

Why ERP may not be Suitable for Organisations in Developing Countries in Asia

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Abstract

ERP software has been heavily adopted in developed countries in the past decade. However, similar levels of adoption have not occurred in Asia. This study asks why the adoption of ERP software from developed countries (e.g., SAP, Oracle, PeopleSoft, BaaN and IFS) is so low in developing countries of Asia, and why the few local organisations (excluding multi-national corporations) who have adopted ERP have experienced problems. Answering these questions will benefit ERP vendors in formulating product development and implementation strategies for Asia. Answering these questions will also help potential local customers in developing countries of Asia to understand the pre-requisites for success in ERP adoption. Two case studies have been conducted in Sri Lanka. The preliminary findings suggest that high cost, culture, integration, and lack of knowledge are the four most important factors that make ERP unsuitable for many organisations in Sri Lanka.

Keywords: ERP adoption, Integration, Cost of ERP, Culture

1. Introduction

Enterprise Resource Planning (ERP) software packages provide generic, computer-based, enterprise-wide, business-process support for many organizations. They have two fundamental characteristics namely, seamless integration of data and processes across the organization, and so-called embedded best practices. To date, most mainstream ERP solutions have been developed by US or European-based vendors. It may be that these artifacts embody Western-style thinking which may be at odds with the prevailing cultural mores, values and norms in developing country contexts. An analysis of customer “success stories” of three mainstream ERP vendors’ websites (www.sap.com, www.oracle.com, www.peoplesoft.com) suggests that fewer than 7% of ERP implementations worldwide have been in developing countries in Asia. These web-sourced statistics, which show low ERP penetration in developing countries of Asia, motivated us to ask two questions:

1. *Why is ERP adoption so low among developing countries in Asia?*
2. *What can be learned from existing ERP adoptions in developing countries in Asia about reasons for low adoption in these countries?*

To answer these questions, we conducted two case studies in Sri Lanka which is a developing country in Asia. Anecdotal evidence suggests that some large organisations in Sri Lanka have successfully implemented core financial ERP modules such as financials, assets, and planning and budgeting (usually without integrating the main business functions, such as purchasing, inventory and sales) but organisations that have adopted more than the core financial modules have experienced problems. In this study, multinational corporations (MNCs) were excluded since Sri Lankan-based subsidiaries of MNCs usually have different, i.e., developed-country, business practices compared to local organisations. Some MNCs

have claimed success with their ERP adoptions in Sri Lanka. These MNCs are the subject of a future study.

The remainder of this paper is presented in four sections. The next section summarises relevant prior research; the third section presents the case studies; and the fourth section discusses the set of low-adoption factors revealed from the study. Finally, the fifth section summarizes advice for ERP vendors in formulating their product development and implementation strategies, as well as advice for potential developing country customers in understanding pre-requisites for success in ERP adoptions.

2. Relevant Prior Research

Question 1: Why is ERP adoption so low among developing countries in Asia?

Reasons for low adoption in developing countries appear to be as follows. First, ERP systems are expensive compared to the small size of organisations in developing countries (Huang & Palvia 2001). For example, out of 240 listed companies in Sri Lanka (which, of course, excludes subsidiaries of MNCs) only two companies have annual turnover above US \$ 200 million (Source: Colombo Stock Exchange). Therefore, the usual market for ERP products, large organisations, is not available in developing countries. Second, cultural issues (Krumbholz et al. 2000; Heeks 2002) may inhibit adoption. Soh, Kien & Tay-Yap (2000) question the universal applicability of ERP packages in developing countries. Third, lack of ERP experience and low IT maturity in developing countries may inhibit adoption.

Question 2: What can be learned from existing ERP adoptions about reasons for problems in these countries?

In developed countries, the major problems appear to be related to determining which processes the software should be configured to support (Bancroft et al. 1998), overcoming knowledge barriers (Robey, Ross & Boudreau 2002), and change management (Davenport, Harris & Cantrell 2004). Studies in Asia, mainly in China, suggest that the key problems are related to cost, culture, incompatible process models, change management, limited national IT infrastructure and lack of knowledge of ERP system concepts (Liang et al. 2004; Reimers 2002; Huang & Palvia 2001; Davison 2002).

