company needs to decide between integrating ERP software within the same business model by customizing the software or re-engineering the business process to harness the product capabilities. We agree that re-engineering strategy is the most obvious choice and it is a lethal combination for success.

Business re-engineering gives rise to internal politics and upsets organization culture in the company. This leads to resistance to change and becomes a liability for the implementation. We agree that change can cause a resistance leading to failed delivery and should be managed well in advance.

Business re-engineering potentially also increases the scope of the project. The scope also gets affected by the implementation strategy – big-bang or phased. We agree that increased scope has risks and things might fall apart if coordination is an issue.

SAP today recommends phased implementation. Regardless of which implementation strategy is recommended, as part of customer service, SAP/Andersen should have informed the client about the potential timeline and risks involved. But it seems that in FoxMeyer’s case this was not clearly outlined. We believe that the criticality of Change Management was overlooked.
Most consultants now have a huge ERP practice. But, at the time of FoxMeyer’s case, there was a shortage in the supply of experienced staff on ERP implementation. In the expert’s view, any good consultant could fulfill the integration process successfully. However, for a project unprecedented in terms of scale and adoption of a distributor, this might not be the case. The implementation partner should have a very good understanding of SAP. In order to avoid the complexity later on, SAP should have been involved in the implementation. We agree with the expert on having proper Product Knowledge. However, the question is whether SAP really wanted to be involved in the implementation process, or whether they tried to wash their hands out of the process when they succeeded in providing satisfactory measurements to the customer and leave the remaining for Andersen. FoxMeyer claimed not to receive any help from SAP. It seems to be a case of bad Project Management.

The use of fresh graduates by Andersen for implementation is not much of an issue as long as there are experienced supervisors and guides acting as gatekeepers to maintain the quality of the implementation. We do not fully agree with this point because we believe that fresh graduates have a limited understanding of the product as well as the business requirements and processes. This can lead to faulty implementation and/or longer turn-around times. The lack of experience is one of the biggest risks involved for Software Installation/Configuration and Technical Integration making it one of the biggest Project Risks.

SAP is famous for scalability. Customization and development is possible and easy. We believe that although customization is possible, it results in changes in database and code, leading to a modified code which is equivalent to new codes. It requires involved testing – which if neglected, can lead to unstable and bug ridden software. We know that due to the shortened project schedule, such involved testing was not done at FoxMeyer and thus volume could have been an issue.

The expert from SAP has given us a very good overview of the risks involved in implementation of a radical project like FoxMeyer’s which needed a complete business overhaul.

2.2 Expert 2 – Mr. Chris Ip and Mr. Dino Ho, McKinsey and Company

Fundamentally misguided efforts result in significant cost overruns. Many companies adopted ERP with the wrong motivations. We fully agree with this point that correct strategy results from correct identification of requirement. A misguided or wrong interpretation of problem will result in failed solution.

Another reason for failure is wrong scope, which can be either a too broad, or too narrow scope, or too deep or too shallow data structure. A wrong scope inherently leads to a vague implementation, large overheads or inappropriate structure for the implementation. We agree with the experts that a correct scope is one of the major keys for success for the project.

Companies tend to focus on implementing the system rather than on changing the business. We agree with the experts that ERP project is as much about leading a change program as it is a program of building systems.
Lack or ineffectiveness of complexity management. We agree with the experts that this results in high process complexity or cost or time overruns in the implementation process. This makes the cost of transformation larger than the realizable gains in short-term.

Mismatch between objectives and motivation of different players involved. We agree with the experts that this results in high process complexity or cost or time overruns in the implementation process. This makes the cost of transformation larger than the realizable gains in short-term.

The companies need to consider Risk Management, Functional Priority and Cost-Benefit Analysis before undertaking implementation in either Phased or Big-bang approach to implementation. We agree with the experts on need to rationalize the approach to implementation.

The experts from McKinsey & Company have given us very thoughtful insights from the implementation perspective for a company.

