Operational and Tactical Challenges Faced by Indian Software Firms

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Abstract

The Indian software services industry has been spectacularly successful, growing at over 50% annually for several years. However, the nature of markets and technology is changing. Other changes include rising salaries in India, fast growing higher end markets, talent shortage worldwide, and need for faster implementation of projects. However, for Indian companies a key change could be the growth of market segments that are not so price sensitive, and price based competition from China, Mexico, Philippines and other countries. In this paper, we have described important unique challenges faced by Indian service companies. These include challenges arising from sustained high growth, operating as a low cost service provider, challenge of overseas development, managing multiple agencies in a single project, cultural challenges of operating in overseas markets, and entry barriers to higher end value added work.

Strategic responses include building brands, re-positioning, changing client and market perceptions, and deciding whether to move up the value chain. However, Indian firms also need to make operational and tactical responses. We describe and assess current responses made by Indian firms. In general they are inadequate, largely because of recent success and high growth. Thus Indian firms feel there is no need to worry. This might include a different sales and marketing approach, and training sales people for negotiating and getting better prices and rates. It might also include re-training software professionals to manage clients and communications better and to handle client requests for changes in specifications. It is important for the firm to identify talent and put it in the right projects. It requires tracking of individual employees, and their current skills and experience. It also means keeping track of upcoming projects and their requirements so that the right people can be put on the right job. Few Indian companies use systematic processes while executing projects. Putting the right processes in place helps to cut down re-work, improve quality and reduce project execution time. Finally, firms might also have to change some of the beliefs that employees hold about themselves, markets, clients, and the company they work for. These responses would help firms to improve operational efficiency. However, in the long run, it will also help to improve brand image and sustain marketing efforts to reposition the company higher in the value chain.

Operational and Tactical Challenges faced by Indian Software Firms

Indian companies in the international software service market have done very well in the recent past. However, they face some unique challenges due to the low cost model of doing business where development work is done in India while clients are located overseas. Spectacular success, high growth rates and tremendous market opportunities place the industry in an enviable position. However, this very success makes firms ignore price based competition from other countries and subtle changes in several market segments that are no longer so price sensitive.

The international software services market was expected to grow significantly in the near future. Although analysts disagreed on the size of the market, all of them predicted significant growth. Estimates for the worldwide market varied from $220 billion to $630 billion, up from $177 billion in 1998. At the same time, the supply of qualified IT professionals had decreased in most developed countries, including the United States, Western Europe and Japan. According to US Department of Education estimates, the number of Bachelor degrees in computer science awarded annually fell by 41.7% from about 42,000 to 24,500. Germany had introduced a liberal system for granting visas for software professionals to work in the country. Japan and Singapore have expressed serious interest in doing business with Indian software firms. This shortage of professionals along with recent advances in telecommunications led to increasing acceptance and use of offshore IT service providers and growing globalization of the IT services market. In short, there were tremendous market opportunities for Indian software. Recently however, China, Philippines and Mexico among other countries were entering the market and providing price based competition to Indian firms.

Six OECD countries (USA, Japan, UK, Germany, France and Italy), dominated the international software market with 73% of market share in 1997. However, in a recent report, McKinsey & Co. said that India scored high on vendor and people sophistication and was best positioned to offer competitive services. For Indian companies in the international market, around 60% of turnover came from the United States, 20% from Europe, with new opportunities opening up in Japan, South Korea and South Africa. Several alliances and joint ventures with US and European companies were expected in the near future.

Indian Software Services Industry

The Indian Information technology industry had grown at a compounded annual rate of 52.6% in the five years ending 1997. From US$ 150 million ten years ago, it was now US$ 3.9 billion in 1998-99. It created several millionaires in India within a short time and contributed significantly to the competitiveness of global corporations. In 1998-99, more than 203 out of the Fortune 1000, outsourced their software requirements to India. US customers bought almost 61 per cent of the software that Indian companies exported to 91 countries around the world. Microsoft Chairman Bill Gates picked the Indian city of Hyderabad to house his company's first-ever development centre outside the U.S.A, and recently announced a tie up with Bangalore based Infosys.

