APPLICATION OF AN ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM IN A STATE-OWNED ENTERPRISE IN SOUTHEAST ASIA

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ABSTRACT

This paper focuses on a state-owned enterprise (SOE) in Southeast Asia which utilizes an Enterprise Resource Planning (ERP) System to aid the restructuring and privatization process. It demonstrates that ERP systems will provide SOEs in any industry a revolutionary rather than evolutionary step in their bid to gain competitiveness. A case study represents how one particular SOE in the steel industry, created electronic internal linkages between their various functions in a multi-mode/multi-site environment and utilized external linkages to communicate to their external customers, financial institutions and suppliers. In addition, the case study provides practical and rigorous analysis of the organization and its transformation. Culture, management and organizational implications in adopting ERP systems in Southeast Asian SOEs are discussed. This paper will demonstrate why an ERP system is a valuable information systems tool in the development of SOEs in developing countries.

EXPLANATORY NOTES

The following abbreviations and acronyms appear in this document:

A/P	Accounts Payable
A/R	Accounts Receivable
AFTA	Asia Free Trade Agreement
APEC	Asia-Pacific Economic Co-operation
APICS	American Production and Inventory Control Society
ASEAN	Association of South-East Asian Nations
BPR	Business Process Reengineering
DRI	Direct Reduced Iron
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GNP	Gross National Product
1C	Inventory Control

ISO	International Standardization Organization
IT	Information Technology
MIS	Management Information Systems
MRP	Materials Requirements Planning
MRPII	Manufacturing Resource Planning
MVA	Manufacturing Value Added
SOE	State-Owned Enterprise

PART ONE: SYSTEMS BACKGROUND (MRPII AND ERP)

Manufacturing Resource Planning FMRPID

In the 1960s and mid 1970s, inventory control (1C) and material requirements planning (MRP) was becoming an established systems technique in the USA and was beginning to appear in Europe. As a tool for managing materials, MRP seemed to have much to offer organizations, but it was limited by its inability to take account of capacity. This deficiency was overcome with the development of closed loop MRP in the mid 1970s. Closed loop MRP offered a complete system for managing both materials and capacity. In the late 1970s and early 1980s, computer technology was advancing and companies began to move away from batch processing to on-line transaction processing. MRPII was developed in the early 1980s as a structured approach to manufacturing management in which a suite of integrated computer software components, linked the main operational business functions (e.g., sales/distribution, manufacturing, finance etc.) together electronically. This suite of integrated computer software was used to assist in the closed loop planning of materials, manufacturing capacity and cash flow, in accordance with company policies and to meet customer delivery requirements (Luscombe, 1993). The chart below depicts how information technology (IT) system solutions have evolved over the past few decades, with enterprise resource planning (ERP) emerging (early 1990s) from the need to make the MRPII systems more "open".

EVOLUTION OF SYSTEM SOLUTIONS

MRPII is not obsolete and will continue to provide the planning framework and the core business systems for companies wishing to move towards business integration and lean production methods. Even though most

companies have implemented an MRP solution at least once, such solutions have proved to be incomplete. These system solutions were incomplete because a large number of solutions were custom-made, not upgradable and developed heavily on spreadsheets. This form of automation is no longer satisfactory and therefore companies are now looking for an alternative solution. In the past, it was impossible to find an international solution with integrated functionality for both the contracting sector and the production sector, because it required a software solution provider specializing in both contracting and production. Now there are six key ERP system providers which can provide contracting and production (e.g., BAAN, J.D. Edwards, Oracle, ROSS, SAP and SSA). Essentially what has happened since MRP was originally conceived in the late 1960s to early 1970s, is a series of global changes in the business environment. The chart below displays the business transition:

BUSINESS ENVIRONMENT CHANGES

FROM (1970 – 1985 PERIOD)	TO (1985 – 2000 + PERIOD)
Long lead time production cycles	Short, market driven lead times
Mass production	Small lot with much variation
Large corporation dominated	Agile company dominates
Vertical integration	"Virtual Business" with partners
Internal production	Extensive outsourcing, contract work
Easy capital sources	Difficult capital sources
Larger margins (cost + markup == price)	Tremendous margin pressure
Slow technical, market changes	Rapid technical, market changes
Production centered	Customer-centered
Domestic production	Offshore production partners
Large, costly middle management	Pressure toward flat organisation
Inventory control focus	Customer response, cost focus
Low trust of computers	High trust of computers
Limited, costly computer power	Abundant, low cost computing power

Figure 2

21st Century Business Model

These changes in the business environment have led to the development of the 21st Century business model. Organizations are now facing a different and more complicated set of business issues which has created the need for a more expansive set of system solutions.

In the 1990s and 21st Century, more than ever, business success will be very closely intertwined with its ability to acquire, process and manage considerable quantit ies of data accurately and efficiently, and to use software to actually implement serious business procedural controls. The need to grow a "21st Century oriented" company requires a system that will provide management tools to be a "lean, mean, profit machine" in the competitive, global environment of the '90s and beyond " (Deis, 1997), has put pressure on organizations to become more flexible. The "21st Century company" needs software tools to set competitive levels, not merely follow or respond to other competitive threats. These software tools must support a fast moving, rapidly changing business environment and assume these operational style characteristics of the 21st Century:

1 **Customer First** - Customer focused, including rapid, frequent, changes to schedules and product configurations; more product variety, short life cycles
2 **"Crunch"** - Must explicitly handle the "crunch" as a normal course of business operations, not to consider its presence as a sign of mistakes or mismanagement
3 **Operation Complexity** - Mixed mode operations, some make to stock, some job quotation, etc.
4 **Production Complexity** - Mixed mode production, discrete lot-sized work orders mixed with continuous flow, both on and off-site; complex logistics involving global transportation and operations
5 **Lower Indirect Costs** - Operate successfully with fewer and lower-skilled people
6 **"Soft Walls"** - Seamless information flow between customer, company and vendors via electronic data interchange (EDI)

MRP or MRPII is not "bad", it is that these management tools have

simply become out of date and need to be replaced with a new paradigm. They have been made obsolete by the same brutally competitive, global economy pressures that have forced countless companies out of business, eliminated thousands of products from the market-place and introduced still thousands more. As manufacturing systems continue to evolve, organizations need to find ways to leverage the latest technological advances. Over the long term, to remain competitive, organizations have to proficiently use IT (Fulcher, 1996).
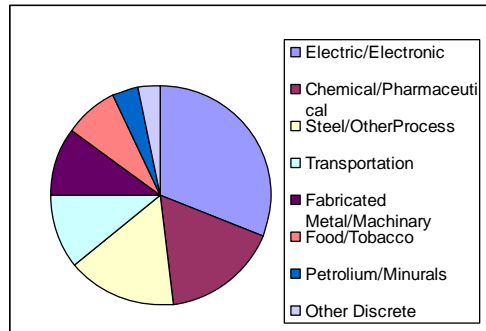
Enterprise Resource Planning (ERP)