3. What is OUR opinion?

3.1 Who is to blame?

The failure of the implementation of ERP at FoxMeyer can be analyzed within 2 frameworks – MIT 1990s Alignment Model and Andersen 2003 Information Systems Success Model. Each of the two frameworks looks at the success of an IS implementation from different angles.

3.1.1 MIT 1990s Alignment Model

MIT 1990s Alignment model emphasizes the mutual adaptation of five elements of change: strategy, structure, process, technology and people and their alignment with the recipient organizations business processes. Lets analyze the alignment model from view point of SAP, McKinsey and our.

<table>
<thead>
<tr>
<th>Strategy Alignment</th>
<th>SAP</th>
<th>McKinsey</th>
<th>Our opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement of ERP</td>
<td>ERP represents a solution to manage the business process. Many companies have applied it and benefited from it.</td>
<td>ERP can add values to an enterprise in three direct ways – Operation Consolidation, Efficient processes and Rationalization of Company’s IT legacy.</td>
<td>Needs to analyze the requirement of ERP based on cost-benefit analysis and functional requirement.</td>
</tr>
<tr>
<td>Phased vs. Big-bang</td>
<td>Analyze the business requirement. But, if a large change prefer big-bang but they come with high risk.</td>
<td>Preferably roll out the project in small pieces. Smaller the project, lower is the risk. Analyze the requirements and scope.</td>
<td>Preferably Phased as the process entails change of IT systems and Business Process.</td>
</tr>
</tbody>
</table>
### Choice of Vendor

| SAP product has reliability and scalability | Any ERP software can be chosen. | Choose vendor most compatible to other systems in IT system. |

### Choice of Consultant

| Not many competent consultants who knew SAP as a product well enough. Andersen had Business Process Re-engineering experience so a good choice. | An acute shortage of SAP Consultants in early 1990’s. | Not much choice because of shortage of consultants. Choose business process re-engineering experts and consultants from the vendor company. |

### Structure Alignment

<table>
<thead>
<tr>
<th>Structure Alignment</th>
<th>Project Management</th>
<th>Mismatch between objectives and motivation of different players involved.</th>
<th>Need to have a clear vision of objectives of the entire process. Set milestones both in terms of implementation and adoption.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Combine the business re-engineering expertise with the SAP product expertise; you can have a lethal combination.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Manage Technical Integration Risks

| To retire the old systems and minimize the number of interfaces as much as possible, to prevent possible problems from integrating different interfaces. | Minimize the variation of systems for a better interface management. Interface development for integration takes a huge amount of time and money and is risky because of low testing. |                                                                                       |

### Business Process Alignment

<table>
<thead>
<tr>
<th>Business Process Alignment</th>
<th>IT supports Business Processes?</th>
<th>Need to identify the key strengths of IT system and Business Process and model the other around the strength of one.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change the business process to accommodate the ERP software’s requirements and come out with something useful for the company</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ERP comes with built-in configurable processes and requires companies to change their business processes to fit it.</td>
<td></td>
</tr>
</tbody>
</table>

### People Alignment

<table>
<thead>
<tr>
<th>People Alignment</th>
<th>Different Technology Frames</th>
<th>ERP is not solely in the scope of IT. It involves people from other departments as well.</th>
<th>Resolve before implementation at such large scale. Otherwise, would lead to failure owing to low user adoption.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ERP implementation project requires the involvement and commitment of everybody in the company</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Internal Politics

<table>
<thead>
<tr>
<th>Internal Politics</th>
<th>Business re-engineering gives rise to internal politics and upsets organizational cultural in the client company.</th>
<th>Companies tend to focus on implementing the system rather than on changing the business.</th>
<th>Communication of expected results helps assuage fear and reduce resistance due to internal politics</th>
</tr>
</thead>
</table>
3.1.2 Andersen 2003 Information Systems Success Model

According to the information systems success model introduced by Andersen in 2003, there are four types of risks that can endanger the successful delivery of an information system: software installation/configuration risks, technical integration risks, project risks, and business risks. At each stage the risks have to be managed by FoxMeyer, Andersen, and SAP individually or together, as the direct parties involved in the implementation.