Despite these high growth rates, India's share in the world software market continued to be low. However, there were some advantages Indian firms had. The country had the world's second largest pool of scientific manpower, and software firms had access to a highly skilled, English speaking workforce. The cost of this high quality manpower was relatively low, and ranged from 15% to 20% of international norms. However, this was rising fast, and it was not clear how long the cost advantage would continue, especially for value added activities. The industry employed over 200,000 people in 2000. Software firms were mainly located in Mumbai, Bangalore, Delhi, Chennai and Hyderabad.

The industry was highly fragmented, and Nasscom, the National Association of Software and Service Companies had 430 members in 1997, with an estimated industry wide turnover of Rs.63.1 billion (approximately US $1.75 billion). This did not include in house software development by domestic companies, which was estimated at another Rs.17 billion. Of the total turnover, domestic sales was Rs.24.1 billion, and exports Rs.39 billion. Domestic sales largely came from products and services (46.8%) and turnkey projects (40.9%), whereas exports largely came from professional services (46.7%) and consultancy cum training (27.4%). Industry analysts estimated that by the year 2001, domestic turnover would be Rs.200 billion, and exports Rs.365 billion, of which Rs.150 billion would come from on site work, Rs.150 billion from offshore service, and Rs.65 billion from offshore software packages. In 1997, Indian companies launched 127 new products in the domestic market, and 156 new products overseas. This was negligible by international standards. There was significant growth in CAD/CAM software, ERP packages, RDBMS packages, financial accounting packages and networking products.

The product development focus among Indian companies was a little limited. Most development activities focused on applications software, consultancy and communications software. Applications ranged from straightforward accounting systems to specialized niche market products or customized services. In export markets, Indian firms depended on professional services and consultancy. Marketing was mainly done through direct selling to end users. Some companies had set up offices overseas for marketing purposes. They exploited opportunities created by many international client firms who outsourced software and information technology services. These services mainly concentrated on banking, financial services, insurance and manufacturing. Indian firms had considerable hardware and software skills and were familiar with all major platforms including IBM Mainframe, AS/400, DEC, HP, Unisys, DG, Tandem, Unix, Novell LAN, and Sun.

In 1997, more than 52 Indian firms exported over Rs.100 million worth of software each, including 17 exporting more than Rs.500 million, in contrast to 1991 when there were only 5 such companies. The top 20 firms accounted for almost 60% of all exports. Exports were expected to grow to Rs.64 billion the following year. Several technology and software parks had been set up with international standards in facilities and communications. The nature of exports had changed in the last couple of years. There was a significant shift towards 'off shore' project development, including in some cases, product development, contributing about 41% of total exports. This meant that a small team of less than 5 software professionals visited the overseas client from India, and spent a few weeks understanding client needs, and translating business requirements into software specifications. The team then went back to India, and set up a team devoted to the project. Usually one person was left behind at the client site to co-ordinate with the overseas development team. Thus the bulk of the development took place in India. Some analysts expected the proportion of on site work to further decrease with improvements in data communication links between India and overseas firms. However, others felt that with fast changing technology and shorter product life cycles, the pressure to execute projects quickly in close co-operation with customers would decrease the proportion of off shore work.

Customer Relationships: Some Operational issues

There were several types of services provided to client firms. At one extreme, there were clients who asked for software people to work at their site on a specific project. Firms would supply these people, who worked completely under the supervision of the client. Clients paid the software firm, which in turn paid the people at the client site. This type of service was known variously as 'skill based consultancy', 'manpower supply services', 'professional services' or simply 'body shopping', and was a major source of revenue for several Indian firms and some US based firms as well. Usually, professionals were provided from India, and firms had streamlined procedures to obtain US visas and send an entire team of people at a short notice of about two weeks. Some Indian companies had a roster of software professionals on call in the US, including some US citizens. Whenever there was an enquiry from a client, they would call up people from the roster and ask them to go to the client site. There were instances of companies based in the US who had not personally met some of the people on their roster, but had simply interviewed them over the telephone.

