Knowledge Transfer in Offshore Insourcing

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KNOWLEDGE TRANSFER IN OFFSHORE INSOURCING

Knowledge Management

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Abstract

Offshore sourcing is the latest trend unfolding where companies look for cheaper offshore resource options to reduce their baseline costs. This involves the retrenchment of more expensive onshore resources, to be replaced by the hiring of cheaper offshore resources. A key activity is the transfer of knowledge from the onshore resource to the offshore resource. This paper looks at the key activities involved, namely, the management factors that determine whether or not to offshore a team; the preparatory activities that take place to enable successful knowledge transfer; the transfer of knowledge; and the subsequent integration of that knowledge into the organisation’s routines. Through two in-depth case studies of the technology department in a multinational bank, our findings suggest that each activity has its own unique characteristics, namely, economically and risk driven, matching of pre-requisite experience for optimization of absorptive capacity, intensive extraction of tacit knowledge, and organisational realignment.

Keywords: Knowledge transfer, offshore insourcing, IS BOK, types of knowledge

Introduction

“U.S. financial companies plan to move more than 500,000 jobs to other countries, cutting operating costs by more than $30 million”, as cited in a study by A.T. Kearney Inc., a management-consulting firm. In a survey done by Deloitte Consulting Pte. Ltd. (Cheah, 2003), they revealed that the world's top 100 financial services providers have plans to relocate operations offshore, translating into a bottom line annual cost-savings of US$138 billion or US$1.4 billion each by 2008. British Airways found that it saves nearly US$23 million a year for every 1,000 jobs it relocates to India (Rae, 2002). Due to pressure on the organisation’s cost base and a shortage of onshore skilled resources (Ravichandran & Ahmed, 1993; Rajkumar & Dawley, 1998; Khan et al., 2002), two options are available, namely, outsourcing offshore and/or insourcing offshore. IT Outsourcing is the process of turning over part or all of an organisation’s IT functions to external service providers so as to achieve economic, technological, and strategic advantages (Loh & Venkatraman, 1992). Insourcing, on the other hand, includes in-house capabilities as well as contracts that call for the market to provide resources, but with the premise that it is under the buyer’s management and control (Willcocks et al., 1995). Outsourcing or insourcing is not a new phenomenon (Cheon et al., 1995; Lee et al., 2003), but looking offshore as a cheaper source has been gaining momentum in the past five years.

As an organisation chooses to outsource or insource offshore, knowledge transfer from the onshore to the offshore resource comes into play. There is a need for the offshore staff to acquire and master new knowledge quickly; to get quick access to existing domain knowledge; and find out who-knows-what so as to tap into this knowledge. Knowledge transfer is defined as the process through which one unit is affected by the experience of another in organisations (Argote & Ingram, 2000). The word “transfer” is used rather than “diffusion” to emphasize the movement of knowledge within the organisation rather than the gradual process of dissemination. In the offshore sourcing phenomenon, knowledge transfer is more apt to be compared to knowledge diffusion due to the short time frame given to do the knowledge movement. There are individual and collective knowledges (Nonaka, 1994) that must be transferred from the onshore staff to the offshore staff. Tacit knowledge (Polanyi, 1962), with its personal quality and stickiness (Szulanski, 1995), also makes it harder to formalise and communicate, as it is deeply rooted in action, commitment, and involvement in a specific context. It is also locally specific and harder to get access to from a distance (Westney, 1993). As we see more companies looking towards offshore locations, the knowledge that
cannot be transferred will be lost. It is foreseeable that huge knowledge loss will occur as large groups of higher-cost staff are laid off, taking what they know out the door.

This paper aims to study how an organisation went about transferring knowledge from the onshore staff to the offshore staff in two distinctly different offshore insourcing programmes. One programme was for the offshoring of the Business Application teams, whilst the other programme was for the offshoring of its Infrastructure Services. The key research questions are: How does the company go about determining whether to offshore a team or not; how does the company carry out massive knowledge transfers from the onshore to offshore teams; and how do differences between offshoring Business Application Teams versus Infrastructure Teams affect the way they transfer knowledge? In the next section, we will do a literature review on knowledge transfer and its related topics. This is followed by the case description, after which we will discuss its findings. We will then conclude and suggest implications of our study.

Literature Review

In outsourcing articles, there is frequent focus on transfer of assets, in particular staff (Hancox & Hackney, 1999). Although this is common, it is however not an essential part of outsourcing (Willcocks & Fitzgerald, 1993). Transferring of staff into the outsourcing organisation does however solve a major headache of transferring the knowledge inherent in the in-house staff to the external staff. However, in the case of offshore sourcing, the transfer of staff offshore is typically not taken up – the onshore staff is unlikely to accept a lower salary and unlikely to be located offshore.

Knowledge transfer has been studied in a variety of hybrid modes of governance, namely, within a single company (Szulanski, 1996; Zander, 1991; Tsai, 2001), alliances, joint ventures, licensing arrangements, independent firms, and mergers and acquisitions (Bresman et al., 1999). However, the literature review revealed little research directed at knowledge transfer in an offshore sourcing phenomenon. In a field study on the transfer of knowledge from one manufacturing establishment to another within the same organisation, Galbraith (1990) provided quantitative evidence that out of the 32 attempts, 10 of them failed and were terminated. Of the 22 remaining attempts, there was a mean productivity loss of 34%. The tacit property of knowledge is often singled out as a central attribute of knowledge with respect to its transferability (Nonaka, 1994).

