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Joan Cooper

University of Wollongong, joan@uow.edu.au

Srini Utpala

University of Wollongong, srini@uow.edu.au

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The Emergence of Global Software Development Outsourcing Case Studies of Large Organizations in Australia

Joan Cooper and Srini Utpala

School of Information Technology and Computer Science
University of Wollongong, Wollongong, Australia
joan@uow.edu.au, srini@uow.edu.au

Abstract

Information Technology (IT) is a diverse environment and managing all areas of IT has increasingly become difficult for an organization's internal Information Systems group. Coupled with the fact that performance requirements have become dynamic, there is a greater need to search the world for the most capable supplier(s). An approach towards global outsourcing of software development or offshore development has been witnessed in the United States; however, organizations in Australia have not been as aggressive in pursuing this strategy. This study aims to document the reasons behind this stance via multiple case studies. Specifically, the study aims to document the awareness, practicality, drivers and risks in adopting a pro-active global outsourcing strategy in Australian industry.

Keywords

Global Outsourcing, Offshore Development, Global Software Development Outsourcing, Selective/Smart Sourcing

INTRODUCTION

Information Technology (IT) is a diverse environment that has proliferated into many organizations as a vital division. Increasingly, organizations are identifying areas within their internal IT unit that could be handled more efficiently by third party provider(s). Such a scenario has been termed as Outsourcing – a strategy that utilizes resources located outside the organization to perform activities that were traditionally performed using internal resources. Organizations outsource for a number of reasons including cost effectiveness and greater expertise on part of the vendor, to reduce IT costs and to enable the organization to concentrate on core business competence (KPMG, 2000). The 1990s had witnessed an increase in the use of offshore development to countries such as India and Ireland. Carmel (1999) defined global software development outsourcing (also known as offshore development) as sourcing across national boundaries while actively collaborating on a common software/systems project. Motivations for offshore development occurred for a variety of reasons including cost effectiveness (savings of up to 60% in some cases) (Carmel, 1999) and the ability of offshore vendors such as Infosys Ltd (India) to mobilize large teams and provide quality software. Steen (1998) documented the aggressive adoption of the offshore outsourcing methodology by a number of organizations in the United States to tackle the Y2K bug. Parallel to this finding, a great deal of academic research identifying the issues and trends in global outsourcing has been published within the U.S. context. However, very little literature that established an Australian perspective on the topic of offshore development was found. Clearly, there was a need to document the Australian standpoint as the global outsourcing initiative has been suggested to be the 'strategy vision for tomorrow' (Chan et al., 1991).

This research presents the experiences of three (3) large organizations in Australia who have undertaken offshore development. Personal interviews were conducted with senior IS managers from each of the three organizations. The resulting dialogue is presented as the results section. The interviews aimed to draw information that identified the parameters surrounding the offshore development strategy in Australia – reasons, effectiveness, risks, obstacles and predictions for the future.

LITERATURE REVIEW

Organizations have traditionally outsourced for a number of reasons with a view that the process could - be made more cost effective, take advantage of the greater expertise on part of vendor, reduce IT costs and allow focus on core areas of business and streamline the company (KPMG, 2000). There have been a number of flavours of outsourcing that have surfaced since Eastman Kodak turned over the bulk of their IT operations in 1989. In recent years, 'selective/smart sourcing' has evolved which is a modular approach where the practice is to identify IT systems that would best be operated in-house and source the remaining systems from a specialist vendor (Lacity et al., 1996). Since the 1990s, the growth of the Internet and the pressure to compete in

international markets has made it imperative for some organizations to consider the global sourcing option proactively (Stevens, 1995).

Carmel (1999) outlined some advantages of Global Software Development Outsourcing (GSDO) to be the following: able to tap into specialized talent, reducing development costs, facilitating a global presence and cost savings of upto 60%. He highlighted multinationals such as General Motors (with remote sites in Australia, France, Germany, Sweden), Microsoft (Israel, India, UK) and Sun Microsystems (Russia, China, India) who have offshore software development sites.