On the other hand, there were clients who were looking for something more than low cost, good quality programming skills. One senior marketing executive working in Boston for an Indian software company recalled that after a lot of effort he managed to get an executive from the IT department of the company managing the Dow Jones index on the telephone. The potential customer wanted to know why he should add an unknown Indian to his existing list of software vendors. The marketing executive felt completely bewildered when he was told that low cost and high quality did not interest them. After a lot of thinking he came to the conclusion that they wanted hassle free service, and quick project implementation at short notice. Unfortunately, his firm at that time was not in a position to do so. In such cases, clients specified the work to be done, and left the details to the software vendor, who often worked off site (i.e., outside the client location). They were paid on a *time and material* basis using estimates of the number of man hours or amount of programming required, or on a fixed price, fixed time basis. A rate per hour was agreed upon, including in many cases, different rates for work done on site, off site but in the US, or off shore. Rates also differed across short term or long term projects. Fixed price projects were perceived as higher on the value chain. There were a variety of other services including package implementation, custom software development, Internet Services, business process outsourcing (BPO), IT and management consulting, network services and system integration. Indian companies tend to concentrate on relatively low end time and material work.

Clients sometimes entered into long term relationships with IT service providers. In some cases there were explicit contracts, but more often the relationship was informal. Broad terms of payment and work were agreed upon. Actual payments were tied to specific projects. Some clients wanted to work with the IT firm, specify requirements and broadly oversee and supervise the project. Others wanted to work in a more 'hands off' way, allowing an IT consulting firm to manage the entire project, including decisions on platforms, and hardware and software purchases. Some clients wanted the entire work to be done at their site, while others were comfortable with allowing a major part of the work to be done elsewhere. At the other extreme, firms like EDS managed the entire IT function for a client, and reported only to senior management. They were paid in terms of percentage of client turnover, and were free to manage services in their own way. Indian firms tend to concentrate on the relationship model working closely with the client.

As the level of outsourcing increased, allowing IT service providers more freedom in operations, in setting specifications and requirements, in advising clients on IT needs, and finally, managing all the IT needs, the fees that IT firms could charge increased considerably. Moving up this value chain essentially meant changing from doing specific programming tasks under supervision to providing IT management, consulting and maintenance services. A broader set of skills and capabilities would be required that went beyond technical hardware and software skills, to those that required understanding clients' business needs. taking a long term view of them, and making judgements about how best to meet them For instance, several high end IT consultants sold their services based on the 'total cost of ownership' model. They argued, often successfully, that IT related total costs over the long term could come down with expert advice and services. This allowed them to charge a premium in the market.

There were at least two categories of customers. One operated within a budget constraint, and required services that included maintenance work and updating of legacy systems. They preferred to keep detailed control over IT activities, and worked with vendors who followed detailed specifications. These customers provided an entry to Indian software companies. The other type of customer was driven by value from IT investments, and outsourced its software requirement. The following table summarizes the different types of customer relations. Software companies were able to charge more as they moved from staff supplementation to vendor managed projects, vendor driven services and IT consulting. Hourly rates varied from $30 an hour for firms doing offshore development work in India to $300 for the high end IT consulting firms. Typically, for Indian firms, some part of the work was done on site, and the rest off shore. Vendor managed project firms in turn commanded a much higher price than those in staff supplementation. The following table summarizes the broad types of services.

Type of service	Some companies
Body shopping, staff supplementation	Several Indian Cos.,Keane
Vendor managed projects, driven by customer set requirements	WIPRO, Infosys, TCS
Vendor and customer jointly drive requirements, customer approves	CTP; some projects by Indian companies
IT strategy consulting	Andersen, Price Waterhouse Coopers, Deloitte and Touche, KPMG, Ernst &Young

The services market would continue to change rapidly, and it was a challenge to keep up with it. Technology itself changed very fast. Thus legacy systems work that required older systems to be updated would continue. However, it was difficult to predict what technology or platform would survive. For instance, the client-server system, mainframes, object oriented programming, Internet were all opportunities. Some companies had invested in mainframes, but client server architecture became more accepted. Similarly, the platform choice was not clear: whether it should be Microsoft, IBM, or Sun. Indian companies had chosen a more conservative approach, and tried to hedge its bets when it came to committing itself to technology. Thus, new technologies or products often provided fresh opportunities, but it was not clear how to take advantage of them.

Thus there are different market segments with different requirements. But these segments are also changing. For instance, many clients today want one service provider to carry out full cycle projects, right from initial high end consulting to later detailed programming and installation. The Internet is creating new opportunities. Clients are no longer looking only for low cost bidders. Delivery times, performance, quality and so on are becoming more and more important. Different skills are required in different market segments. Indian companies have an opportunity to reposition themselves in the value chain.