Using ideas from communication theory, Gupta and Govindarajan (2000) conceptualised knowledge flows (transfer) into five factors. First, the value of the source unit’s knowledge stock is comprised of both duplicative (not unique to one team) as well as non-duplicative (unique) knowledge. Iivari et al. (2004) have identified five knowledge areas that form an IS expert’s body (stock) of knowledge (IS BOK). They are: technical knowledge (knowledge about the types of hardware and software available and how they may be applied); application domain knowledge (knowledge about the application domain for which an information system is built); organisational knowledge (knowledge about the social and economic processes in the organisational contexts); IS application knowledge (knowledge about the applications, their structure, functionality, behaviour, and use in a given application domain); and IS development process knowledge (the tools, techniques, methods, approaches, and principles used in system development). These knowledge areas are evident in existing onshore (source) staff; they also form the knowledge base of the offshore (target) staff where new knowledge will be transferred over to them.

Second, the motivational disposition of the source unit refers to whether the source unit is motivated to transfer their knowledge. This is highly questionable in the context of offshoring, as the source units are typically retrenched after the transfer of knowledge and may not be motivated.

Third, the existence and richness and bandwidth of transmission channels, as captured in aspects such as information formality, openness, and density of communications, affect the extent of knowledge flows. The variety of mechanisms (Argote & Ingram, 2000) that may be used include personnel movement; training; communication; observation; technology transfer; replicating routines; presentations; interactions with suppliers and customer; and other forms of inter-organisational relationships. Different mechanisms used would result in varied richness and bandwidth of the transmission channels. Different mechanisms may also be employed depending on the dimensions of knowledge to be transferred. Winter (1987) conceptualised three dimensions of knowledge, which was further expanded by Garud and Nayyar (1994). They are: simple versus complex; explicit versus tacit; and independent versus systemic. Winter (1987) considered each dimension on a continuum along which knowledge could be located, with each dimension evoking different issues in the transfer process and requiring different amounts and types of information to describe it.
In the fourth factor, Gupta and Govindarajan (2000) argue that the motivational disposition to acquire/accept knowledge is dependent on three factors: the incentives that increase the eagerness to learn; the relative value of the knowledge stock; and the coercive pressures of upper management.

The last factor of the knowledge flow concept is the absorptive capacity of the target unit, which is defined as the ability to recognize the value of new information, assimilate it, and apply it to commercial ends (Cohen and Levinthal, 1990). As observed by Cohen & Levinthal (1990), successful knowledge transfer is more likely between individuals if they had similar experiences. It also forms the base, which enables absorption of new knowledge (Cohen and Levinthal, 1990).

We will use Szulanski’s (2000) four-stage process of knowledge transfer to describe how the knowledge transfer was carried out. Szulanski suggests that the knowledge transfer goes through four stages: the initiation of the transfer, the start-up initial implementation effort, the ramp-up to satisfactory performance, and finally the follow-through effort to integrate the practice with existing practices of the organization.

In summary, using Gupta and Govindarajan’s (2000) five factors, we will look at the stock of knowledge with the aid of Iivari et al.’s (2004) five IS knowledge areas, the motivational disposition of the onshore and offshore units, and the mechanisms (Argote & Ingram, 2000) that are used that determine the richness and bandwidth of the transmission channels, taking into consideration the different dimensions of knowledge (Winter, 1987).

Methodology

A qualitative research methodology using an interpretive case study (Walsham, 1995; Klein & Myers, 1999) was adopted for this study. Qualitative data is able to preserve chronological flow, able to show which events lead to which consequences, and derive rich explanations (Miles & Huberman, 1994). As this research topic requires contextually rich descriptions with emphasis on language rather than numbers, and focusing on social relationships rather than variables (Maxwell, 1996), the qualitative data collection technique was preferred. Case study research as defined by Yin (1994) is an empirical inquiry that investigates a contemporary phenomenon within its real-life context. It is especially useful when the boundaries between phenomenon and context are not clearly evident. In this situation, offshore resourcing is a contemporary phenomenon that we will be studying in a real-life context in which we have very little control over the events, nor the ability to manipulate behaviours as they unfold. This research topic is closely related in context, where no control of independent variables is possible, which makes experiments untenable (Benbasat et al., 1987). The research question is mainly about how knowledge transfer takes place in offshoring, which is more explanatory in nature (Yin, 1994).

The case study was carried out using predominantly structured and unstructured interviews. Secondary sources, such as internal documents, project manuals, presentations, and intern company presentations, were also collected. Interviews were carried out within the two different departments about a year after the completion of the transition. This was rather timely, as it allowed us to have a view of the organizational changes that took place after completion of the programmes. One department was responsible for the development and support of business applications; the other was responsible for the development and support of technology infrastructure services. The onshore location was Singapore and the offshore location was Malaysia. Unstructured interviews were used to get an overview of the programmes and decide on which teams to interview.