In the Australian context, Goldsworthy (1997) in the report titled "The Global Information Economy - The Way Ahead" observed that Australia's future as an advanced economy would depend on the extent to which it participated in the evolving global information industries. It was also communicated in the report that policy must focus on globalisation; and that investment, technology and trade were intimately linked. The National Office for the Information Economy (NOIE) also foresaw a need to establish Australia as a key player in global information industries by developing global scale and orientation (NOIE, 1999). However, Rao (M.D., IPPCS, 2000) assesses that the Australian industry has been conservative in comparison to their American counter-parts in embracing and adopting a global sourcing strategy on a large-scale. Parallel to this, there seemed to exist limited literature explaining why Australian industry was lagging behind in the global sourcing initiative. Clearly, the importance of this strategy and its prospects for Australian industry need to be examined.

There have been snippets of research into global alliances initiated by Australian multinationals: e.g.: Consolidated Press Holdings expanding its telephony operations (to develop software products and services) in a \$395 million deal with HFCL, India (Schulze, 2000) and Telstra's proposed alliance with British Telecom and MCI (Plunkett, 1997). This research aims to shed light on the strategic prospects of global software development outsourcing in Australian industry.

RESEARCH METHODOLOGY

The research was undertaken as an honours thesis over a period of one (1) year starting in December 1999.

Research Design

The research best fits into the category of a qualitative design as it aims to highlight the experiences of individual organizations i.e. it is not concerned with averaging data as in a quantitative design. Multiple case studies were identified as the appropriate strategy to gather the detailed and intensive data that was required to satisfactorily address the aims set. The main instrument for data collection was personal interviews. Other sources of evidence included corporate websites and librarians, journal and newspaper articles. Since the research tried to represent the perspective at a broad level of Australian industry, the study encompasses organizations from three different industries: telecommunications, services and transportation. The sampling was not representative of targeting a pre-determined industry, geographic region, or size. The sample consisted of organizations where contacts were available and the participant agreed to partake in the research. The aim was to gather information from large-sized firms who had sufficient offshore development experience.

The participant from each organization that the research interviewed was a senior IT manager or executive. Specifically, the three individuals from telecommunications firm COMPANY X, services firm COMPANY Y and transportation industry COMPANY Z held the following positions: Deputy Director of Information Services, Software Development Manager and Systems Delivery Support Manager, respectively. The questions posed during the personal interview warranted an individual of this stature, as the topics bound to arise would be of a strategic and tactical nature. It was anticipated that a person holding such a management position would be aware and able to express an educated and experienced response to the questions posed. Additionally, three (3) pilot studies were carried out on another set of organizations; however, they will not be discussed in this paper. The pilot studies were primarily carried out to establish the research focus and questions.

Research Cases

This section details the characteristics of each of the organizations that participated in the research. It includes a brief business profile of each organization, their respective operating environments and financial information where available. The validity of research data is implicitly substantiated by the size and global nature of these organizations.

COMPANY X - is among the top three (3) long distance telecommunications company in Australia, offering a range of services including domestic and international long distance voice, data and mobile. The organization in 1997 successfully managed 160,000 customers, with total revenue of approximately \$528 million for the 18

months to June 1997. The company has established relationships with 12 major overseas telecommunications companies to establish an international delivery network.

COMPANY Y - employs more than 5,000 IT professionals, with over \$5 billion in contracts. It supports more than 100,000 end-users in Australia, Singapore, Malaysia, Thailand, Philippines, Indonesia, Hong Kong, Taiwan and Korea from data centres in Sydney and Melbourne. In 1998, the organization had a gross income of AUD\$2.8 billion and total assets of AUD\$1.9 billion. It provides a wide range of services to all major industry segments. The parent of company Y employs over 138,000 professionals around the world.

COMPANY Z - is Australia's leading transportation company and is ranked tenth amongst its peers worldwide. It employs approximately 30,000 employees. The Information Technology division based in Sydney employs some 800 permanent staff and 300 contractors. The operating budget details of the IT division during the 1999/2000 financial year was approximately \$235 million, compared to \$222 million the previous financial year.