In the following, we analyzed the four risks to figure out the responsibility of each party in the debacle.

3.1.2.1 Software Installation and Configuration Risk

ERP was considered the business fix of the 1990’s. This sheds light on the possibility that FoxMeyer might not have thought through the decision, and applied the software without asking how it could really fix their business problem. As pointed out by the expert, ERP is not a stand-alone technology, but instead a solution to business management. It does not have the magic of transforming an enterprise, unless the company makes sure that ERP system is right for them. Further, new business processes must be developed to support the working software.

SAP, being a product seller, has the incentive to oversell the capabilities of their product. The approach of “silver bullet” might have been used by them, but it is the buyer’s responsibility to do proper analysis of the tool and its capabilities before making the purchase decision. There is no evidence in IT history that software alone could solve a business problem. The key to success lies in the deployment process, not in buying the software and installing it alone. In this case, it is obvious that FoxMeyer made the mistake of not planning ahead and overlooking the risk of the product never being operated at such high volumes. How Andersen was also responsible for this decision is unknown, since we do not have details of the degree of involvement Andersen had in making this decision. The main fault is on FoxMeyer’s part.

As detailed in the case, the project required integration of SAP ERP solution with Pinnacle’s warehouse automation system. SAP also had their warehouse automation system ready for deployment. They wanted FoxMeyer to buy both systems from them. There could possibly have been integration issues with third party warehousing system vendors which SAP would have known. But, to make the sale, SAP might have chosen to keep Andersen and FoxMeyer in the dark about the issues resulting from this. This also led to the working software being a poor choice. If this is the case, SAP also shared their part in the failure.

In the software installation period, software training and system configuration also contain risks. To manage these risks, the implementer must have proper knowledge of the functionalities of the software and how to leverage them to the client’s benefit. Andersen Consulting, in our opinion, lacked a comprehensive Product Knowledge. They could not synergize their expertise in business process re-engineering with their knowledge of SAP ERP systems. They failed to transfer product knowledge to FoxMeyer as well. Usage of a sign off policy indicates, in some measure, the lack of belief Andersen had in the quality of work executed by them and a desire to reduce potential legal liability. We feel that allegations by the FoxMeyer management regarding Andersen’s negligent consulting hold water. This caused poor configuration and software training.
We also believe that Andersen might not have the best interests of FoxMeyer in mind while taking the project. As The expert mentions, there was a dearth of SAP consultants at that time. This explained why Andersen sent fresh and inexperienced graduates to implement the system at FoxMeyer. Although the implementation team reached 50 people at times, their work would not be of much value unless there were senior consultants there to guide and coach them. This also led to poor system configuration and integration. For this, Andersen Consulting should be totally responsible.

3.1.2.2 Systems Integration

As pointed out by The expert, interface development normally represents 60% of integration effort. In this case, since the two systems were developed by different companies for a different set of inputs, integration issues were a definite possibility. FoxMeyer and Andersen would have been better off understanding this risk and getting SAP involved as a partner. However, in fact, SAP was hardly involved. SAP-CEO Hasso Platter admitted that SAP America at that point of time had not yet “developed a close relationship [with users] in the US market”. Given the fact that FoxMeyer was an early distributor adopting SAP for such a huge volume, there is a high probability that both FoxMeyer and Andersen did not have the necessary knowledge. FoxMeyer, Andersen and SAP alike share the responsibility of the poorly integrated system.

The ERP implementation required a transition time for the employees to move from the older Unisys based systems to the new SAP ERP based systems (Implicit Knowledge and Explicit Knowledge). This would have required a significant time in providing extensive training to employees for a successful transition. We believe that training was not budgeted, highlighting poor planning on part of FoxMeyer as well as Andersen.