Two business application teams were chosen, one for its larger application team size of about 100; the other was a smaller but more specialised team of five people. For the infrastructure programme, representatives were picked from each of the key process areas. Formal, structured, face-to-face interviews (on all interviewees) were carried out over a cross section of different levels of staff – team specific Senior Manager and Project Managers for the planning and execution of the transition project, and systems analysts and programmers for the actual execution of the knowledge transfer, with a mix of onshore and offshore staff. The Programme Management team was also interviewed to get an understanding of the objectives, proceedings, and outcome of the whole programme. Depending on the different groups of people, the interview was tailored to understand in greater detail the part that the individual played in the transition. All structured interviews were recorded and transcribed (with the exception of three interviewees who specifically requested not to be recorded). The interviews typically start with the interviewee describing the role that he or she played in the transition, followed by their views on how the transition was carried out, what they thought of the various processes, what issues they faced, and their opinions of the success of the knowledge transfer.
Interviewee Type | Business Application Interviewees | Infrastructure Interviewees
--- | --- | ---
a. Programme Management | 3 | 1
b. Teams (Onshore and Offshore) | | |
- Senior Manager In-Charge | 1 | 1
- Project Manager | 5 | 3
- Systems Analysts/Programmers | 7 | 3
Total | 16 | 8

Table 1. List of Interviewees

Data analysis was carried out with the aid of Szulanski’s (2000) four-stage process of knowledge transfer. Using interviews as the primary source of data and supplemented with secondary sources of data, triangulation was carried out to enhance internal validity (Yin, 1994). Cross-case analysis between the business application project and infrastructure project was also carried out.

**Case 1: Business Application Offshoring**

BankCo is a multinational bank. In 2001, after a review of its IS global technology business application development and support organisation, it decided to progressively replace its more expensive onshore staff in the United Kingdom, Hong Kong, and Singapore, with staff in lower-cost offshore India and Malaysia locations. There were three main reasons for this move, as cited by its Programme Director. The first objective was to lower cost. The second reason was to reduce the risk of shortage of technology resources in its onshore locations (Ravichandran & Ahmed, 1993; Rajkumar & Dawley, 1998; Khan et al., 2002), which was plaguing the technology industry in 2001. The third reason was to improve productivity and quality (Rus & Lindyall, 2002) through centralization in the two offshore locations. By centralizing its operations in two key offshore locations, BankCo effectively improved its cost of production due to economies of scale.

BankCo created a team consisting of the Programme Director, a Programme Management Office, and a Transition Manager in each onshore country. The Programme Management Office was responsible for creating the Transition Guide, which outlined the steps that the teams needed to follow to complete the transition of responsibilities from the onshore team to the offshore team. Each team transition was given between six to nine months to complete the whole process. For a few complex business applications, the team was given no more than a year to complete.

In 2001, 95% of BankCo’s business application staff was spread across the onshore locations of the United Kingdom, Hong Kong, and Singapore, with 5% in India and Malaysia. By the end of 2004, the offshore locations of India and Malaysia held more than 70% of the staff. In terms of labour cost comparisons, a Hong Kong and Singapore staff at BankCo costs 50% of the cost of a United Kingdom staff. The cost of an India and Malaysia staff is 25% the cost of a United Kingdom staff. The Programme Director confirms that “...the programme has delivered and exceeded its cost savings objective by far. The management view of the whole programme was a resounding success. No doubt there were a few transition ‘failures’ that had to be re-done, but as a whole, nothing was really broken.”

The programme was officially completed at the end of 2004. However, the pressure to reduce production cost is still going on, with smaller scale replacements of onshore staff with offshore staff.

We will describe the knowledge transfer processing using the four-stage process as identified by Szulanski (2000).

**Initiation: What to Send Offshore**

The initiation stage started with senior management deciding on which teams were to be sent offshore. BankCo set themselves a target of moving as many of their staff to low-cost locations. As such, most teams were earmarked for transitioning to the offshore location, with the exception of a few teams. These few teams were either found to be not cost-effective to send offshore or the business application maintained by the particular team was deemed to be
extremely business critical and as such posed a very high risk to the organisation in the event that the knowledge transfer was not successful.

Teams that were not cost-effective to be sent offshore were typically small (three to five members), supporting many business applications, and highly efficient. The offshore manager was unlikely to accept the support of such a team if more resources were not allocated. A manager of such an onshore team said:

“I do first line support, some production support, some systems development, for eight to ten different applications. That makes it very difficult with just five people. So when they decided to look at my team [to move it offshore], one look and I think everybody backed off. The management thought that it was probably not justified to [send the team offshore] because they were not going to save anything, [instead] it probably costs more.”

To replicate such a team offshore, it was expected that more than five people would be required to manage the 10 business applications. This will erode the savings derived from sending it offshore. In another team, the business application supported was that of the bank’s core transaction processing engine using COBOL on the mainframe. This skill set was not readily available in India and scarce in Malaysia. As such, it was considered risky to replace the teams in Hong Kong and Singapore by a Malaysian team.

**Initial Implementation: The Start-up Stage**

Both the offshore project manager and onshore project manager had different types of work cut out for them. For the offshore project manager, one of the challenges was to find as many suitably qualified members to quickly build up their team. Suitably qualified resources were those with the necessary prerequisite technical knowledge and application domain knowledge, which would form the base to pick up the company-specific IS application knowledge. However, finding suitably qualified staff was not easy, as pointed out by an offshore project manager in Malaysia. The sudden ramp-up by two-and-a-half times the current number of staff within two months was extremely tough to accomplish. Without the pre-requisite experience, it was difficult to transfer the knowledge to the recipient, as the base knowledge was not there, impacting the ability to absorb new knowledge. As one transferer of knowledge pointed out:

“…[if] the skill set doesn’t match in the first place and you assign him to me for transition, I think that is potentially an issue. You can’t just hire anybody and transfer the knowledge. It will never work that way because transitioning is not about training [from scratch].”

For the onshore team, the preparation of various documents and presentations was the codification of some of the tacit knowledge within the team. Whatever that could be explicitly put on paper was created in the form of manuals, documents, and presentation slides. As pointed out by an onshore project manager:

“Firstly, we listed out what were the key areas that we had to cover. For example, in PSS [production support], there were a lot of procedures for day or night PSS. So we had to document them down — what were all the steps. We then prepared the presentation materials. We planned out the timetable for the training and the different topics to train. We also came up with guidelines, like developers guidelines when you code JCL or when you code programs, the standards that we followed, the naming conventions for programs and copybooks. Then we moved into the A&D [analysis and design] training and included all the different functionalities that we needed to train the people.”