An enterprise resource planning system (ERP) is a software application which is distributed across an organization to enable integration between business functions and provide control across the entire supply chain (e.g., sales/distribution, manufacturing and finance). The aim of enterprise-wide information systems is two-fold: ERP systems provide a very wide range of application modules within a single integrated framework and secondly, ERP is based upon the use of truly open systems so that specialized third-party software can be readily integrated with the core system. ERP is standardized by APICS (American Production and Inventory Control Society), and today is the main transactional system in most manufacturing companies. It seems highly likely that ERP will be the main focus in software development over the next few years. It is an all-inclusive information-management system that automates business decisions from when an order is first received to when a truck or railcar delivers product to the customer. ERP represents the application of cutting-edge information technology to the original MRPII model. The technology changes from MRPII to ERP include the move to relational database management systems, the use of a graphical user interface (GUI), open systems and a client/server architecture. ERP is still concerned with financials, manufacturing and distribution and many of the modules are the same as in MRPII, but ERP stresses flexibility, capability and scalability. Advanced Manufacturing Research Inc. (AMR), located in Boston, reported worldwide sales (software, implementation, support services and ongoing maintenance) for the top 27 ERP software producers climbing 32 percent to $5.4 billion in 1996 from $4.1 billion in 1995 and $2.8 billion in 1994 (Stevens,

1996). The following chart reflects the extensive use of ERP systems across industries:

95 ERP SAI.ES! BY INDUSTRY

Legend:
- Electric/Electronic
- Chemical/Pharmaceutical
- Steel/OtherProcess
- Transportation
- Fabricated Metal/Machinary
- Food/Tobacco
- Petrolium/Minurals
- Other Discrete

Many multinational companies (e.g., H.J. Heinz Co., Colgate Palmolive Co. and Snap-On Inc. etc.) are taking advantage of the recent advances in software and hardware technology to install these integrated information systems. The shift to ERP systems has in large part been driven by business-process reengineering (BPR) of functional processes, restructuring and privatization. Most organizations interested in buying a new system really want to reengineer their business, and they use the software as a trigger mechanism. Through business-process reengineering, many organizations have begun to restructure or transform their critical business processes in order to address competitive pressures such as: global competition, demanding vendor-customer relationships, complex regulatory requirements (e.g., ISO 9000) and rapidly changing market needs. Information technology infrastructure and software are essential to enabling new and improved business processes and BPR is causing most major organizations to rethink and revamp their information systems needs. These ERP systems provide seamless and real-time data to all functions within an organization, because to make better decisions, organizations need to take into account all these important interactions within the business. ERP takes into account and emphasizes production decisions as they are affected by and affect all of the other functional areas in the organization; making computer software the medium for accomplishing this integration of the various decision making processes. ERP provides the technology for nearly every department in an organization to "talk" to each other. The following chart depicts the "suite" of functional components which comprise the ERP system:

Figure 4

ERP is not a replacement for MRPII, it is an extension of it for organizations that comprise a number of semi-autonomous business units. ERP systems provide the option for organization management to co-ordinate planning across multiple sites. Most standard ERP systems can support an organization's multiple-dimension business needs. The diagram depicted on the next page demonstrates this capability more clearly:

ERP SUPPORTS MULTIPLE-DIMENSION ORGANIZATION

Figure 5

ERP is considered an umbrella strategy in which its integration allows co-ordination of activities between business units. ERP software is modular and compatible with MRPII principles. Many forward-looking organizations seeking to remake their manufacturing capabilities, seek solutions that fulfill three key criteria: process-oriented; based on best business practices; and capable of supporting a changing business model through continuous business process improvement. ERP is the newest value-added technology that will allow enterprises to achieve their next-century manufacturing and competitive goals. The future is giving way to dynamic ERP systems that have the potential for enabling the real-world requirements for continuous improvement and Internet enablement. The concept of flowing information up and down an extended

supply chain, with enterprise-to-enterprise links via the Internet is redefining supply-chain management. As companies get control of the information flow within their organization, that information can then add value to suppliers and customers. Suppliers can gain access to client production schedules for just-in-time delivery, and customers can access the status of orders or even conduct their own releasing against long-term contracts. There is additional value to the organization as financial institutions may view receivables or cash forecasting so they can offer better investment vehicles. An example of the future: "Imagine a manufacturer shopping on the Internet for extra capacity to help with a promotion on one of their products," (Stevens, 1996). The following diagram represents Internet enablement and what companies currently and in the future will be able to achieve with ERP systems:

ERP PROVIDES WEB-ENABLED TECHNOLOGY FOR GLOBAL INTERACTIONS

Figure 6

ERP offers companies new possibilities, but only by building firmly upon MRPII methodologies and disciplines. ERP systems deliver tangible and fundamental benefits to organizations at a strategic and tactical level (e.g., time savings, bottom-line growth and continuous improvement). The following diagram on the next page, displays the benefits that a generic ERP system provides to organizations:

STRATEGIC BENEFITS
Reduce Time-To-Market - utilize software applications and
hardware to streamline the manufacturing process and integrate the
cross-functional groups
Improve Return On Assets - sales orders and forecasts drive the
manufacturing process

Improve Product Quality - track cost and quality of products through entire manufacturing process (cradle-to-grave)

Increase Market Share - expand into regional then global markets

Increase Customer Satisfaction - provide quality products which customers demand at the right price and at the right time

Figure 7

In addition to providing strategic and tactical benefits, ERP also provides functional benefits such as: what-if scenarios, integrated database, ease of navigation, drill-down capabilities, report control, unit conversion, module interfaces and audit trail.

Many of the ERP features are useful to smaller, single-site organizations as they are to transnational organizations. Furthermore, many single-site organizations are dividing their operations into semi-autonomous business units, to gain the benefit of local responsibility and ownership. ERP will support local control of these business units while maintaining company-wide integration of information. Some companies which are presently single-site may one day experience commercial or political pressures that force them into setting up overseas production units to service local markets. They will need a flexible system that will allow them to adapt without disrupting the overall operation of the business.

Single-site companies that consider ERP is not of interest to them should reflect on whether they really are as isolated as they think. Regardless of size, many organizations are beginning to link themselves more closely to their suppliers, customers and financial institutions, using electronic data interchange (EDI) networks. The diagram on the next page displays the integrated ERP system technology which will revolutionize the way business is conducted for single-site and transnational organizations:

Figure 8

Organizational issues, internal politics and the need to come to consensus are choices that are not IT choices, but are business-based and are profound in terms of how senior management wants to run the organization. In addition, ERP provides a cultural impact by breaking down cultural barriers (functional silos) and allowing people to work together and take proactive action against the data and not just collect it. It is important to emphasize that an investment in software alone will not solve all process improvement problems. Effective information solutions take into account the organizational, procedural and change management elements of the process re-design and not just software and hardware requirements.

Many organizations realize these information systems have the potential to produce dramatic cost savings, operational improvements and enhance customer service. As faster response and better coordination become more important to organizations, small gains in planning and scheduling effectiveness are yielding significant financial returns. The ERP system is a western phenomenon where it is implemented in single-site as well as transnational organizations. The next section demonstrates that ERP systems provide the same results to state-owned enterprises (SOEs) in developing countries. A case example of an SOE in the steel industry in Southeast Asia will be analyzed. In addition, ERP will demonstrate its ability and benefits to increase the automation of functional processes, allow interaction between functional groups (A/P, Purchasing etc.) and assist in systematic restructuring of SOEs in Southeast Asia.