RESULTS

The key results from the personal interviews have been summarized below into four (4) topics. The topics being presented below are the key areas of the conversation that took place during the personal interviews.

Projects sent Offshore

The projects that were sent offshore by the three organizations studied in this research are recorded in Table 1. COMPANY X contracted an organization in Hong Kong to complete Y2K work, and two software projects were contracted to two different vendors in India. COMPANY Y outsourced portions of their maintenance of legacy systems work to their Indian counterpart. COMPANY Z outsourced a number of maintenance and development projects in various business areas including reservations; passenger revenue accounting and some parts of its Y2K work were sent to India via an onshore contractor. COMPANY Z have globally outsourced since 1992, to vendors in USA, UK, Spain and India.

	Company X	Company Y	Company Z
Type of Project	Two Software development projects and Y2K work.	Maintenance of Legacy Systems	Maintenance and development projects. Some Y2K work.
Project Details, Duration and Cost	<i>Software project 1 =></i> Back office systems development, (Feb 1999 – Feb 2000) costing \$700,000. <i>Software project 2 =></i> GST project, (Nov 1999 – Jul 2000), cost N/A. <i>Y2K conversion project =></i> (1998-Mar 2000) costing \$1.3 million.	Applications that cover all the business systems – marketing, finance, HR etc. Started in March 1999 on an going basis. Project stands at \$2 million in the first year and projected to grow to \$4 million the following year.	<i>Y2K =></i> small percentage of \$9 million. Other small projects each \$1 million, some started as early as 1992. A number of projects were sent offshore for specific environments and skill sets. Various business areas including reservations, passenger revenue accounting, TPF language environments.
Project Specifics	All contracts were done via Request For Proposal (RFP) on invitation. Vendor => India, Hong Kong.	Directive from parent company to outsource to Indian subsidiary. Vendor => Indian subsidiary	Request For Invitation to India and Philippines. Vendor => India (TCS, TIL, HCL), Spain, UK.

Table 1: Projects that were globally outsourced.

Market Competition

When questioned about the current state of the global outsourcing strategy in Australian industry, the representative from Company X noted that traditionally Australian industry had always lagged behind in picking up new ways of doing business - 'We are followers rather than inventors of doing business'. He gave an example of how Australia was slow in penetrating the Asian market when the United States and UK were doing business with Japan and Korea from the early 1970s. He reasoned that this might be the case because Australian industry wanted to learn from other people's experience. Further, he observed that it was only the 'big shops' that could take these big steps. Offshore engagements, the representative from Company Y believed, usually started via small projects because there were elements of risk and confidence to be observed. These two factors have

played an important part in the non-aggressive sourcing approach adopted by the relatively cautious Australian industry. Distinctively, the representative from Company Z viewed the pressure to compete in today's markets as not being new phenomena - his organization had always looked at alternative sourcing means.

Comparison of Australia and United States

The representative from Company X believed the reason behind the noticeable difference in the current global outsourcing strategies between organizations in Australia and the U.S., laid in the manner in which Australia did business. He noted that it was only recently in the wake of cost saving exercises and realizing global business parameters, that some organizations were venturing offshore. He believed that as the scale of operations had become bigger, senior executives and managers had started learning and knowing about global outsourcing. He compared the situation to the changes the manufacturing industry incurred in the 1960s and 70s, when manufacturing services moved to places where labour was cheap. On the other hand, the representative from Company Z reasoned that Australia had a different operating environment and volumes of sales, both for the client sourcer and offshore vendor. He expressed that industry in Australia was in a way conservative on the topic of global outsourcing and that Australia seemed to be a decade behind the trends taking place in the U.S. His rationale being that Australian industry tended to approve a concept only after it had been proven and critically examined on how it might value-add. The representative from Company Y spoke of his organizations standpoint, which was a year behind their counterparts in the United States and Europe on the global outsourcing topic – known as ‘global resourcing’ at the US based parent company. Although he was not certain as to why this might be the case in Australia, he speculated that it might be the culture of people and organizations. He noted that there was a lack of proactive strategic IT innovation amongst senior executives in Australian industry who needed to be continually asking themselves, ‘How do we use this technology to reduce costs?’ Both the representatives from Company X and Company Z communicated that the relatively small market in Australia as being another inhibitor, which had meant that offshore vendors had been targeting client organizations in the U.S. and Europe.