The onshore project manager was also required to pull together of knowledge from various people. No single person knew all the details about the business application. In one of the teams, knowledge was spread across 100 team members located in different countries. As an onshore project manager pointed out:

“…if there were certain topics that we ourselves couldn’t do it because we were not familiar with it, then we bring in the people from Hong Kong or Singapore. We planned it such that when the person came over, they would take a few topics. We would arrange it such that those few topics they were good at they would do the training.”

The onshore project manager, when asked if she had motivation issues in getting the onshore staff to pull together the presentation material and do the training, mentioned that most of the onshore staff were quite professional about it and would complete what they have been assigned to do. Furthermore, she pointed out that templates for the material were provided so that the key areas of knowledge were not left out.
Once the migration planning, resource planning, and transition planning activities were completed, the knowledge transfer activity kicked off. This would take anywhere from 10 to 17 weeks. For a very complex business application, this took more than 25 weeks. The methods of knowledge transfer recommended in the Transition Guide were: presentations (face-to-face, typically in the offshore location); written and oral tests (created by onshore staff to test if the offshore staff have grasped the important points of the presentation); and on-the-job training (typically in the onshore location, where the offshore staff worked with and observed their onshore colleagues in action).

Presentations were used as the key transmission channel at the beginning of the transfer; the intention was to do mass training that reached out to the whole team. The onshore individuals would take turns flying into the offshore location for a period of a week to train the offshore teams on a particular topic. To “motivate” the offshore staff to be more attentive during the presentation session so as to enable maximum absorption, written quizzes and oral interviews were conducted. An onshore project manager administering the quizzes said:

“After every session [presentation], there was a quiz — we prepared the quiz questions. The quiz questions mainly concentrated on testing the important things that we needed them to know for that particular session. Then we would mark and grade them.”

Next, the onshore team member would do the support of the business application in the offshore location. This enabled the offshore staff responsible for that topic to sit next to the onshore staff and observe how the onshore staff did the support. The offshore staff was able to learn which departments the onshore staff called to solve different parts of the issue, observe the methodology that was used to work through a problem, and note the business parties that the onshore staff had to get in touch with to update the status. The offshore staff was able to see the work in action and ask questions along the way for things that somehow were not explained in the presentations.

Not all the offshore staff that attended the training were able to absorb the knowledge. One offshore knowledge transferee felt that it would be difficult to absorb all the knowledge being presented due to the large quantity of information being imparted at the presentation sessions. Instead, he felt that the presentations were good to make one “aware” of the existence of the different functions and features, and were meant to be “pointers” for future reference if required:

“The training was not a waste of time — it was more of giving us the awareness. I would consider it more of an awareness training. I don’t think that a person goes into a training room and becomes perfect. At least he is aware that we have this and we have that. After that, OJT (on-the-job training) was the most effective one, whereby he is having to live situations and he is understanding it better and getting things done more effectively.”

He felt that absorption of the knowledge would be best experienced on-the-job. Other onshore and offshore members also shared this sentiment.

Ramp-up: Intensive Extraction of Tacit Knowledge

Stage 3 Ramp-up was about giving satisfactory performance, where the transition project went into steady state and the onshore staff handed over the development and support to the offshore staff. In the production environment, the handover of control is typically done country-by-country, month-by-month, sequentially over a period of time. This was typically depicted by the offshore team demonstrating to the onshore team that they had absorbed or internalised the IS application knowledge that was imparted to them. Some of the mechanisms recommended by the Transition Guide were the use of playback sessions, support simulation, individual interview assessment, and team review.

All three mechanisms were mainly done just prior to the official handover of responsibility to the offshore teams to check for readiness. Playback session was where the offshore team presented the knowledge that they had gained back to the onshore teams. The offshore teams would then check for gaps in the knowledge and retrained the team on the areas that were lacking. Support simulation was where a few production support scenarios were simulated to the offshore team, and the offshore team played out what they would do to solve the situation, whilst being observed by the onshore team. Individual “interview” assessment was where the onshore Project Managers gave the offshore members an oral assessment on the key topics. The main purpose of the individual interview assessment was to have a longer descriptive type test so that the offshore member was able to walk through a full trouble-shooting process, or describe in detail the key areas in a particular topic. This was the last stringent test to see if the offshore teams had indeed absorbed the knowledge. An onshore project manager recounts:
“…before the interview, we actually gave them the topics that we were going to cover. They had to go and guess [the questions]. We had all the questions ready but different people would get different questions, it’s not the same question — we picked and chose the questions we wanted to ask them. There were a few of them, two or three of them, that didn’t do so well. They had to go back and study again and then come for another interview.”

The final hurdle was the individual performance assessment, where the onshore and offshore project managers collaborated on the assessment of each offshore individual’s readiness to takeover the onshore role. Each member was rated on his or her understanding of the application domain knowledge, technical knowledge, application knowledge, and process knowledge. The individual assessment was discussed with each offshore team member so that they were aware of their weak and strong areas so as to further improving it.