PART TWO: PRACTICAL APPLICATION OF AN ERP SYSTEM IN SOUTHEAST ASIA

Steel Industry in Southeast Asia

In Southeast Asia, the time has come to reassess the traditional policies and strategies that have worked in the past for developing countries. In the

past, policy (government) makers in developing countries implicitly left out the element of international competition when they adopted protectionist policies for their domestic markets. Current developments are clearly making it more difficult for latecomers to follow the path of export orientation. Developing countries find they must now compete in a world where information technology has become an important criterion for industrial competitiveness. The focus of this paper is the utilization of ERP systems in state-owned enterprises (SOEs) in Southeast Asia to establish a competitive position in preparation of privatization initiatives. The proposal is for SOEs to adopt leapfrog technology solutions (ERP) to place these organizations on a revolutionary rather than evolutionary path. The following chart displays this path:

<u>REVOLUTION VERSUS EVOLUTION</u>

Figure 9

Dr. Mahathir has stated "in most nations, the steel industry is a yardstick to measure the country's success." Citing the United States, Japan, South Korea and Germany as examples, he said "the steel industry had played a significant role in their development." Industrial competitiveness will increasingly depend on technological capabilities and innovation; the ability to apply new technologies in production, organization and marketing; and to establish appropriate linkages with global corporations in the form of subcontracting, production mandates, foreign direct investment (FDI), licensing, strategic alliances etc. Technology has been described as one of the most decisive factors for industrial competitiveness in the 1990s with emphasis in traditional industries such as iron and steel (UNIDO, 1995). In short, the use of information technology will influence the ability of traditional industries (e.g., steel, cement etc.) in Southeast Asia to modernize and compete in world markets. When it comes to mastering new technology, developing countries need to be careful not to move into new technologies (for fear of being left

behind) in which they have no expertise. Southeast Asia can build up its technological capabilities in the steel industry by using technology imports through formal channels such as licensing agreements, turnkey projects and consultations.

If Southeast Asia wants to reach their targets for national economic and industrial growth, governments must plan carefully and ensure that their policy and implementation frameworks match their human resource needs. Government intervention has a vital role to play if the policies are carefully designed, well implemented, directed towards strengthening efficiency in competitive markets and, where possible, temporary in nature. Governments role should therefore establish an attractive investment climate to encourage collaborative ventures between local firms and transnational corporations rather than direct SOE daily operations.

The manufacturing sector continues to dominate the development and pace of economic growth in Southeast Asia. In 1994, the MVA (manufacturing value added) of the region grew at an estimated rate of 8.1 percent, the highest in the world (UNIDO, 1995). Strong growth was registered in almost all countries and territories. In particular, the iron and steel industry in Southeast Asia has grown steadily from 1970-1995 at an average annual growth rate of 9 percent. In addition, new developments in trade within the region have shown intraregional trade increasing steadily over the past 10 years. As the region develops, the demand for manufactured goods produced in the region will increase along with the Asia Free Trade Agreement (AFTA) which is committed to reducing tariffs throughout the ASEAN region over the next 5-10 years.

The governments within the region are increasingly recognizing the potential of their SOEs in industrial development, and many programs have been initiated to enhance the linkage between these SOEs and large industries such as: tax incentives; specific institutional arrangements; vendor development schemes; local content requirements; information provision and exchange and cluster creation. In 1996, growth in the region continued at a healthy pace yielding the highest growth rates in the world. In 1996, the GDP and MVA growth rates of the region were 7.1 percent and 9.5 percent, respectively. Growth in the near future will be in the traditional industries such as iron and steel which will be influenced by factors such as additional

infrastructure investment in the ASEAN countries.

A common objective in the Southeast Asian steel industry is to ensure that the industry grows in tandem with the ASEAN countries progress. To aid a country's bid to become a successful industrialized nation, the respective country must produce steel to cater to the construction industry's demand. The steel industry requires large capital investments and does not necessarily offer profits in a short period. Two examples of the increase in steel demand are: China's industrial production continued to steam ahead, growing at an annual rate of more than 11 percent in the year to April 1997. The government's plan to invest more than $100 billion in housing, bridges and railroads by year 2000 will stoke the demand for steel (Xuechao, 1996). In Malaysia, demand for steel is soaring due to enormous projects such as the Kuala Lumpur International Airport, the Multimedia Super Corridor and Cyberjaya City.

A practical case study of an SOE in Southeast Asia which invested in an ERP system to achieve competitiveness, provide restructuring and aid future privatization initiatives is presented. This practical case study of an SOE is provided to demonstrate and analyze how ERP systems are currently being used in the development of SOEs in Southeast Asia.

Case Study (Steel Company in Southeast Asia)

Company Background

D&P Steel is an SOE established in 1982 under a government industrial master plan. As a fully integrated steel mill, D&P's operations transform raw materials such as DRI (direct reduced iron), iron ore and scrap iron into finished products such as billets, beams and sections, wire bar and rod, wire mesh and other downstream products such as nails. D&P utilizes a large network of distributors to channel its products throughout the country. D&P plays a key role in the country's economic growth through the manufacture and distribution of steel products used for infrastructure development.

Factory A

Factory A's facility was commissioned in 1984 and started full operation in 1985. This site has three manufacturing operations: a direct reduced iron (DRI) plant and two melt shops. The DRI plant, with an annual capacity of 1.2 metric tonnes, produces direct reduced iron by reducing lump ores and pellets to 92% metallization. The two melt shops utilize electric arc furnaces to melt DRI and scrap material into molten steel. The first melt shop (NKK) has capacity to produce 770,000 MT/yr of blooms and beam blanks. The second melt shop (NSC) has capacity to produce 800,000 MT/yr of billets. Products from factory A's steel-making operations are either shipped to external customers for consumption or to Factory B's downstream operations.

Factory B

Factory B's manufacturing facility occupies 900,000 sq. feet of land and was commissioned in 1993 to roll bar, wire rod, beam and sections, as well as produce downstream steel products. In the bar and rod mill, billets from factory A are placed through a conditioning process to check for internal and surface defects. The billets are then placed on a charging table for transfer into a re-heating furnace in preparation for rolling. Finally, the billets undergo a process similar to continuous forging to reduce the diameter to the desired size. Bar and rod from the rolling mill are sold directly to D&P customers, sent to factory B's downstream operations for further processing, or to factory C's wire mesh operations. Blooms go through a similar process in the beams and section mill. The finished goods from factory B's beam and section mill operations are sold directly to D&P customers. Factory B's current production capacities: bar and rod mill 500,000 MT/yr, beam and section mill 700,000 MT/yr, and downstream operations 160,000 MT/yr.

Factory C

The corporate office in factory C administers the following: financial and accounting activities; human resource management; sales and marketing to mills (for billets/DRI); purchasing for strategic materials; information

technology; haulage and plant engineering. In addition, the downstream factory C manufacturing operations create 18,000 MT/yr of wire mesh products.

Organization

D&P plans to break out its operations into five legal entities (e.g., restructuring):

ENTITY	DESCRIPTION
DPSB	Factory B operations
DPBB	Factory A operations Factory C head office
D&P Haulage	Outbound logistics
D&P Sales and Marketing	DRI, billet sales
D&P Distribution	Wire rods, wire mesh, bars, nails, and

Figure 10

Vision

D&P's vision is to become the leading regional steel maker (e.g., competitiveness):

D & P STEEL'S VISION
• Expanded Capacity: up to 5 million tons per year of finished products
• Full Product Line: across both long and flat steel product categories including
• Strong Reputation: for leading technology and product quality
• Regional Presence: with sales and distribution throughout Southeast Asia
• Financial Strength: profitable and fiscally sound
• Professional Team: a dedicated and committed workforce

Figure 11

D&P's Current System Challenges

D&P is facing several business and technical issues which projects the business environment as being inefficient and requires management through intuition:

1 **The current system is not integrated**. As an example, the accounts receivable subledger is not interfaced with the general ledger, resulting

in lump sum manual journal entries at month end.