Advantages and Effectiveness of offshore development

The representative from Company X identified reduced time-to-market as being a top reason why organizations outsource globally because vendor companies typically have a much bigger resource pool. In addition, he believed, that gradually there would be a depletion of programmers with legacy systems knowledge, and even when an organization found such personnel, they tended to be expensive. This scenario existed because developers receive money for ‘upskilling’ themselves with new technologies. This was outlined as one of the reasons why firms pursue offshore development. The work done by COMPANY X's offshore vendor was rated as effective. The parameters that surrounded the effectiveness metric were quality, timing and cost. A desirable aspect of offshore development was that human resource management issues on the vendor side were transparent to COMPANY X.

The representative from Company Y reported that supporting legacy systems could be a prime reason when organizations contract projects offshore. He did not see it appropriate to comment on the subject of effectiveness as COMPANY Y was in the ‘transition period’, which in their case was forecasted to be over a period of one year. He noted that offshore development offered cost advantages and additionally would allow the client sourcer to be competitive to their customers. He also observed that offshore development freed up personnel from maintenance work and allowed for retraining into newer exciting technologies.

The representative from Company Z held an opinion similar to the other two participants, in addition to the belief that the advantages would be project and business environment specific. He believed that one of the best ways to harness the potential of offshore development was to bring key offshore personnel on-site; acquaint them with applications, environment and people; and establish relationships. When the offshore personnel were confident with the systems, they would return to their ‘home country’ and develop a small unit of personnel and become leaders in that unit. He added that although all their offshore projects could be rated as effective, quality had to be continuously given attention. One of the best ways to install the quality initiative was by bringing key offshore personnel onsite and accustoming them with the standards and procedures. Moreover, effective monitoring practices needed to be administered in both the vendor and client organizations.

Risks of offshore development

When questioned whether - management and communication issues, problems resulting because of cultural differences and varying business protocols and loss of business application knowledge inhouse - presented risks, The representative from Company X reasoned that global outsourcing should be ideally looked upon as a merger between two companies. It was only under such circumstances would the vendor treat the client's business priorities as their own. Another detail that needed to be accepted by the client was that it typically took

between 12-18 months to lay the foundation upon which quick turnaround times, quality and savings could be realized. Interestingly, he spoke of one instance where his organization was not happy with the expertise of one personnel from the vendor. This was communicated to the vendor and consequently the individual was replaced very quickly. Issues relating to change management, standards and documentation, he observed, gradually met requirements. The lessons learnt at each organization are summarized in Table 2. The table consists of two marking that display how strongly the organization related to the issue. The mark (✓) indicates that the organization strongly related or experienced the issue and the (✓) shows that the organization agrees on the importance of the issue but does not necessarily believe it to be a key lesson learnt in their organizational context.

Notably, COMPANY Y had encountered a misunderstanding over the SLAs (Service Level Agreements) with the management at the Indian vendor. The misinterpretation was over the hours for customer support operation where COMPANY Y specified support from 8am to 5pm (Australian time) in the SLAs. This time translates to 4am to 1pm in India. The Indian management declared that they could not expect their employees to start work at 4am and that this requirement was not clear in the SLAs. This misunderstanding has been identified as a potential 'showstopper'. On the topic of management, communication and cultural issues that offshore presents, the representative from Company Y summed up saying, '...all are pertinent and challenging, but not insurmountable'.