The ramp-up stage concluded with the Quality Manager’s audit of the migration process and the offshore project manager’s acceptance of the handover. The Quality Manager describes the acceptance-into-production process:

“…how do we know that they are ready? We know it through interviewing people, by looking through the documentation that “Yes, you have done on-the-job training, playback and all these, as documented in the process documentation.” But whether these people had really transferred the knowledge, the document would not be able to tell you. So what we do was we would interview the people doing the transitioning by asking the managers: “were you happy with it?” We also asked those who were at receiving end: “were you happy with it?” Finally, we would ask the Customer [business owner]: “were you happy with it?”

Integration: The Follow-through

With the successful handover of the support of the system, full responsibility moved over to the offshore team. The onshore team continued to monitor the progress to ensure that the transfer of knowledge was successful. The onshore team would make a trip to the offshore location to observe if the offshore team had integrated their learning into the in-country processes correctly. An offshore technical manager recounts:

“[The onshore staff] came here to observe [to see how problems were solved], to see whether if there was anything done right or wrong. There was an activity called Playback session, where you presented what you had learnt in terms of the PSS process and the onshore activity. There was also a functional lunch to meet with him and another business person, so that they had a feeling of whether we were on the right track.”

The observation sessions enabled the onshore staff to take note of any irregularities in what the offshore teams were doing. It also allowed the onshore staff to observe the transferred knowledge in the new context of the offshore organisation and how it blended in with the offshore organisation’s existing processes. Both the onshore and offshore teams were then able to integrate some of the processes and smoothen out the kinks.

When BankCo started off with the programme, the onshore teams were in a sense “outsourcing” work to the offshore teams. The onshore teams were the buyers and the offshore teams the vendors. The onshore team reported to the onshore manager and the offshore team reported to the offshore manager — effectively was as if there were two teams. There was the “us and them” concept — the buyer and vendor — where the vendor was expected to deliver the services on their own after the transition was completed.

BankCo then realised that although the knowledge of the systems analyst and programmers could be easily replicated in the offshore location, the more senior analysts and project managers possessed application domain specific knowledge that was not as easily transferred. The intention of replicating or “outsourcing” an onshore team capability totally into an offshore team did not seem viable. BankCo quickly understood that the way forward would be to integrate both onshore and offshore teams into one cohesive team. There would be no concept of onshore or offshore teams, no concept of “outsourcing”. Instead, it was just one team, with members in different geographic locations, reporting into one manager. This seemed to work very well, as observed by an offshore manager:

“I think what helped most was with the [re-organisation], all of us reported into one common manager. The mindset is so different now.”

Although the programme has ended, the movement of the remaining onshore jobs is by no means over. As the teams mature and offshore staff gain more experience, BankCo continues to reduce their baseline cost by replacing onshore with cheaper offshore staff.
Case 2: Infrastructure Offshoring

Case 2 looks at another programme in the same bank, offshoring their technology infrastructure services. In 2001, the top management of the technology infrastructure services department decided to consolidate their fourteen in-country operations into India and Malaysia. There were three main reasons for this move, as cited by the Senior Manager in charge of the Malaysian location. The first objective was to lower cost through economies of scale (not always through labour cost arbitrage). The second objective was the centralization of functions so as to have better control to satisfy audit requirements. The final objective was to standardize the processes across the different countries, taking this opportunity to change the existing processes within each country into one common best practice. The choice of the two locations was to enable both locations to back-up each other, with Malaysia handling the south and northeast Asia countries and India the west and Mesa/Africa countries. After the initial planning stages, year 2002 was spent transitioning the 14 countries into the two centralised locations. When this was completed, 2003 was spent mainly consolidating and standardizing the various processes.

Initiation: What to Send Offshore

The initiation stage started with the programme management team identifying what to send offshore. The key criterion was: anything that did not need to be done in-country onshore would be sent offshore. Tasks that were required to be done onshore were those typically requiring someone to be physically present to see the status of a desktop, server, or network equipment, or to physically change or configure a piece of hardware. The services that were sent offshore comprised: call centre (technology problem reporting and resolution), problem management (end-to-end management of problems), security management (server and password management), change management (technology service requests and production changes), centralised operations (batch operations and central monitoring), desktop support (centre of excellence for desktop technologies), and service reporting. The areas of work that were sent offshore were just part of the full set of responsibility for managing the technology infrastructure support. By centralizing these key areas, BankCo was able to derive economies of scale, saving 30% of its total headcount. Note that not all the 14 countries had more expensive labour costs compared to India and Malaysia. Countries such as Thailand and Philippines were in fact cheaper comparatively.

The programme management team also hired the services of an external consulting company who had done this form of centralization before. The consulting company provided expertise on how to carry out the transition from the onshore to the offshore country, as well as providing process documentation and flows for each of the centralised services.

Initial Implementation: The Start-up Stage

The offshore management started by looking for suitable candidates to staff their teams. The Malaysian Senior Manager pointed out that it was not a problem to find suitably qualified candidates at all. There were many applicants for every vacancy they advertised. Technical knowledge in the technology infrastructure service that the candidate would be supporting was the main skill requirement. Specific banking domain knowledge was not a must as candidates were expected to learn the local environment of the company.

“We looked for foundation skills. Like if we were looking for basic technical support, we would look for people who had UNIX skills, people who had Microsoft NT skills or Lotus Notes. Whatever we needed, we just brought in those people. Even if they had the best banking knowledge, they would never know the local environment.”