Challenges faced by Indian Companies

In a competitive market all firms face challenges, but there were some that were unique to Indian firms. These can be classified into the following categories:

- Challenge arising from sustained high growth
- Challenge of operating as a low cost service provider
- Challenge of overseas development
- Challenge of managing multiple agencies in a single project
- Cultural challenges of operating in overseas markets
- Entry barriers to higher end value added work.

There were other challenges that were common to all firms. This included the fast pace of change in markets, customer demands, and technology. The Internet was a major driver of change and customers were changing the way they did business, wanted projects completed much faster and to exploit the Internet, but were not always clear on how to do that. Projects were distributed across several customer locations.

Clients generally could not clearly specify their software requirements at the start of a project. Changes in requirements and specifications during a project were common. The buyer or *customer* of the service, usually the IT department of a client firm, was different from the *user* who could be someone from a different department. Customer expectations were many and included quality of executed project, skills of service provider, on time completion, cost targets, proper communication of service provider with client firm, and support in terms of installation, and maintenance. Highly skilled software professionals had a tendency to focus on technical issues and neglect commercial issues and customer management. This was particularly true of Indian professionals who operated in an alien culture overseas.

Technology also changed fast in this industry. Clients always wanted the latest software. For instance, Visual Basic 4 was released in 1995, version 5 was released in 1997, and version 6 was released even before the previous version was fully adopted. This meant that firms had to continuously update their knowledge. At the same time, there were bugs in the latest versions. A senior executive recalled that a software product from a very reputed US software firm had a bug that they themselves could not fix. The software also did not work as per the manual. However, clients insisted on getting the latest versions. He said that sometimes they had to caution clients about blindly going in for the latest versions.

Customers were also becoming more demanding and industry norms were changing fast. Thus, clients always wanted projects to be done according to strict deadlines. In some cases, a project that took about 18 months to do a few years ago, had to be completed today in 6 months. There were several reasons for this added time pressure. First and foremost, clients themselves faced shorter product life cycles and tremendous pressure to change business practices. Second, competition in the IT service industry had increased tremendously. Companies were therefore faced with fresh challenges in project management while managing 55% revenue growth rates. Although it was easy in principle to say that putting more people on a project would help to crash deadlines, in practice it was not so easy. There were several factors that were outside the service provider's control like vague initial specifications from the client, frequent changes of specifications, waiting for client sign offs on intermediate modules and so on.

However, fast pace of change in markets, customer demands, and technology were common to all companies in the IT services market. The unique challenges faced by Indian companies arose from overseas development and the low cost position they took. We now describe these challenges.

Challenge arising from sustained high growth

As mentioned earlier, the software services industry in India went through phenomenal and sustained annual growth rates of over 50% for over 5 years. No other industry in India has grown at such a rate for such a long time. Even overseas, it is rare to find a software services firm with this kind of track record. Although this growth is good for the industry, it posed some unique challenges. First, the number of employees doubles every year. This was not a problem in the early 1990s for a firm with around 200 employees. It could go out and recruit people, and assimilate them into the organization. The firm could be more systematic about induction and training. However, a few years down the road, the firm might have 5000 employees. Within two years it will have more than 10,000 people. This usually puts some strain on the organization. It is difficult to induct and train so many people in a few months. If new employees do not imbibe some of the key values like quality, on time delivery and so on, it could adversely affect the company. Within the company also, there is some divide between the older and newer employees. The newer and younger employees come in with much higher expectations than their counterparts seven years ago. Although salaries are much higher today, it is possible that today's new recruits are more dissatisfied. Firms are no doubt aware of this, but are not clear about what to do.

Inducting and training new recruits is no doubt a challenge. However, a more subtle challenge arises when a company grows so fast. Everyone is too busy with project deadlines, getting new business and so on. They do not have time to carefully monitor changes in markets and technology, and plan and implement some of the changes that might be needed. For instance, the market might no longer be price sensitive, but might be much more demanding with respect to performance, quality and project deadlines. This in turn might mean that right from the initial sales pitch, bid, to project implementation, changes might be needed. No doubt, several people within the firm might be aware of these issues, but as an organization, the firm is often unable to respond or change. Phenomenal growth is a powerful signal to everyone that the company has hit upon the right strategy. People start identifying with that strategy. No one wants to bell the cat or sound like a Cassandra. Therefore, if change is required it becomes that much more difficult to implement it. Will some firms grow so fast that they become dinosaurs, unable to adapt to a changing environment? Time alone will tell.