The representative from Company Z perceived big risks when an offshore vendor hid important issues because the vendor did not wish to acknowledge that they have a problem. This could partly be attributed to cultural differences, he reasoned. Another risk identified was the non-permanent nature of offshore personnel. He noted that when dedicated cells were set up in the vendor organization to address specific client business needs, there were two levels of risk being undertaken. First, to effectively utilize the advantages of a dedicated cell, the project necessarily needed to be large which translated into a higher level of risk. Second, managers needed to accept the fact that over time some cells might loose key personnel. In these cases, clients might need to re-educate, ensure quality and control is not lost, and accomplish cost savings. Another issue that needed to be considered was that globally outsourcing a critical system should only be investigated after having established a good working relationship with the offshore vendor. Otherwise the risk could be that the vendor might not able to meet performance and efficiency levels. The way to combat this, he believed, was to establish a very strong relationship so that issues could be discussed openly. The lessons learnt for COMPANY Z would be in the recognition of relationship management, quality control, planning and monitoring as being crucial elements in the global outsourcing game.

	Company X	Company Y	Company Z
Think Long Term	✓	✓	✓
Plan – identify and address risks	✓	✓	✓
Expect / Accept initial hiccups	✓	✓	✓
Project Management	✓	✓	✓
Multiple Vendors	✓	✓	✓
Precise SLAs	✓	✓	✓
Relationship Management	✓	✓	✓
Quality Control	✓	n/a	✓
Monitoring	✓	n/a	✓

Table 2: Lessons learnt from offshore ventures.

DISCUSSION

The areas of discussion that have eventuated from the results section have been summarized below into four (4) topics. The topics being presented here are the key elements of interest that surfaced and the recurring issues that were identified during the analysis stage.

To source or not to source?

Information Technology could be viewed as a double-edged-sword in its strategic value for an organization's outlook. Clearly, outsourcing an entire IT function and losing strategic control over your technology platform could be considered as an extreme attempt. A more judicious flavour of outsourcing known as 'selective

sourcing' has gained momentum and has been prescribed as being a better option by many academics (Puryear, 1993 from Dawley and Rajkumar, 1998; Lacity and Hirschheim, 1993). All participants in the cases studied favoured this option. Both COMPANY X and COMPANY Z concluded that this was the best way to outsource, or atleast it was the most appropriate way in their organizational context. COMPANY Y, on the other hand, was noted to be more aggressive about the sourcing option, where they had identified maintaining legacy systems as being a good project for sourcing. COMPANY Y was of the firm opinion that once these initial projects were carried out efficiently and effectively by the vendor, then outsourcing on a larger extent could be investigated. The notion of selective sourcing was inline with the experiences of the Commonwealth Government, where an audit on the federal government outsourcing program reported 'budget blowouts' and failure to fulfil 10% of SLAs (Dijk, 2000b). Prudently, the federal government plans to outsource CSIRO's IT infrastructure and services with the likelihood of off-the-shelf services to be outsourced and specialist research systems to remain in-house (Dijk, 2000a).

Going Global

Some practitioners and researchers believed that where there was a cheap resource there would be a global competitor waiting to harness it (Porter, 1986 from Dawley and Rajkumar, 1998). Ghoshal from Segal-Horn (1998) remarked that 'managing globally' appeared to be the latest battle cry in the world of international business. Ravichandran et al (1993) noted the success of offshore development sites established by multinationals; such as the one in Ireland by Boeing Computer Services and a similar site established by Texas Instruments in India. Systems development traditionally has been viewed as a local organizational operation. This concept has been challenged by a number of organizations that have ventured offshore with some of their software development projects.

Cerotti and Clifton (1998) reported that global communication technology had not been widely implemented in Australian organizations despite the strategic advantages that it presented. Similarly, the views of the participants from the cases studied highlight the approach towards global software development outsourcing in Australia as being non-aggressive. Clearly, the offshore development units established by MNCs in countries like India and Ireland have implications on Australian giants such as AMP, BHP, NAB and Telstra. Pressure to compete in international markets, as suggested by Stevens (1995) could in the future result in greater interest in global sourcing in the Australian market. The inference from the study is that Australian trends would follow worldwide trends, however, forecasting a year estimate on this matter is beyond the scope of this study.