1 **The current computer system is old technology.** The current computer system was installed eight years ago and is no longer supported. Additionally, D&P's systems will not be able to handle transactions past the year 2000 (the "Millennium Bug").

2 **D&P does not have on-line tools, critical data is not available real time and users have difficulties accessing the right level of detail.** As an example, the daily production runs (heats) in factory A require that logs be kept of the steel as it is melted. That data is currently captured by hand and keyed into the AS/400 system (current IT system by IBM Corp.) days later. As a result, factory B's downstream activities do not have access to "current" data.

3 **D&P's business processes are inefficient.** As a result of the above technical issues and lack of formal processes. Two examples of this are: 1) Today, D&P must manually match vendor invoices with delivery orders, purchase orders and goods received notices. As a result, seven clerks manually perform the matching activity for 10,000-15,000 invoices per month. 2) D&P does not have the tools to perform centralized production planning, resulting in a suboptimal roll sequencing. This issue will have more significant impact as D&P begins producing higher value-added products.

Assessment of Current Architecture

D&P needs to address internal weaknesses because their current system is over eight years old; not supported by the vendor; full capacity has been reached by the CPU (central processing unit) bandwidth being exceeded; and the current system will not be able to handle growth in processing or user needs because the network architecture is overloaded. In addition, external threats such as geographical, technological and financial barriers to entry are breaking down, creating a competitive environment in which D&P operates.

This means that inefficient organizations like D&P will face stiffer penalties when AFTA reduces tariff duties to 0-5 percent by 2008. Information technology is improving infrastructure, knowledge sharing and access to foreign funds through today's borderless capital markets. The assessment of D&P was: D&P needed a system which would enable them to anticipate and respond quickly to changing business conditions; link them to a global information network; enable improved storage and retrieval of historical trend data and a system which was flexible and easily configurable to handle dynamic environments.

The external environment found D&P facing customers demanding higher quality products, faster delivery and closer business relationships. The assessment of D&P: D&P needed performance-focused management systems which would have adequate controls in place; reduce time-to-market; support a collaborative work environment and build teams and assist human resource management tasks such as career development. There are significant market opportunities available to D&P such as producing higher value-added products to capture higher profit margins and expanding their product line to include non-steel products. The assessment of D&P: D&P needed a market-driven production planning system to ensure supply/demand consistency and to optimize roll sequencing; a real-time quality control reporting system for making machine adjustments, thus maximizing product yields; a fully integrated distribution planning and control system to support both build-to-order and build-to-stock environments and an on-line technical database to quickly provide information for customer inquiries and tracking systems to monitor customer services. In addition, most of D&P's applications will not function after year 2000 due to the 2-digit system date field.

Why should D&P adopt an ERP system? There are four key reasons for adopting an ERP system: (1) Market Driven: Southeast Asian markets are rapidly becoming more competitive and consumers more demanding; (2) Measurable: after privatization, D&P's investors will demand a more transparent and commercially-oriented organization; (3) Cross-Functional: senior managers need enterprise-wide information to optimize decisions for the whole company; (4) Higher Value-Added Responsibilities: reduce data input and manipulation to allow staff time for higher-leveraged activities. Interviews conducted with senior managers at D&P identified three inter-related areas of

concern:

D&P INTERNAL WEAKNESSES

Figure 12

It was realized that, D&P's legacy applications could not meet transaction processing, decision support or management reporting requirements for the key business processes within the company. The priority processes which were non-existent in D&P are: sales planning and analysis, production planning, maintenance planning, inventory management, cash management (A/P, A/R, budgeting), product costing and executive information systems. The current business process applications also have significant technology gaps (e.g., interoperability) as they are unable to run software applications nor exchange information easily across multiple platforms because they are not integrated. The current business processes have limited scalability as they are unable to quickly change system performance to meet changing organization needs. In addition, the unfriendly user interfaces are green screen technology which makes it difficult for users to navigate through.

Installation of an ERP System

The chart below demonstrates how the installation of a new ERP system significantly improved D&P's information management performance by solving their current system and architecture challenges:

<u>ERP SYSTEM PROVIDES IMPROVED PERFORMANCE</u>

Figure 13

Projected Return on Investment (ROI)

D&P received an estimated $21 million return above the projected $9 million investment.

ERP SYSTEM RETURN ON INVESTMENT FOR D&P

COST/BENEFIT AREA

Figure 14

Utilizing the new ERP system, D&P has achieved both revenue gains and cost reductions. The increased revenues are the result of improved capacity utilization and reduced time-to-market delivery. The reduced expenses are the result of improved process efficiency and improved product cost control. In addition, reduced working capital requirements through lower inventories and better cash management have been realized.

The ERP System Provider

The information technology firm who implemented the ERP system was SSA (System Software Associates, Inc.). SSA is the leading provider of cost-effective enterprise software solutions to industrial businesses worldwide. SSA was founded in Chicago, IL in December 1981, to provide a competitive advantage for clients through the implementation of their business enterprise information system. Since 1981, SSA software and implementation methodologies have been validated by more than 10,000 implementations in organizations throughout the world. In 1988, SSA Asia Pacific was founded and since this time has opened thirteen offices and maintains a strong network of thirty affiliate business partners throughout the region. Their ERP package is called BPICS (Business Planning and Control System). SSA has achieved over 35 percent annual compound growth rate over the last nine years as a publicly held company. This demonstrates the growth in ERP systems in the software industry. With ERP packages most organizations purchase enough modules to fulfill a phased approach to implementation. (Note: One of the functional components displayed in figure 4 equals two-four of their modules). D&P purchased the complete off-the-shelf "suite" of modules as shown in figure four. The main reasons for D&P to choose the BPICS package over other ERP vendor packages is: (1) people; (2) object technology; (3) long-term player who will survive industry consolidation; (4) relatively short time-frame to implement (Covey, 1996).

It was important when choosing the ERP package and provider, that the strengths and weaknesses of the provider was challenged and to ensure they had the right skills and experience to meet D&P's business strategy. In addition, SSA was chosen because it used proven enterprise technology principles and has built and maintained strong local support, trust and respect in Southeast Asia. Implementing an ERP system is a comprehensive and time-consuming process in which the organization, software provider and implementor must work together collaboratively toward the same goal. The implementation strategy was a phased approach throughout the organization that lasted two years. This enabled a systematic, controlled and fully trained workforce on the new system.