Most companies underestimate the cost of data conversion. Their Legacy standalone systems might contain inconsistent or unreliable data. Therefore, complete data conversion takes time and effort since it involves correction, filling in missing data, not conversion itself. In this case, we speculate that data conversion was also an issue, resulting from the evident unavailability of skilled personnel at FoxMeyer, insufficient and indifferent staffing for the project. For this, FoxMeyer was at fault.

3.1.2.3 Project Risk

The scope of the project was risky from the start. According to Kenneth Woltz, former advisor to FoxMeyer, the company set a totally unrealistic goal of achieving a schedule for the entire implementation in 18 months, and thus requiring each module to be completed in two or three months. Despite this concern, the project went ahead. In hindsight, not only did FoxMeyer lack competent in-house IT personnel and capable users to ensure a fast-track installation but it also failed to consider the risk of being the first distribution company, with unprecedented high volumes and complex pricing systems, to adopt SAP. Poor management over scope and schedule was also indicated by the shortened timeline and increased throughput to R/3 after the successful bid for UHC. Perhaps the company’s management was over committed to consider de-escalation,
as evidenced by Robert Brown, FoxMeyer’s CIO, statement, “We are betting our company on these systems.”

FoxMeyer did not foresee the impact of the dramatic change in their business life that ERP implementation would bring about and therefore, did not have adequate change management policies and procedures. This is evidenced by declining morale among workers leaving en masse in fear of forthcoming job redundancies and mal-operation by those who stayed on. People, by nature, are resistant to changes. Expecting employees to accept a drastic change in a short period of time will cause a mind-block reducing the efficiency of the employees. At FoxMeyer, the top management was committed to the change, but no such commitment was observed from the end-users. The advantages of the new system could simply have been ignored and possibly human errors could have caused most of the issues FoxMeyer had.

Whether Andersen, in their role as implementers, pointed these risks out to FoxMeyer is not known. But considering their reputation as successful IS implementers, we believe it was their responsibility to educate the management at FoxMeyer about such a critical issue.

It appears that the debacle was a mix of Interaction and Correspondence failure. The ERP system, though implemented, failed to achieve its objectives of saving costs by improving operational efficiencies. The situation was complicated by lack of user involvement, lack of mutual understanding regarding business needs, human resistance, poor design quality, inadequate time and poor internal management processes. This shows that the business requirements were not clearly understood and thus badly managed on FoxMeyer and Andersen’s part.

3.1.2.4 Business Risks

FoxMeyer seemingly had not done a proper risk-analysis of the business change. They banked on technology alone and bet the company’s existence. The business risk was large and it did not pay off. The company sought to improve its efficiency by merging the ERP with warehouse automation, thus cutting costs. The timeframe set for the changeover was very minimal and the changeover was expected to be smooth. Lack of proper planning makes the strategic move look like wishful thinking. Technology cannot be used as a magic bullet, unless the caliber of the gun is well known. It is a case of insufficiently analyzed business solutions that FoxMeyer had no one but themselves to blame.

FoxMeyer and Andersen were jointly responsible for the implementation process. The implementer would have required a thorough understanding of the complete business process and the requirements from the project. This would have enabled Andersen to do a much better job. Considering the scale of the project and the complex requirements, a larger time for implementation would have been a better strategy. Andersen should have considered this while accepting this assignment. This also led to the business solution not being properly analyzed.

Different people have different frames of reference and thus have different expectations. We believe there would have been internal conflicts with regard to implementation. For instance, the decision between big bang and phased implementation would have created a lot of discomfort. This could have potentially led to some departments not being cooperative enough during the implementation with the implementation partner. This is a problem with the converted processes.
The threatening sign-off policy that Andersen instated could be because Andersen did not believe in the success of the project and wanted to protect itself from potential legal consequences in the failure. This would have also possibly antagonized the management at FoxMeyer, making them hostile towards Andersen. This could have led to a potential stand-off between the two parties, causing the implementation failure. Doing this, Andersen skipped their responsibility of job training and hood-winked FoxMeyer to cover the failed converted processes.