An offshore project manager was assigned to each country transition, together with offshore representatives from the call centre, problem management, change management, and security management areas. Each country team was given between one to three months for the transition, depending on the size and complexity of the country. The whole team would fly into the onshore location for the duration of the transition. The first half of the time was spent documenting how the country carried out the various support services. Typically the knowledge of how the services were accomplished was in the heads of the human knowers. Each of the offshore representatives had a template, which aided them to ask the right questions and document the process. Typically the only documentation that was provided from the onshore team was the support roster and the business user list, which was insufficient. Once the process was documented, the offshore staff then proceeded to work with the onshore staff to close the gap between
the onshore process and the offshore process. This might require heavy negotiations and some changes to existing procedures. From the description of a problem analyst, it appeared that most of the knowledge extracted was procedural in nature:

“First of all, we wanted to identify how they ran problem management over there? It might not be in the same way as what we wanted to do over here. So we tried to close the gap between the two centres. We would also sit with people at their helpdesk, to see how they escalated their problems to their support teams; solve strategic problems, the way they notified the business user and sent notifications — we would note all this down.”

The extraction of the procedural knowledge was also systemic. They had to approach different onshore staff for the different roles that they played. For example, the onshore helpdesk staff carried out problem management whilst the onshore technology service managers carried out problem postmortems. The offshore staff would sit in to observe how it happens onshore to better understand the complex, tacit, and systemic knowledge that they would not have extracted just by asking questions. The helpdesk staff were extremely unhelpful, as they knew they were going to lose their jobs. The service managers were more helpful, as many of them were still required onshore because some of the tasks could not be transitioned offshore. Incentive bonuses were paid to encourage staff that would be retrenched to stay for the duration of the knowledge transfer. This did not deter the offshore staff, as they were able to pull together the process knowledge understanding from the service managers and from other sources.

For example, to get a better understanding of the various issues faced by the country, past records of all service data were mined for information. By examining these past records, the offshore staff were able to find out: the key problems faced by the country; which areas required more emphasis and careful handling; and which problems were classified at what criticality level. The offshore staff also needed to understand the business applications that they were supporting, at least at a superficial level, so that they were better able to manage the problem. This knowledge was harvested from two sources: the business application support team, for the domain and IS application knowledge, and the business user, for how the application is used and the business pressure points if the application fails. All these were documented in a template and stored in the offshore knowledge database.

Once the data capture and knowledge extraction activities were completed, the offshore staff had to create training materials so as to transfer what they had learned to the rest of the offshore support staff. This was done in the form of presentations in the offshore location. Due to the volume of knowledge (14 countries in total and more than 400 business applications), the central database was an extremely useful tool for reference. The trainees were not expected to remember all the information. They were trained specifically on the more common and high impact business applications.

**Ramp-up: Pilots**

Stage 3 was where the Malaysia service centre ramped-up to satisfactory performance. This was accomplished by initially running pilots in the offshore location. The onshore service staff would travel to the offshore service centre to sit with the offshore staff and work from there. This enabled all the offshore staff to see first hand how problems of a particular country were handled. Once this was done, the offshore staff would take over the handling of service calls and the onshore staff would observe and correct mistakes.

Onshore service managers were also enlisted to get the first impressions of the performance of the offshore staff. This was part of the feedback loop from the country users on whether the offshore service centre was carrying out their tasks correctly or not.

“Ever since the cutover, we would have a meeting everyday together with country IT [service managers] to review the problems [that were solved] so as to see if they could also give us some advice if this problem needed to be handled differently. Of course we got a lot of guidance from country IT [service managers].”

This stage went on for two to three weeks, after which the country transition process was considered complete.

**Integration: Standardization**

All of 2002 was spent transitioning 14 countries into the centralised service centres of Malaysia and India. Each country typically had their own way of doing things; this was moved to the central location without many changes. Once this was done, 2003 was spent standardizing and integrating the process and tools of the fourteen countries into one best practice. There were continuous improvements made to the processes to bring the performance up to
an acceptable level. The team continued to challenge the norms, learned from their mistakes, and ultimately met the performance metrics set out for them. An offshore project manager recounts:

“Initially, we may cater for, let’s say, 15 of various ways of doing it, [this was the] first cut. But once you moved them into a standard [best practice] model, then you say the other fourteen can go and we will only apply one [best practice]. So when you first started transition, you needed to accommodate [each country’s process]. But once it’s within your control, you transform them into the preferred model.”

Once the process and tools were standardised, in year 2004 the offshore teams started benchmarking themselves against industry best practices. The Malaysian Senior Manager remarked:

“In 2004, we went for benchmarking. We did a benchmark against the best in the industry; aligned and beat the numbers; challenged the final processes and measured risk.”

Discussion

Having examined each case data in detail, this section presents the findings and observations. We have organized it inline with the stages of the knowledge transfer process model, covering in-case and cross-case discussions for each knowledge transfer process stage.

Initiation: Cost Arbitrage versus Economies of Scale

In Case 1, the main driving force of why a team was sent offshore was the savings derived from the labour cost difference between onshore and offshore. The secondary drivers were to overcome the shortage of critical resources and economies of scale through centralization. At the initiation phase, each team was studied for its feasibility to be sent offshore. Those that were not sent offshore typically were from critical business application teams (too risky, or from extremely efficient teams (few members supporting many applications) such that it would not make economic sense to send them offshore.

In Case 2, centralised management of infrastructure services enabled the organisation to reap cost savings through economies of scale, as well as have better control and standardization over various processes. Any part of infrastructure services that could be taken out from the individual countries and carried out centrally was moved offshore. The remaining tasks were those that had to be carried out onshore because they required visual and physical presence in the country.

It was interesting to note that Case 1 derived savings through labour cost arbitrage, whilst Case 2 was through economies of scale. Ultimately, both resulted in cost savings albeit from different angles. Also, the reasons as to why certain teams were left onshore and others moved offshore were totally different. Case 1 viewed risk and lack of savings as a consideration, whereas Case 2 had to have part of the team onshore for its “physically” properties. Refer to Table 2 for a summary of findings.