PART THREE: THEORETICAL ISSUES OF ERP SYSTEMS IN SOUTHEAST ASIA

The State Owned Enterprise

Since 1984, governments have focused attention on reforming and revitalizing the state-owned industrial sector in Southeast Asia, which accounted for more than 70 percent of the total national industrial output at that time. The goal has been to transform the SOEs from being merely factories taking administrative orders from the state into competitive business units which could carry out market transactions based on their own strategic judgments. The integration of Southeast Asian countries into the world economy and the dismantling of their state administered industrial infrastructure does not necessarily imply that they will in the future conform to Western capitalist market models. The reform of state enterprises, begun cautiously in the early 1980s, has been designed to decentralize decision making from the planning authorities (government) to enterprise management. What is beginning to transpire in Southeast Asia is the separation of the government from the management of these enterprises, resulting in a hybrid economy appearing. The state's role is now shifting to applying regulatory measures and exerting its control over infrastructure to administer both the enterprises and economic relations to that particular country. In the case ofD&P, the enterprise now enjoys autonomy of decision making for most issues because the government is kept separate from the enterprise operations. A new governance structure is slowly emerging within these large industrial SOEs, where strategic decisions are now being taken by the headquarters or the board, which has replaced the government as the managerial authority. Within enterprise management the trend is to delegate less, as the directors and senior executives exert more control over activities such as investigating and implementing IT into these SOEs. As the enterprises are now more exposed to market transactions, decision making has become concentrated at the director and executive levels (Brown and Porter, 1996). This highlights the growth of strategic business decision making and the development of a professional management class in Southeast Asia. Although

cautious, economic reform is a bold and comprehensive undertaking, it is not a revolutionary so much as an evolutionary process. It displays continuity with the past, as well as breaking away from it.

Southeast Asia Management

An interesting point is that of the sixty-two writers on organizations, the large majority (forty-three) are Americans, twelve Britons etc. The Anglo predominance is not surprising, since organizational theory accelerated first in these societies. With this in mind, we are now in the information revolution and when working with information technology in Southeast Asia, one needs to take into account Confucian ethics and personalistic modes of management (Hickson and Pugh, 1995). Within ASEAN there is a shared common cultural and religious tradition - Confucianism - which instills the belief of hierarchy and order in society as well as harmonious interpersonal relationships.

Within Southeast Asia, it is important to understand the importance of managing authority and that it is tied in with managing relationships more so than in the West (Hickson and Pugh, 1995). People draw standing from and are socially positioned by their personal connections or networking. Time is spent subtly exploring the other's "guanxi" (personal connections or networking). It is important to know that relationships are more up and down the hierarchical administrative system than they would be in a complete market system, "good guanxi helps to get things done." Southeast Asia entails a particular combination of collectivism and competitiveness as an influential part in their astounding success of recent times. They maintain a distinctive way of managing and that is a respect for personal loyalties beyond the workplace. It is important to view and respect these management styles when working with SOEs and organizational transformation, as it can negatively or positively affect relationships and the ability to accomplish objectives.

D&P Culture

A description of culture by Ed Schein of MIT is: "A pattern of basic assumptions invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration that has worked well enough to be considered valid, and to be taught to new members as the correct way to perceive, think and feel in relation to these problems." (Hampden-Tumer, 1994). This is an appropriate description of the culture in which SOE's such as D&P are experiencing today. Corporate cultures such as the one displayed at D&P is part of the national macro-culture of the state. The management within D&P do not trust their subordinates and believe that employees will not do a good job unless they are closely supervised. Thus, management wants to establish tight control systems such as the punch clocks which are used for salaried as well as hourly employees. In addition, frequent employee observation is used to assure management that employees are working. D&P believe that an enhanced information technology system will provide them these "observation" tools. Employees on the other hand do not reinforce a vicious circle of a self-fulfilling prophecy as their culture condones this behavior of obedience. The main purpose of hierarchy in this organization is to organize tasks and facilitate problem solving around these tasks. It is important within this company and in Asia in general "not to lose face". The statement "It is important for a manager to have at hand precise answers to most of the questions that his subordinates may raise about their work" (Adier, 1991), is true within D&P and unfortunately the present company structure and IT system does not provide this to management, subordinates or customers. An ERP system will allow business processes to be mapped to ensure workflows are performed in standardized ways and to provide management with a high degree of visibility to transactions. The diagram below provides an example of how management within D&P is now able to understand events transpiring within their respective areas utilizing an ERP system:

KEY PROCESS STEPS WITHIN ACCOUNTS PAYABLE COMPONENT

Figure 15

Many different factors must be taken into account in Southeast Asia in general and in the organization in which to implement an ERP system. Most SOEs in the ASEAN countries, are very different in both religion, dress, ideology and pursuit of business. These cultural differences must be acknowledged and dealt with. In Southeast Asia, utilizing Hofstede's four dimensions of difference (Adier, 1991), the ASEAN countries display these four dimensions: (1) high power distance (e.g., paternalistic management, low level of consultation, hierarchical roles not perceived as an unjustifiable inequality); (2) collectivist (e.g., in-group loyalty, tight-knit social framework, dependence); (3) high uncertainty avoidance (e.g., discomfort with uncertainty and ambiguity, rigid codes and beliefs, precision, punctuality); and (4) feminine (e.g., preference for relationships, modesty, caring for the weak and quality of life). The following are examples of which are evident within D&P: is now in the third phase of the model, organizational maturity which refers to a time when an organization is highly stable and lacks the motivation to change. The culture has become dysfunctional as the external environment has changed, requiring the organization to become more dynamic and flexible. A culture change mechanism appropriate for D&P is the coercive persuasion technique. This works well in Southeast Asia as it involves leadership forcing through cultural change in situations where employees have no alternative but to accept the new reality because they have nowhere else to go. In D&P the best method is the division of change which is unfreezing, change and refreezing (Brown, 1995). In Southeast Asia the mechanism of culture change is dependent on the stage of organizational development which supports Schein's theory as previously discussed.

Power and Politics

Power and politics occur in every organization, but understanding the nature, sources and effects of power and politics is an important first step toward using power and politics to become a more influential and effective member of an organization. There is a link between political behavior and planned organizational change. It is important for change agents to understand the level of organizational change and the necessary level of political involvement required to implement new processes. In Southeast Asia, managing cultural differences and managing power can be complicated because in high power distance countries (e.g., ASEAN), titles, status and formality are more important and bypassing the boss is viewed as insubordination. An example of a planned political-change model in an SOE such as D&P is an influence strategy. An influence strategy includes the following: involving the person in the decision process; controlling information; engineering the system; relying on your position; using rational persuasion; offering desired rewards; generating hope for a better future; and demonstrating that a greater good is being accomplished and increasing your dependence on the other person.

The SOE as a Machine

The SOE is highly bureaucratic as it depicts the model of mechanistic mode of thought. The corrosive terminology which describes this particular SOE are: political;
coalitional; unplanned; evolutionary; networking; the 'informal approach' (Bate, 1994). In this organization (D&P), there is formal structure of jobs. When a vacancy arises in the subordinates did not bypass superiors because they were afraid of "losing face" within the organization (e.g., high power distance); the employees of the organization viewed their place of employment as a traditional family in which they thought of everyone as a family (e.g., feminine). An important fact is that employees and management did bring their ethnicity to the workplace (e.g., two hours of prayer every Friday in which the steel plant was shut down). It is important to understand different culture nuances and dimensions of difference and plan accordingly. We must realize that Theory Y is not suitable for all cultures as western management would hope. Within D&P,

the employees tended to see no need to change situations but rather attempt to accept situations as they are. This was due to the fact that they did not know of alternatives to change their situation. The organizational hierarchy is a bureaucracy where if senior management bought in to change, then all the employees would follow.

Managing Organizational Culture

The effective management of a culture, however, requires the ability both to introduce change and to maintain the status quo. In managing the implementation of a new information technology system such as ERP, entailed the reengineering of processes and the change in how work is processed. Effective culture management frequently involves efforts to facilitate organizational learning through the use of symbols, role models, communication and rewards. Organizations which manage culture by involving the leader and utilizing human resource devices offer the greatest scope for sustainability in the long term management of culture in Southeast Asia. In Southeast Asia, employees learn from modeling the behavior of those they respect, especially when there are other benefits to be derived from doing so. They look at the personal enactment of their leaders, the senior management in these SOEs. To implement IT systems in Southeast Asia, it is imperative to obtain senior management support and commitment.