Another challenge is that as firms grow, more and more recruits are needed. In the early 1990s, the industry recruited less than 8,000 new people each year. Today it requires over 80,000 new people to sustain the same growth rate. Firms need to take stock of the situation and decide how long this growth model is sustainable. Smaller firms and those concentrating on low value work might be able to survive for some time. Larger firms with a policy of recruiting only the best people will have to make some changes, and perhaps think of moving into value added work or be satisfied with lower growth rates. The top three services companies had a combined turnover of around $800 million and employed around 26,000 people at the end of year 1999-2000. To maintain current annual growth rates of over 50%, these three firms alone companies will employ over 83,000 people by the year 2002-2003 if they stick to their current strategy. With massive recruitment, firms can no longer be very choosy. The capability of new recruits varies a lot. Most of them are however assigned very similar jobs.

Market opportunities also led to another type of challenge. Projects had to be manned at short notice with teams of up to 70 people sometimes. Most members of a team had no prior work experience. This meant that new team members had to be trained fast. At the same time, project managers were often in short supply. The average age of people heading projects for leading North American was less than 27 years. Several clients were initially surprised to see such young project managers. Thus recruiting, training and staffing went on at a hectic pace. At the same time, Indian firms wanted to keep about 12% of its engineers on the 'bench', i.e., people who were in between projects. This provided a cushion for meeting sudden requirements from new clients or projects. It also provided time for people to read and update themselves on new software technologies. However, it was difficult to maintain the balance between those working on projects and those on the bench. Young people typically felt impatient and lost motivation when they were not working on a project.

It is important to note that growth in a services firm is different growth in products or even in manufacturing. In the software services sector, growth is dependent on recruiting more and more people. Thus sustained high growth leads to organizational stress, and difficulty in induction and training, Soon Indian firms are going to find it difficult to recruit the required number of people. Growth also keeps everyone busy and the organization has no time to change. It is also difficult to put the right person on the right job given the pressure to man projects and keep to deadlines. These issues are summarized in Table 1.

Challenge of operating as a low cost service provider

Traditionally, Indian firms operated internationally as low cost, good quality service providers. There is a close parallel between Japanese and Korean automobile manufacturers who entered the low end US car market, competing on price. For Indian software firms, the cost advantage mainly came from doing most of the development work in India, where high quality software professionals were available at low cost. In the early 1990s, the ratio of manpower costs in India to those in the US was as low as 1:20, although it had gone up recently to about 1:6 for a few of the top firms. The gap was expected to come down further in the near future. The biggest challenge however came from the large gap between demand and supply of software professionals. Since IT was a truly global industry, Indian professionals were very mobile, and professionals in the IT industry were in demand all over the world. As a senior executive from the industry put it "if you are competent and have two or three years experience, you can get a job anywhere in the world. There are hardly any cultural or national boundaries for purely technical jobs in the software industry." Thus even top Indian firms initially faced very high turnover with employees leaving for better paying jobs overseas. They also faced problems getting the required number of skilled people to manage high growth rates. Companies were forced to pay higher salaries to stem the high rate of turnover. Infosys was the first Indian company to introduce generous stock options to employees. Other Indian companies like WIPRO followed suit. Today top Indian companies enjoy a low turnover of 15% to 20% compared to 30% to 35% for international firms. However, this added to costs and they were worried about continuing as a low cost service provider to US client firms. Recently a small but significant trend has emerged where people cash in on their stock options and leave. It remains to be seen how long top employees will stay on in the future.