Implementation: Absorptive Capacity — Identify, Seek, and Match

In Case 1, we noted that the offshore project managers were aware that identifying candidates with the right experience was vital. However, they had difficulty in finding enough candidates given the short time frame. Finding suitably qualified staff is important to successful knowledge transfer as it impacts the absorptive capacity (Szulanski, 1995). Based on Iivari et al (2004) IS BOK definition, we had observed that some knowledge areas inherent in the new recruits were usable as is, whilst others formed a basis for further understanding, and others could not be ported from one organisation to another. For example, technical knowledge of a specific hardware or software is portable from one organisation to another, its knowledge usable immediately. The offshore project manager either found this skill in the incumbent or did not. Application domain knowledge was also specific to a particular application domain and not applicable to other application domains. This was a specialised skill, which the incumbent may port over to the new organisation, usable as is. For organisational knowledge and IS development process knowledge, this was not vital, as the project manager knew that these knowledges formed an important basis for understanding how the new organisation functioned, but was inherent in all software development people. The final area of IS application knowledge (functionality, structure, and behaviour) appears to be organisation application specific and less portable from one organisation to another, and as such is not a pre-
requisite knowledge area. In summary, the offshore project manager identifies, seeks, and matches people with technical knowledge and application domain knowledge areas specific for their team’s needs.

In Case 2, it appeared that the offshore project managers did not have major problems identifying and hiring candidates with the prerequisite technical knowledge. Domain, organizational, application, and process knowledge were not considered vital as they varied from company to company. They were considered simple knowledge, easily documented (made explicit) and somewhat systemic and as such more easily picked up along the way. The offshore teams took the lead in documenting the various domain, organizational, application, and process knowledges, as limited documentation was available. This was followed by a gap analysis, negotiation, and implementation of the new processes with country variations.

In both cases, it would appear that the business application teams had a tougher time getting the right candidate, whereas the infrastructure team had more than enough to choose from. Knowledge transfer from the application teams had a stronger a push factor, where the onshore teams went to the offshore locations and did presentations and handholding, whereas the infrastructure team were had the offshore teams going to the onshore locations and pulling process knowledge from the onshore team.

The motivational disposition of the onshore team somehow did not impact the knowledge transfer process. In Case 1, templates were used so as to ensure coverage of key topics. In Case 2, although the onshore helpdesk teams were unhappy and may have been unhelpful, the offshore staff were able to reconstruct the knowledge from other onshore service managers and alternate sources of information. In both cases, the motivational disposition of the target offshore staff was unquestionable, as they had to get the necessary knowledge to enable them to successfully support the service going forward.
Objectives of offshoring
1. Cost savings through cost arbitrage
2. Overcome shortage of resource
3. Some economies of scale

What to send offshore
All development and maintenance work
Exceptions:
- Critical applications (too risky)
- Teams where cost savings is not material (not cost effective)

Stock of Knowledge and what was transferred

<table>
<thead>
<tr>
<th>Business Applications</th>
<th>Infrastructure Services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical knowledge</strong></td>
<td>Technical knowledge</td>
</tr>
<tr>
<td>• Pre-requisite in new hire but difficult to find.</td>
<td>• Key pre-requisite in new hire.</td>
</tr>
<tr>
<td>• Knowledge transfer carried out.</td>
<td>• No knowledge transfer done.</td>
</tr>
<tr>
<td>Application domain knowledge</td>
<td>Application domain knowledge</td>
</tr>
<tr>
<td>• Pre-requisite in new hire but difficult to find.</td>
<td>• Not a pre-requisite in new hire.</td>
</tr>
<tr>
<td>• Knowledge transfer carried out.</td>
<td>• Pulled by offshore staff and documented</td>
</tr>
<tr>
<td>IS application knowledge</td>
<td>IS application knowledge</td>
</tr>
<tr>
<td>• Typically not found in new hires.</td>
<td>• Not a pre-requisite in new hire.</td>
</tr>
<tr>
<td>• Knowledge transfer carried out.</td>
<td>• Pulled by offshore staff and documented</td>
</tr>
<tr>
<td>Organisational knowledge</td>
<td>Organisational knowledge</td>
</tr>
<tr>
<td>• Not a pre-requisite in new hire.</td>
<td>• Not a pre-requisite in new hire.</td>
</tr>
<tr>
<td>• Learned on the job</td>
<td>• Pulled by offshore staff and documented</td>
</tr>
<tr>
<td>IS development process knowledge</td>
<td>Infrastructure process knowledge</td>
</tr>
<tr>
<td>• Expected pre-requisite in new hire and readily available</td>
<td>• Not a pre-requisite in new hire.</td>
</tr>
<tr>
<td>• Learned on the job</td>
<td>• Pulled by offshore staff and documented</td>
</tr>
<tr>
<td></td>
<td>• Later standardised into one best practice with slight variations</td>
</tr>
</tbody>
</table>

How the knowledge was transferred

| Knowledge transfer pushed from one onshore to the offshore application team. | Knowledge transfer pulled by one centralised team from each onshore team. |
| Transfer done predominantly in the offshore location. | Transfer done predominantly in the onshore location. |
| Rich face-to-face channels and mechanisms used. | Rich face-to-face channels and mechanisms used. |
| Takes approximately 6 to 12 months per team, depending on application complexity | Takes approximately 1 to 2 months per country |