3.1.2.5 Product Delivery - Conclusion
Putting the above analysis and corresponding responsibilities in the IS chart we get the following

Figure 1 gives an overview that although all three parties are involved; mainly Andersen and FoxMeyer are at fault, FoxMeyer more so because they had their business interests. Andersen took advantage of the poor knowledge of ERP with FoxMeyer management and did not manage the project to the full extent.

Failure of ERP implementation at FoxMeyer was not just a technological failure but also poor management. We would also like to bring to the notice of the reader that the judgment provided by Judge Robinson in 1999, found Andersen guilty of the charges pressed against it and fined it an undisclosed sum. Following more such bungled implementations and other malpractices, Andersen was dissolved and Accenture was born.
3.2 How would we re-do it?

Given the expert opinion we now have and our theoretical grounding in information technology induced changes in organizations, we would implement ERP at FoxMeyer, albeit with a different strategy.

We believe that for any IS implementation to be successful, especially when the technology used is new and untested, an alignment between the organization and technology is a key requirement for mitigating the business risks involved in this decision. This responsibility mainly lies with the adopter as it is their business which is at stake. Either the technology should be aligned to the business or the business should be re-aligned to the technology adopted. Application of the most advanced and best practice technologies is not sufficient to achieve organizational objectives. Greater business value comes when the right technology is aligned with the organization’s objectives, strategy, structure, processes and people. It’s thus not only about what you apply but also how you apply it that can make or mar the success of the implementation process. The concept of alignment is thus the dynamic search that seeks to harmonize the organization with its environment and arrange internal resources in support of such harmonization. Thus technology has to be converged with these four elements of an organization to achieve the state of “best fit”.

- **Strategy.** The technology used, should complement an organization’s strategy and not threaten and dominate it. It should play a supporting role in achieving it. However, technology should not be treated as a “magic bullet”. FoxMeyer’s strategy was lacking in firepower and it hoped that ERP would provide for such deficiency. Implementing untested technology, betting the company, not having sufficient product knowledge and trying to have the best of both worlds by having different vendors, is definitely not a smart strategy, in our opinion. Our expert from SAP also corroborates by highlighting the need to know the product not only from the implementer’s side but also the client’ side as it’s his business and his product. It’s their final responsibility to know the product and test it before buying. As per the experts from McKinsey & Co., ERP is a fundamentally sound system which seeks to provide gains in efficiency and financial control by streamlining and standardizing business processes. However, implementing companies ought to be very clear as to why they want to implement and adopt it. Generally companies implement ERP for financial control & procurement or operational initiatives by the main departments or because of recent regulatory requirements like Sarbanes Oxley Act, which require standardized and transparent systems. In fact the conceptual benefits from ERP, as per an internal study by McKinsey & Co., reveals that ERP systems have the potential of providing a 200% Return on investment (ROI) with a payback period of just six months. Ms. Xiao also stated that a big bang implementation is not a wise strategy as it does not provide sufficient time for testing.

We believe that FoxMeyer should either have implemented the ERP system alone without automating the warehouse for the UHC contract or just automated the warehouse with a phased ERP implementation. Basing the financial viability of a USD 1 billion a year contract, on unproven technology is definitely not a smart strategy when you are the industry price cutter. They should have aligned the technology to the strategy and not the strategy to the technology.
• **Structure.** An organization which is very diverse and provides a great deal of autonomy will find it hard to integrate itself into a whole using a common technological platform because of the organization structure. FoxMeyer had thirty warehouses across USA which operated on stand alone software. Complicating this was the loose managerial control, as is evident by the poor management of warehouse worker lay off. They should have re-structured their operations to reduce such complications. As per McKinsey & Co., companies should clearly understand the difference between “implementing the system” versus “changing the business”. There is a line separating these two things, albeit a thin one, but very critical. The organization structure gets impacted by the system and this causes a change in the business. This requires the company to build mechanisms in the organization structure which can absorb such changes. We would have identified those warehouses in the entire network which did not have significant volume levels and then used them as prototypes for the ERP implementation. Once the implementation was perfected on them, it could then be easily extended to the important warehouses. Thus, we would have created a mechanism in the organization structure by this prototype method, tested it, perfected it and then implemented it across the entire organization.