3. Case Studies

Two case studies were conducted in Sri Lanka. We use the pseudonyms RubberCo and RetailCo, respectively, for the case organisations. These organisations were selected for three reasons. First, both of them are among the largest organisations in Sri Lanka. Second, both organisations have a mature IT environment. Third, these organisations have adopted modules beyond the core financial modules. A summary of the attributes of the case organizations appears in Table 1.

Company	Annual Revenue	Project budget	ERP modules implemented	User Licences
RetailCo	US \$ 40 million	US \$ 100,000	Finance, sales, purchasing, inventory management	27
RubberCo	US \$ 20 million	US \$ 200,000	Finance, sales, purchasing, inventory management, manufacturing	40

Table 1. Summary of the attributes of the case organizations.

3.1 RubberCo

RubberCo is one of the largest rubber product manufacturers in Sri Lanka. It implemented its first accounting software package in 1987. In 1999, RubberCo decided to move to a ERP package to overcome several problems including Y2K, instability of the vendor of the existing package, and functional problems. It had to undergo two hardware upgrades as a result of ERP implementation. According to the Managing Director, one of the major problems the company faced was cost:

“...If ERP [is] to be popularized cost must be brought down. Cost is extremely high not only the initial cost but even the subsequent maintenance and upgrade cost is extremely high. Apart from this, hardware cost also high because you need a massive capacity. Cost of the package is very high. Very few people can afford it.”

Another major problem faced by the company was training and re-skilling. In this 40-year old company most staff members at all levels have long service histories. The company was used to a standalone working environment, manual integration among functional areas, and producing a large number of reports for the senior management. With the introduction of ERP, training of high numbers of employees became a problem. It was not only training, but more a question of re-skilling the entire workforce who were used to working in isolation and who were now required to work in an integrated working environment. Even with its high IT literacy level, RubberCo found it extremely difficult to train the staff, since ERP requires many other skills such as overall business knowledge, and knowledge of ERP itself. One of the accountants commented:

“Our staff was not confident enough to understand the real aspects of ERP. We didn’t have any experience on ERP. We worked in isolation. Integration was new. Therefore people had to be educated on ERP when you move from standalone PC environments to this level of integration. There was a big resistance. On top of that, our vendor also didn’t have proper knowledge and experienced people to support us.”

Another major problem experienced by RubberCo was the very poor level of IT facilities and business practices of its suppliers and customers. RubberCo did not receive conventional Western-style orders with quantities and delivery dates. This led to major problems in production planning and purchasing. Sometimes, due to unplanned purchasing activities, materials were delivered to the production floor directly. Then the actual cost of the goods delivered came after a delay of some days, so the cost of production could not be calculated accurately. These delays in sending invoice information by suppliers was due to unstructured business practices of the suppliers. This is a very common situation in Sri Lanka. In the case of imports, the situation is worse because charges such as handling and transport are not available until after a long period of time after receipt of the goods.

3.2 RetailCo

RetailCo is one of the largest retail organisations in Sri Lanka. The company implemented its first in-house-developed accounting software in 1985. Introduction of the ERP system in 1997 forced a total hardware change. In January 1998, the system went on live. Within a few months, hardware had to be upgraded again due to incorrect hardware requirements originally suggested by the ERP vendor’s Sri Lankan agent. In 2002, the ERP agent abandoned the agency and another Sri Lankan company took over the agency. Due to a lack of customer support from the agent, RetailCo had to build their own ERP expertise in house. According to the systems study report, RetailCo is again considering a change in its ERP software:

“The main problem with our ERP system is the rapid and fast growth of the data volumes, the inadequate amount of user licences and the change in the business process.” Systems Study Report (2004)

Currently, RetailCo has 27 user licences and their actual requirement is 80 user licences. As the first customer in Sri Lanka for this ERP vendor, RetailCo got an affordable price with the original purchase of the software. The Business Development manager commented:

“This is too expensive. Even we buy the licenses we still have to customise the system. So we are considering a change.”

4. Analysis and Discussion

Answers to our two research questions, based on the two Sri Lankan case studies briefly presented in the previous section, are now discussed.

Question 1: Why is ERP adoption so low among developing countries in Asia?

It is apparent from the cases that many factors, not just one single factor, have combined to influence the low rate of adoption of ERP systems from the major global vendors in Sri Lanka. We list below what appear to be the four most important factors—ranked by order of importance—that explain why adoption of ERP systems in Sri Lanka has been low.

Factor 1: The initial cost of ERP adoption is not within the reach of most organisations in Sri Lanka.