Schein's Life-Cycle Model

In understanding organizational culture change (Brown, 1995), D&P has passed through distinct phases of development, each associated with a different sort of culture serving different sorts of functions which are susceptible to change in various ways. These phases are birth and early growth, organizational mid-life and organizational maturity. D&P organization, managers frequently talk about having "a slot" to fill (Morgan, 1986). Within the SOE's the following conditions prevail: (a) there is a straight forward task to perform; (b) the environment is stable enough to ensure that the products produced will be appropriate ones; (c) one wishes to produce exactly the same product time and again; (d) precision is not at a premium; and (e) the human "machine" parts are compliant and behave as they have been designed to do. In the past these conditions and practices were acceptable as they were protected by the government. Now, the age of the ineffectiveness and unprofitability of these SOEs is over, as they are now being privatized in order to bring back country competitiveness and pride. I have found some limitations to this form of organization (SOE), in particular they: (a) create organizational forms that have great difficulty in adapting to changing circumstances; (b) result in mindless and unquestioning bureaucracy; (c) have unanticipated and undesirable consequences as the interests of those working in the organization take precedence over the goals the organization was designed to achieve; and (d) have dehumanizing effects upon employees, especially those at the lower levels of the organizational hierarchy.

PART FOUR: CONCLUSION

In the future, ERP will be the information system that will reform and revitalize SOEs in developing countries throughout the world. ERP will assist SOEs in their transformation of factories taking administrative orders from the state into competitive organizations capable of carrying out market transactions based on their own strategic judgments. The government in these developing countries must separate themselves from the SOE. The governments new role

will be to apply and generate required measurements and remove barriers that will enable SOEs to flourish. In the past, the SOE has developed a "black eye" in their respective country because they display the following characteristics: (1) bankrupt; (2) inefficient; (3) highly bureaucratic; (4) highly labor/capital intensive; (5) unglamorous industries (e.g., cement, steel rather than biotech, IT organizations). The case study examined in this paper was an example of the abovementioned characteristics of an SOE and the transition ERP took the company through. D&P is slowly becoming an organization in which government and employees take pride in. Government should enable their "bumiputras" (absence of foreign-ownership, locally owned) to use IT to bring about change.

To facilitate ERP implementation, companies should match their objectives to the implementation focus of the consultants. The factors from the literature are useful yardsticks. The study shows that ASAP provides quick but not full solution and different ERP consultants have different foci. However, they all avoid some significant issues, namely the culture change, risk and contingency management. Even with a capable ERP package and consultants, clients' role remains crucial in the implementation process.

To continue the move forward, governments and management of these SOEs need to make a significant commitment and be willing to accept and promote change. The pursuit of competitiveness and efficiency in the 1990s and into the millennium will need to be driven and supported from the government of these developing countries. The government will need to be willing to relinquish control of these SOEs to management teams in order to move forward and implement change. The government will need to accept their new role as an "enabler", assisting management in removing barriers in which these SOEs encounter. The following will be applicable and required of any SOE regardless of industry and country implementing an ERP system:

1 Top Management Support and Commitment
   - Senior management leadership throughout the project
   - Dedicated internal team
   - Project management support
   - Information systems vendor support
2 Complete Company Overhaul

- Re-engineering systems/functional groups
- New computer hardware/software
- Corporate culture change
- Organizational change
- Employee training

3 Time-Consuming Process

- Minimum implementation time of 1-5 years (depends on industry and size of organization)

4 Significant Capital Investment

- Approximately $10 million dollar investment (depends on industry and size of organization) for a full suite of software applications (see figure four), hardware and implementation

Once management has committed to utilizing an ERP system within their organization, the organizational culture will then be introduced to the following new methods of working because of: (1) integrated system; (2) extended enterprise; (3) on-line analytical tools; (4) audit trail; and (5) new, flexible technology. The organizational characteristics which were missing prior to ERP and which will now exist:

5 Market Driven
6 Transparent
7 Cross-Functional
8 Higher Value-Added Responsibilities

Today, SOEs are providing the building blocks for their country's industrial development, with antiquated technology and processes. ERP systems will provide a leapfrog technology solution to SOEs, placing the organization on a revolutionary rather than evolutionary path.

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LIST OF FIGURES

APPENDIX

KEY TO SUCCESSFUL ENTERPRISE RESOURCE PLANNING IMPLEMENTATION

Introduction

Enterprise Resource Planning (ERP) represents application of enterprise-wise integrated management information system, which replaces fragmented legacy systems. By using common data and eliminating interfaces between systems, ERP promises seamless integration which automates many corporate functions and provides timely information for decision-making.

The implementation process of ERP is challenging, however. With such packaged systems, business needs to radically change its information system, or even its business process and structure. Coupled with misunderstandings of the implications, many projects can result in a complete write-off of the investment. This study reviews the factors of successful ERP implementation suggested in the literature and then contrasts the implementation process practiced by consultants.

Factors leading to ERP Success

Firstly, factors affecting the effectiveness and efficiency of implementation will be discussed. As suggestions in the literature are fragmented, following factors are observed.

Business Process Re-engineering (BPR)

Changing business processes may be necessary as to fully exploit the benefit of ERP integration of business processes and information systems. ERP is a business transformation rather than merely an IT project, in which its success is very dependent on the re-engineering of the business processes.

BPR involves radical redefinition of market scope and competitive strategy, and then, rethinking of the way of doing business. Critical business processes are identified and analyzed in terms of the added value through the supply-chain. Every ERP

Configuration and Customization

1. Modules to install

Depend on the scope of the business processes to be integrated, company should decide what modules to be installed. In general, the more modules to be installed, the more the benefit of integration but also the greater risk, cost and changes involved. This refocuses the need of good business understanding of processes before the implementation.

2. Configuration tools

Successful ERP implementation starts with considering business processes. Depend on the BPR, different firms have different business needs. ERP packages provide configuration tools to fine-tune the system for particular business needs. For example, SAP R/3 has over 3,000 configuration tables. Vendors has pre-configured versions for different industries to reduce the trouble of going through all the tables while providing some flexibility[1].

3. Customization

Despite the configuration tools, an ERP package represents only a generic solution. If this does not fit, customization may be necessary. This involves rewriting some of the code. The risk of implementation failure and the cost involved increases for every customization made. Also, it losses the essential advantage of the purchase and make the upgrade of later release harder[2].

Change Management

The greatest challenge of ERP implementation is not, however, the technical, but the "soft" issue involved, particularly, the organizational readiness for the radical business transformation accompanied.

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[1] See Scapens and Davenport

[2] See Scapens and Davenport

ERP implementations drive radical change in business processes and organizational changes. Without good change management, the resistance and inertia gathered would be a devastating problem. The original working philosophy is challenged. Information, being the power base of some people, may now become available to different people. This intensifies the power struggle and politicking within the organization. Front-line staff may not be communicated enough with the objectives and impacts of the change. Thus, it is not unusual for massive layoff or resignation during the projects.