Offshore development – A Strategic Exercise

McFarlan (1996) noted that for medium and large organizations, the opportunities posed by global software development were very significant and needed to be examined. Monczka and Trent (1991) proposed a four (4) phased model to represent internationalisation of the procurement process. They concluded that the 1990s would require organizations in many industries to be 'truly global' to facilitate maximum global performance. Under this model, COMPANY X would constitute a Phase 2 firm (characterized by foreign buying based on need) as it had participated in offshore development based on a need-to-need basis and had been reactively driven to this strategy. Both COMPANY Y and COMPANY Z on the other hand, could be classified into the Phase 3 category (characterized by procurement process which includes foreign buying) as they constituted international sourcing as part of their procurement strategy where appropriate.

The participants from the cases studied believed that organizations in Australia were conservative in adopting the offshore development strategy. Their views suggest that the majority of organizations in Australia could be categorized into the Phase 1 class (characterized by domestic purchasing only), where the firm does not engage in any direct foreign sourcing and lacks sophisticated international networks. Monczka and Trent (1991) proposed that an organization would progress from Phase 1 to Phase 2 when it was confronted with a requirement that could not be met by the domestic supplier or when a competitor began to take advantage of global sourcing. Although pressures to reduce operating costs are evident in many sectors of the Australian industry, firms have not viewed global sourcing as a potential business or procurement strategy. Clearly, there is need for further investigation on a large scale to establish the reasons behind this stance; and whether and when organizations in Australia will achieve Phase 4 (as in the model proposed by Monczka and Trent) which is characterized by integration and coordination of procurement needs on a global basis. Chan et al. (1991) summarize the importance and need for such an investigation by labelling global sourcing as the 'strategy vision for tomorrow'.

It is clear however that an organization needs to work on several modest projects with the offshore vendor before undertaking mega development efforts. Such an approach would offer the client organization experience with the offshore development strategy, ensure delivery of a quality product and determine if future business partnerships are plausible.

GSDO – Implications for Australian industry

McFarlan (1996) noted that organizations in the United States were increasingly globally outsourcing IT for a variety of reasons including cost and quality, lagging IT performance, supplier pressure and other financial factors. It has been established through the case studies that organizations in Australia were somewhat conservative in their approach to offshore development. The views of senior IT management from the case studies seemed to indicate that a number of organizations in Australia might be operating in a global economy with little attention to global strategies. Fusfeld (1989) observed that the fundamental essence of a global market place stemmed from the notion where organizations must ‘...adjust to tough new competitive standards that are now world-wide in scope rather than local or regional’. He sensed that executives must rid themselves of ‘egotistical and unrealistic notion’ that technology solutions would need to come from within the country. Further, Goldsworthy (1997) has conveyed that Australia’s position as an advanced economy would depend on how it invests, trades and widens its global technology platform.

For Australia to sail the information age, competing worldwide and collaborating globally seem to be the key. The services being provided by local IT service companies and internal IT units in organizations need to be evaluated against global vendors. Such a practice will ensure that domestic IT solutions are comparable to worldwide standards in terms of cost and quality. This approach involves open-mindedness and abandoning the not-invented-here attitude. A good example being the experience of COMPANY Z, where internal IT units are benchmarked against suppliers worldwide regularly. Such benchmarking has sound implications for other organizations in Australia as it allows their respective internal IT units to be evaluated against suppliers worldwide.

CONCLUSION

Whilst global software development outsourcing is expected to grow in Australia, it is beyond the scope of this research effort to identify how successful it would be in the long term. It is known that a handful of organizations have ventured offshore for some of their information systems projects and that their managers feel comfortable about the strategic prospects. The majority of Australian organizations are contracting work to multinational technology companies such as EDS and CSC, which elevates a degree of risk as these companies have large offices and investments in Australia. From the offshore vendors perspective, it is necessary for them to invest and establish a local presence if they are to attract business in Australia.

Although the number of organizations researched is relatively small and includes the opinions of only three individuals, the issues raised have sound implications for medium to large organizations in Australia. Clearly, there is need for quantitative research in this area to identify a wider set of issues. A quantitative study would also allow greater generalizations to be made across the Australian industry. It is suggested that such a study should encompass all industry sectors, more number of firms from each industry and more participants from each firm.

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