As revealed in both cases, organizations in developing economies such as Sri Lanka cannot afford high investments for ERP implementations. Liang et al. (2004) also identified cost as one problem related to lack of ERP adoption in China.

Factor 2: National culture of Sri Lanka manifest at organisational level is not geared to accept the culture imposed by the ERP software.

Sri Lanka has a centralised labour-intensive system of management where managers rely on various types of paper-based reports, unstructured decision making, changing roles, and manual authorisation procedures etc. By contrast, ERP systems inscribe modern management concepts and values using online services and highly-structured processes, data, and roles. In both case studies, additional reports and changes to the ERP processes have been introduced to support the mostly centralised, paper-based management culture. Decision making is low among junior and middle management. However, ERP demands decision making at all levels of operations. In Sri Lanka, promotions are mostly based on seniority. Hence, most of the working population are accustomed to being employed by one organisation for a long period of time, and often to working within a particular function within that organisation. With experience, they become managers and owners of departments, not team players. Again, this goes against ERP culture, which promotes shared environments. Both case studies experienced severe resistance to change due to this conflict between assumptions inscribed in the software and social norms in Sri Lankan business. In the case of national culture, technology-enabled change initiatives may not fit with cultural values relative to social change (Krumbholz, et al. 2000; Heeks 2002; Robey et al. 2002).

Factor 3: The growth of ERP adoption in developing countries is severely affected by lack of information, awareness and ERP-trained human resources, unsuccessful projects, and uncertainty concerning agents appointed by the vendors.

In general, awareness of ERP software is very low in Sri Lanka. Both case organisations confirmed this view. Currently, and for good reasons as suggested by the points above, very few ERP products are available in Sri Lankan market. Very few local organisations have adopted ERP solutions with sufficient number of modules that leads to an integrated environment and the achievement of some success. In Sri Lanka, all except two vendors are operating through local agents. These agents suffer severely from lack of knowledge of their products.

Factor 4: *Staff reduction facilitated by ERP adoption clashes with cultural norms in the Sri Lankan labour market.*

Sri Lanka has a low-wage work force. Hence, one of the key benefits of ERP, cost reduction through workforce reduction, is not a great advantage in Sri Lanka. Savings achieved through staff reductions are negligible compared to the cost of purchasing and implementing the ERP software. ERP projects are therefore viewed with some concern, because cheap labour can produce similar outputs for much less cost and in a more socially friendly manner. In both case studies, no staff reduction has resulted from ERP adoption. Table 2 compares findings from the prior literature (Section 2) and findings of this study.

Previous findings (see Section 2)	Findings in this study
a) High cost	Factor 1 confirms the finding
b) Cultural issues	Factor 2 confirms the finding
c) Lack of ERP experience and low IT maturity	Factor 3 confirms the finding in relation to the ERP experience, however, case organisations have mature IT environment
d) not reported in the prior literature	Factor 4 Staff reduction facilitated by ERP adoption clashes with the Sri Lankan labour market

Table 2. Summary of findings on why ERP adoption is so low in Sri Lanka

Question 2: *What can be learned from existing ERP adoptions in developing countries in Asia about reasons for problems in these countries?*

The above four factors explain why many organizations in Sri Lanka have not adopted ERP systems. We turn now to six lessons learnt from the two firms that have tried to adopt developed-country ERP systems. Many of these lessons echo the same underlying cost, culture, and stage-of-development issues as the factors identified above.

Lesson 1: *The on-going cost of ERP adoption is not within the reach of most organisations in Sri Lanka.*

Both case-organisations are among the very first group of ERP adopters in the country. Thus, they received some pricing concessions initially, with limited user licenses. However, subsequent additional license fee and hardware upgrades, which are essential for smooth operation of the package, were not affordable for both case-organisations. In one case, the license issue is the main reason for looking for another solution. Two case studies clearly demonstrate that the on-going cost of ERP exceeds their budgets.

Lesson2: *The number of staff to be trained is higher in Sri Lanka compared to West even for the same organisation size.*

In comparative ERP case studies that the authors have conducted with Australian organisations, the proportion of users of the finance module for a firm with a similar turnover was one quarter of those in Sri Lanka. Both case organisations emphasise that the training and re-skilling made change management extremely hard. Both case-organisations have very high IT literacy level as they have been using IT for over 15 years. Comparing this finding to the literature, (Robey et al. 2002) found that organisations had to overcome knowledge barriers of two types: those associated with the configuration of the ERP, and those associated with the assimilation of new work processes. Both types of knowledge barrier were even more pronounced in Sri Lanka.