• **Business Processes.** How an organization goes about doing what it does is the key to operating effectiveness. Technology can either enhance these processes or provide them with a supportive role. Understanding whether technological implementation will lead to business process reengineering or adaptation of the technology itself is a key success factor. As per McKinsey & Co., ERP, being fundamentally strong, seeks to standardize business processes. However, it is “Counter – intuitive” in nature. That is, it seeks to rationalize the business processes rather than be customized for the business. Older technologies allowed the businesses to modify them to suit their needs. The understanding of this perspective is very essential to the user. It requires a change in mindset. Now FoxMeyer should have been clear on this, with specific inputs from Andersen. As per our expert from SAP, this should have been clearly identified – R3 will re-engineer the business processes at FoxMeyer and FoxMeyer will have to adapt itself to R/3. This decision then had to be clearly communicated to people and in either case relevant orientation and training had to be provided to them to change in a smooth manner.

• **People.** The human capital of an organization represents the most challenging alignment issue to technology. People are wary of change, especially technological. Technology has to be able to overcome their fears and make them realize its indispensability in making their job easier. According to Ms. Xiao, internal politics arising due to resistance to anticipated changes is one of the biggest hurdles which implementers can face. Technology is viewed as an invader which will take away their job. So people end up resisting it, even when it might improve the quality of their work and ease their work pressures. As per McKinsey & Co., there arises a distinct need to manage Change Management, when corporations go in for IT implementations which have the potential of changing the face of an organization. Specifically, skill sets and values are the most vulnerable areas which led to resistance and in extreme case, retaliation. As employees have to re-learn their job, they need to be trained for this mental transition. Learning a new way of doing things is not that difficult, but accepting a new way of doing things is. The values which employees have, and which develop due to organization culture also develop into serious impediments.
At FoxMeyer, what measures were undertaken to make sure that the exit of the warehouse staff would be smooth? The absence led the workers to retaliate by damaging inventory worth US$ 34 million. Imagine, this retaliation is tangible to us, but what about that of the management? We would like to address this, even before we proceed with the implementation. When decisions are made which affect the working conditions, job satisfaction and job security of employees, their consensus should be considered before final decisions are made. This will generate their commitment to the project and make the implementation very smooth. Technology is meant to be used by people to make their lives easier. But unless the people believe this fact and are willing to accept the intrusion of technology into their work lives, technology cannot deliver its potential value to an organization.

To conclude, we feel that all parties to the contract were to blame, albeit in varying degrees. FoxMeyer and Andersen should probably share the larger portion of the blame. It was not really a case of technological failure per se, but a case of corporate greed overtaking rational decision making. Basing a billion dollar contract on technology per se, rushing the implementation to get it all in one go and not providing an unbiased opinion to a client, are nothing but testimony to the unrelenting objective of profit maximization with scant regard to social obligations. We support the use of technology to maximize efficiency and financial gains, but condone indiscriminate implementation affecting the lives of thousands of people.
REFERENCES:


The ABCs of ERP, compiled from reports by Christopher Koch, Derek Slater and E. Baatz. http://www.cio.com/forums/erp/edit/122299_erp.html

“Broken Promises? FoxMeyer’s Project was a Disaster. Was the Company too Aggressive or was it Misled?”, John Jesitus, Industry Week, November 3, 1997, p31-37.