Table 2. Summary of Findings

Ramp-up: Use of Predominantly Rich Channels Vital

In Case 1, we found that the transition process recommended predominantly rich transmission channels, and they were widely used. Presentations, tests, and on-the-job training were predominantly face-to-face. Its richness and bandwidth of the transmission channel, captured in its informality, openness, and density of communications, enabled optimal knowledge transfer conditions (Gupta & Govindarajan, 1991). The presentation material was the codification of the business application knowledge. The presentations included the individual’s know how of the business application, gathered from various project and support documents. It also included systemic and tacit knowledge of the various connectivities to the other business applications (IS application knowledge), as well as knowledge of the people (organisational knowledge) with whom the teams needed to work. Systemic knowledge of the organisations process, coding and design standards, rules, and routines were also included as part of the presentation. It took a few four-hour presentations for each topic, over a period of one to four months, to complete the presentations. Each topic also had country specific peculiarities as well. No one person possessed all the knowledge.
In Case 2, the offshore teams flew into the onshore locations to do knowledge extraction and documentation of the various types of knowledge. Here again, we note the use of rich face-to-face channels of transmission. After the initial extraction of knowledge, the onshore teams also flew into the offshore location to sit next to the offshore teams to ‘show’ how the tasks were carried out.

In both cases, it was common to find knowledge transfer using predominantly rich face-to-face channels of transmission. No costs were spared in this respect, as all the managers were acutely aware that the knowledge that was not transferred would be lost once the onshore staff was retrenched.

**Integration: Global Teams and Standardised Processes**

In Case 1, to ensure that the knowledge transfer was successful, we observed that the onshore staff made the effort to go to the offshore location to observe the offshore staff in their own environment at work. We found that in this instance, it was not just transferring the knowledge over, but it included observing if the transferred knowledge worked well in the new environment. The organisation spared no effort to ensure that knowledge transferred was applied successfully as well. We found substantial effort spent in confirming and reconfirming that the knowledge was indeed transferred over to the offshore teams. There were difficulties encountered with the transfer of tacit knowledge deeply embedded in the more senior staff. The technical and domain specific knowledge areas of junior staff were easier to be recruited offshore. Thus, retrenching the onshore high-cost senior staff was likely to result in IS application knowledge area loss. BankCo responded by changing their strategy of totally reducing onshore staff to a mix-and-match of key onshore staff with the majority of the junior staff in offshore locations. The organisation had to also re-look at the buyer-vendor relationship to see how they could overcome the problem of “us-and-them” problem. What started out as an offshore insourcing programme with the concept of a buyer-vendor relationship resulted in global teams working together as one team, albeit from different locations.

In Case 2, once the 14 countries had completed the handover of the identified tasks to the offshore centralised location, BankCo moved into a standardization and consolidation stage. This entailed the standardization of 14 country processes into one common process with some variations to manage in-country needs. This enabled BankCo to integrate the various processes and derive further economies of scale, resulting in better control over the running of the services.

Comparatively, integration in the business application department was people focused, whereas in the infrastructure services department, it was process focused. One might conclude that business application knowledge is more tacit, complex, and systemic, such that the six to 12 months of knowledge transfer was insufficient. It required further diffusion from the onshore senior staff to complete the process. On the other hand, infrastructure knowledge may appear to be more simple and explicit (in the process documentation). It did not require further extraction, took only two months to pull out, and then was consolidated and standardised.

**Conclusions and Implications**

As organisations continue to take advantage of labour cost differences between onshore and offshore locations, the importance of knowledge transfer from the onshore to the offshore staff is vital. Research in knowledge transfer between organisations in the past was mainly in the area of international joint ventures and less complex inter and intra organisational knowledge transfers. This case study was different in that it provided empirical insights into two large-scale knowledge transfer programmes from one geographic location into another, between business application and infrastructure service teams. We have found that costs and risks are the key drivers in deciding whether or not to offshore a team. We know the types of knowledge IS BOK knowledge that were pre-requisites to the hiring of the new staff, which also impacts their absorptive capacity. We have highlighted the key activities involved in the successful transfer of knowledge from the onshore to the offshore teams and also how the organisation went about integrating this major change to make it successful.

The practical implications of this case study show how an organisation is able to cut costs through successfully sending work to cheaper offshore locations. It provided useful insights on the considerations of why teams or tasks may be sent offshore, the pre-requisites to optimize knowledge absorption, the various techniques used to transfer the knowledge, and finally the strategy involved in stabilising this major organisational change. It gives the practitioner a better understanding of how the business applications and infrastructure services of a technology department may be sent offshore.
Theoretically, we have extended the understanding of the stock of knowledge in Gupta and Govindarajan’s (2000) knowledge flow using Iivari et al’s (2004) definition of the IS BOK into business application specific and infrastructure services technology knowledge. The motivational disposition of the onshore source unit did not appear to have impacted the knowledge flow, as there were alternatives to circumvent it. The motivational disposition of the offshore target unit was unquestionable. The transmission channels were extremely rich, as the mechanisms used (Argote & Ingram, 2000) were predominantly face-to-face. Absorptive capacity was a problem in the business application area, as it was difficult to hire incumbents with the knowledge pre-requisites. In the infrastructure services area, absorptive capacity did not appear to be an issue, as the knowledge transferred was process focused and could be reconstructed from existing alternative sources.

The limitation of this case study is that it covers knowledge transfer in technology insourcing within one organisation. Different organisations in different industries may behave differently. Also, if this was outsourced to a vendor, different factors may come into play as well. Future researchers may look into other industries, departments, or outsourcing to vendors to get further insights.

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