To minimize the anxiety requires both high-level executive support and end-users commitment. Top-level commitment is vital to the support of new business goals, the quality of the project team and the new compensation system to motivate people. For end-users, to develop enterprise-wise consensus to the change, it is suggested to

- ❖ identify all key stakeholders and ensure their commitment
- ❖ prepare for culture change that encourage people of the strategic, big-picture" and problem-solving thinking and teamwork approach throughout all levels
- ❖ communicate clearly the expected result, anticipated change and the rationale behind it to the organization

This can be achieved by including the front-line managers in different functional areas, the IT specialists and executives in the project team. This enhances the communication across the organization and internal training that sustains improvement even after the implementation. Rather than being a one-off solution, ERP implementation is an excellent chance of organization transformation to learning organization" by introducing the culture of continuous improvement.

Project management

Many managers consider ERP implementation an IT project or simply an asset acquisition. Coupled by the urgency of replacing the legacy system due to Y2K or Euro conversion, they welcome implementation contracts of fixed cost and fixed budget and the Rapid Implementation" methodology. However, literatures condemn this approach the culprit of many implementation failures due to the following reasons.

For IT projects management, the software development cycle of waterfall model is the most commonly quoted orthodox. It is a stepwise process with emphasis on exhaustive requirement definition and detailed planning. It is more manageable for modification at earlier stage of requirement definition than at later stage of testing. The assumption is plan being smoothly executed and protected against changes. However, it is not applicable for ERP, as ERP is a business opportunity instead of a technology. Business opportunities open and close quickly. There is options "value to delay decision. And the complexity of ERP system makes plan difficult to be strictly followed.

In many failure cases, clients and vendors started with sound planning, establishing long-range milestones and rigid project management by pretending a sound vision of the whole process. Vendors assure their expertise and clients insist on a clear budget and schedule. However, this prevents open communication. When problems occur, they end up scapegoating rather than problem solving. Worse still, to rush the imposed deadline, tests are inadequate and the result can be disastrous.

In fact, ERP implementation resembles more like the building of a new venture from scratch in view of the technology, business and organization complexity. To structure a new venture initiative, the following implementation foci are useful in planning and contracting.

Staging

The implementation plan should be designed so that resources are invested stage by stage. At each stage, managers can re-consider the risk/cost/benefit of the project.

Evolution against Planning

Clear planning is important, but it should not be blindly followed. You have to be flexible in making midcourse corrections. The planning process helps gain understanding.

competitive edge of flexibility or cost-effectiveness remains. Thus, ERP is not always productive and it can ruin a business.

Organizational Issues

The impact of ERP on a company's organization and culture are paradoxical. It allows people to be more innovative and to adopt a flexible, problem solving and teamwork approach. However, it also involves centralized control over information and standardization of process, which are the qualities of hierarchical, strictly controlled organizations.

Furthermore, for multinationals, it is questionable how much uniformity across different regions should be enforced. There is a trade-off of uniformity of the enterprise system for greater market responsiveness. ERP system can achieve a well coordinated global lean-production. But, due to the difference in regional markets, this uniformity may be counter-productive. If regionals do not tailor their operations for local customer requirements and regulatory structure, markets may be lost to more flexible competitors.

In Conclusion, businesses should view ERP primarily in strategic and organizational terms in order to benefit the most[3].

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[3] See Davenport and Scapens

Case studies

Purpose

To investigate whether or how, consultants in practice address the success factors identified in the literature, to identify difference between literature and practice and to identify any inadequacy in their approaches. SAP R/3 was chosen, due to its popularity and complicated implementation.

Approach

The standard methodology provided by SAP is considered first, followed by the approaches of 3 ERP consulting firms supplying supplementary SAP implementation services. Based on their corporate homepages, their methodologies and implementation foci are reviewed and compared with the suggestions in literature. This approach has its shortcoming because consultants do not report their failures or describe their proprietary methods in details. Nonetheless, despite some similarity in the approaches, one could expect that the consultants would seek to differentiate themselves by describing their distinctive competencies.

AcceleratedSAP(ASAP)[4]

Based on customers/ implementation experience, SAP developed the ASAP, a set of standardized methodology, tools and services to achieve rapid implementation" and delivers it freely to all SAP customers. ASAP is widely used in SAP implementation in many consulting practices.

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[4] For details, refer to http://www.sap.com./service/asap_rm.htm

SAP's Accelerated SAP methodology

Technical Issue

IT infrastructure	Not mentioned
Selection	Not applicable
Configuration the	Quickly configures the baseline system and then fine-tunes complete solution
Customization	Not recommended

Project Manager

Ensuring operating	Starts with interviews with senior executives and key
commitment from client	managers and ensures their acceptance and honest expectations beforehand
Culture change	Suggests on-going" improvement will occur naturally afterward, but does not explicitly suggest any proactive approach
Enterprise-wise communication	Job specific training for end-users by their peers, and, post-implementation service and support available

Project Manager

Staging	5 Stage process, however, stresses on quick decision and initial full commitment but not staged investment

Allow evolution	Unlikely, rigorously tight schedule and milestones for Rapid Implementation and No-surprise approach
Risk-sharing and management on people	Not mentioned Works closely with clients within project teams and focus on **Focus** on stepwise training and knowledge transfer

Project Manager

BPR	Not covered
Strategic consideration Organisational consideration	Not covered

ASAP is a standardized and packaged process. Its purpose is to get SAP implemented in a standardized, reliable and speedy way. With tailored project and change management, it has packaged approach of ensuring initial commitment, quick decision-making and empowered project team and addresses training, communication and knowledge transfer. It provides clients an expeditious solution.

To accelerate the project progress, ASAP avoids several complicated, yet critical, issues, namely, BPR, culture change, customization and risk management. It does not address any risk of implementation or weaknesses of SAP in strategic and organizational terms. As regards, clients cannot rely solely on ASAP to achieve

excellent results. Clients have to manage those issues themselves or visit other SAP consulting partners, technology partners or third parties.

SAP consulting practitioners

Arthur Andersen's Global SAP Team (AA)[5]

Arthur Andersen is a global, multidisciplinary professional services organization. Its business-consulting arm provides services for ERP selection and implementation. Leveraging its rich available services and resources, its ERP implementation considers a wider perspective from people to processes, systems to strategies. Hence, its approach is far-reaching. It starts with business objectives and aims to provide various services that customers need.

DMR Consulting Group & SAP life cycle program (DMR)[6]

DMR Consulting Group provides management consulting and IT services with extensive experience in managing large-scale IT projects. Dominantly technology driven, its ERP implementation focuses on exploiting the maximum potential benefit from the technology. Sophisticated in business system integration, it developed a full life cycle from identifying potential benefit to post-installation support of SAP implementation.

DA Consulting Group (DA)[7]

DA Consulting Group provides end-user support to companies implementing ERP. It specializes in training, communication and support services.

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[5] For details, refer to

http://www.arthurandersen.com/Framesalt.asp?/BusinessConsulting/enteprise software/index.asp

For details, refer to http://www.dmr.ca/corporatif/en/services_and_solutions/

[6]

[7]

Supplementary services for ASAP from the consulting practitioners

Summary		
Focus AA Business Driven, with clear objectives of business improvement and knowledge transfer**Methodology**	DMR	Technology competence, good stewardship to protect IT investment
	DA	End user support, change management and communication
	AA	Based on ASAP, with various supplementary services available
	DMR	Enhance ASAP's process and benefit
	DA	Own proprietary methodology
Technical Issues		
IT infrastructure	DMR	
Selection		With experience in re-engineering of IT architectures
Configuration	AA	Reviews various packages are before implementation
Customization	AA & DMR	Follow ASAP
	AA & DMR	Avoid modification
Change Management		
Ensuring commitment from client	AA	Asserts expertise and experience and targets to executives by focusing on business performance improvement as commencement.
	DMR	Starts with demonstrating the Benefit and investment protection of future enhancement to gain acceptance of top executives.
	DA	Ensures support from end-users rather than executives
	All	No explicit methods suggested
Culture Change		
Enterprise-wise communication	AA	Helps prepare users for the new roles and responsibility required.