Lesson 3: *The level of integration provided by ERP is too high compared to expectations of individuals and organisations*

In the case companies, users are more comfortable with loosely coupled software modules rather than the tightly coupled modules of ERP systems. Additionally, as revealed in RubberCo, some time-integration assumptions embedded in the software are not valid due to non-availability of data or delays in receiving necessary data. The few large organisations, such as our two case studies, that have taken the risk of ERP adoption are aware of the benefits and drawbacks of integration. Top management of these companies are pushing for integration. This may lead to at least other top companies to follow the same path, though with caution. Comparing this finding to the literature, according to Davenport et al. (2004) integration is the most important factor for realising benefits from ERP adoption. On a more cautious note, Robey et al. (2002) comment on the difficulties arising from integration; for example an established work culture based on functional specialities may oppose new work practices based on process integration. Our findings are consistent with both views: the case-study organisations are not getting benefits because integration is hard to achieve. Software-driven integration is particularly hard to achieve in developing countries like Sri Lanka where tightly integrated processes, within and between organizations, are not the norm.

Lesson 4: Requirement of customisation to ERP software

Both case-organisations needed modifications to their ERP software.

Lesson 5: The lack of structured and disciplined business environments in developing countries in Asia creates severe operational level problems in ERP implementations

Sri Lanka as a whole has not developed a uniform level of business norms and practices like the West. Most organisations use unstructured management practices. Yet ERP systems cannot be implemented in isolation. They need lot of inputs from outside the boundaries of the implementing organisation such as from customers, suppliers and government organisations etc. If the implementing organisations do not receive information on time, and in the desired format, ERP systems are bound to fail. Again, this point is clearly demonstrated in both case-organisations.

Lesson 6: Vendor support and knowledge of ERP products are low in Sri Lanka.

There are only two direct offices of global ERP vendors in Sri Lanka. Other vendors are operating through local agents. Staff of local agents lacks adequate knowledge on their ERP products. There are only two vendors who are conducting training programs on their ERP packages. It is therefore hard to find trained personal to support ERP products. This problem has been clearly illustrated in the cases: one case organisation decided to build its own support team; the other two organisations were also not satisfied with their support. Table 3 compares findings from the prior literature (Section 2) and findings of this study.

Previous findings (see Section 2)	Lessons from this study
a) High cost	Lesson 1 confirms the finding
b) Change management	Lesson 2 & 4 confirms the finding & emphasises more on training
c) Incompatible process models	Lesson 4 confirms the finding
d) National IT infrastructure	Lesson 5 confirms the finding
e) Lack of knowledge of ERP concepts	Lesson 6 Additionally, vendor support is low in Sri Lanka.
f) no comparable point	Lesson 3 The level of integration provided by ERP is too high compared to expectations of individuals and organisations.

Table 3. Summary of lessons from existing ERP implementations in Sri Lanka.

5. Conclusion

Our study has shown that ERP systems from developed countries are not widely adopted or used in a developing country like Sri Lanka for four main reasons. First, ERP products, particularly maintenance costs and upgrades, are very expensive relative to average wages in Sri Lanka. In many cases, they are therefore not viable. Second, the so-called “best” practices and very high level of integration embodied in ERP software clash with business practices and national culture in Sri Lanka. Third, lack of knowledge within Sri Lanka of how to configure, customize, and use the software further reduces the benefits obtainable from adoption of ERP systems by Sri Lankan organizations. Finally, staff reduction facilitated by ERP adoption clashes with the cultural norms of the Sri Lankan labour market.

If ERP software is to become more widely used in Asia both ERP vendors and potential customers need to change their current practices. First, ERP vendors must consider different pricing strategies that can be attractive to at least the top business organisations in the region. Second, it would help organizations in developing countries if ERP products were designed with multiple integration levels, so that user organizations can select the level of integration they desire. Third, vendors could consider developing different versions of their software for different regions of the world with similar cultural and business practices.

Managers considering adopting ERP in developing countries should be even more wary of the likely scale of social upheaval in their organizations. There are two things they can do to reduce the shock. First, they should seek to improve their business processes prior to embarking on an ERP project through adoption of international standard practices such as ISO quality certifications. Second, they should seek to raise staff skill levels and change work practices to align more closely with the global practices currently embodied in ERP software.

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