	DA	Communicates end-users with business goals, analyzes and then presents them with the specifc impact involved and provides full range of services of training, education, communication and supports.
Project Management		
Staging	AA & DMR All All	Staged process but not staged investment, use ASAP that need full initial commitment. No contingency mentioned No risk mentioned
Allow evolution **Risk sharing and Management** **Focus on people**	AA DMR DA	Structured training for project team to ensure knowledge transfer Emphasizes on learning and performance improvement of project team and helps clients to become self-sufficiency. Works with client end-users to identify areas of great concern and facilitates two-way communication
Others		
BPR **Strategic consideration** **Organisational consideration**	AA DMR AA AA DMR	Emphasizes on its rich knowledge-base of Global Best Practice" as the advantage of BPR programme Available but not the focus in the implementation Goes beyond ERP, aims to enhance competitive advantage by providing others services, such as supply chain management, client relationship management and E-commerce. Aims to transform organizational change to competitive advantage and helps in preparing new roles and responsibilities. Identifies organizational effects from SAP

Depending on their respective strengths, the 3 consultancies provide different value-added services to the packaged ASAP implementation process. Special

attentions have been put on business strategy, change management and supportive pre-implementation and post-implementation services.

Strategic Business Considerations	BPR (optional & preferred)	Preparation & Planning		Go live	Support & on-going Improvement
			Implementation		

Issues involved
Technical issues
BPR
Project Management
Change Management
Long-term vision

ASAP

AA

Coverage of methodology

DMR

DA

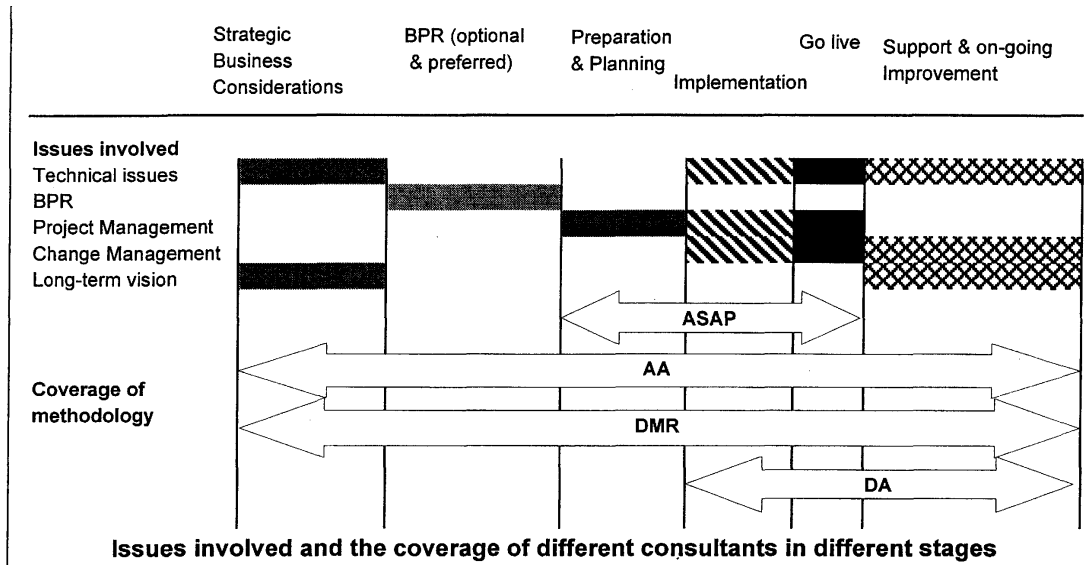**Issues involved and the coverage of different consultants in different stages**

Figure 1

Figure 1 shows the timeframe of a possible implementation process. ASAP covers only the core. With outside consultants, wider perspectives are considered. AA and DMR have commitment throughout the process and DsA has strong post-implementation supports. Different issues are involved in different stages. Figure 2 gives an analysis on the relative strengths of consultants in those issues compared with the basic ASAP methodology. AA has the most balanced coverage. DMR is particularly technically competent. And, DA specializes in change management.

Relative strengths of different consultants to the basic ASAP methodology
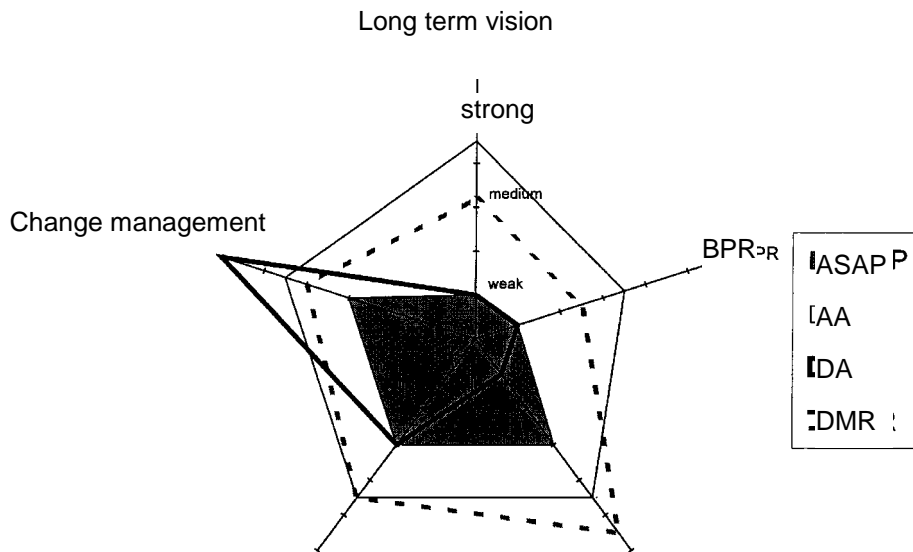
Long term vision

Figure 2

However, based on their presented information, I cannot find any practitioners satisfying all identified factors. Particularly, the culture issue receives no attention. Avoiding any negative message, they present a well-regulated process without informing any risk and contingency. As stated, this may lead to false expectation, hinder open communication and undermine risk management. Given the importance of risk and contingency management in any project, clients should not be ignorant on them.

For companies contemplating ERP consultants, factors, such as cost and reputation will definitely be under their consideration. Yet, they should not overlook those poorly informed issues. They ought to inquire different consultants actively and evaluate all the available approaches instead of blindly purchasing readily-made packages. Topics like "what is risk?", "how should risk be managed and shared?" or "what's the impact of ERP implementation on the corporate culture?" should be addressed.

Conclusion

To facilitate ERP implementation, companies should match their objectives to the implementation focus of the consultants. The factors from the literature are useful yardsticks. The study shows that ASAP provides quick but not full solution and different ERP consultants have different foci. However, they all avoid some significant issues, namely the culture change, risk and contingency management. Even with a capable ERP package and consultants, clients' role remains crucial in the implementation process.