Most Indian firms continue to face high employee turnover. In fact the low cost, low value business model assumes that this will happen. Employees are paid low salaries to back up the low cost strategy. The employee is looking for greener pastures overseas from day one, and eventually leaves. For the firm it is not such a big loss since the longer a person stays, the more he or she has to be paid. They simply go out and recruit some more people. Even if a firm wants to break out of this vicious circle it is not easy to do so. Such firms tend to lose their best people, and are averse to paying higher salaries and bidding for higher value projects. They also usually do not have the right brand image among clients to successfully make a transition out of the low cost segment. That in itself is not a problem because these companies are able to show profits and provide employment. But whether this strategy will work well in the future when it will not be so easy to recruit more people remains to be seen. The nature of markets is changing requiring higher technical skills and faster project implementation. There is likely to be price based competition from other countries as well. Low cost low value service providers would probably end up as subcontractors for larger service firms.

Top Indian firms do not face the same problem. Generous stock options, sustained success and high morale has kept employee turnover levels low. But these firms do carry a legacy from the past when they started out as low cost service providers. Thus sales people who got new projects based on low cost bids to middle level managers in client companies sometimes find it difficult to bid for high value projects. They face several uncertainties. It is not clear what the right price is – should it be on par with overseas high value service providers? Should it be lower? If so, how much lower? At what price does a new customer perceive value, and at what price does he feel that this a low cost service provider who is trying to move up the value chain, but might not be able to deliver? Given the time pressure that everyone operates in, sales people sometimes do not know whether there is in house competence to deliver on a high value project. They perhaps also feel that in the customer's eyes, they are not yet ready for high value projects. The whole sales approach might also have to change. Thus, the initial sales pitch might have to be made to the Chief Information Officer (CIO) or sometimes, even the CEO. More senior people from marketing and from the technical side would need to get involved up front. These people might not always be available. Given the pressure under which they operate, the tremendous growth opportunities, and the spectacular success of the low cost model, sales people have very little incentive to change. Recently however, some top firms have set explicit targets for increasing revenue per person. This provides the right incentive to sales, but also puts more pressure on them. To really succeed, these targets would need to be backed up by organizational support for a changed marketing and sales approach.

It is not only sales that needs to change. Low cost operations also create a certain self image amongst employees. For instance, some of the best people from these firms are routinely recruited by the Big 5. Within a few months these people do high end, value added work. Their former colleagues firms often wonder why they could not do the same type of work for the Indian firm. One of the reasons is that the Big 5 have large data bases and a rich library of projects done earlier. They have also evolved systematic procedures for implementing high end consulting projects. However, the tremendous market growth, talent shortage worldwide, and access to high quality people in India provides a window of opportunity. Indian companies on the other hand are hesitant to enter the fray. At a recent top management workshop for a leading company, it was pointed out that the quality of presentations was as good, if not better than that made by prestigious international companies. However, when it came to charting out the future of the company, executives felt that they were not capable of entering the high end value added segments of the services market. The final conclusion is that IT consulting is not a serious option for Indian firms. People who want to do that type of work will have to leave the company. This self image is pretty strong and makes any change that much more difficult.

High growth combined with low cost operations creates yet another challenge. Whenever there is a new project, people are needed. Given the perpetual shortage, anyone who is available is sent to the project. However, of late these companies have attracted the best talent in the country. Several people who earlier went abroad or got into prestigious business schools for an MBA are now joining Indian software firms. When they are assigned to routine maintenance and installation projects, they lose motivation. A key question is whether or not to reserve top software professionals with high skills for high end projects. The issues facing a low cost service provider are summarized in Table 2.

Challenge of overseas development

The low cost strategy needs off shore development in India to succeed. These services typically involved long duration projects often spread over several months. There is a need for careful co-ordination between people stationed at client sites overseas and other team members in India. Relocating the entire team to the US would be too expensive and seriously cut into profitability. Thus multi site project management is a central concern.

A key issue for a project leader was to decide the quantum of work done overseas at the client site. More on site work meant higher costs, but sometimes increased the probability that the project would proceed smoothly. Internet based projects usually put more time pressure on software firms. It is not clear whether the same level of off shore development is possible in these projects. Several leading firms are now concerned about the higher level of on shore or overseas development compared to the past. This is because overseas development significantly adds to costs. Some companies are now experimenting with setting up overseas development centres in places like Canada and Mexico to service the US market. This is less expensive than a US based development centre and provides faster response to client needs. *Configuration management* or keeping track of different versions was a major issue in software projects especially when the teams were distributed across cities.

More recently, expenses on overseas travel and work have increased faster than sales. This is partly a response to customer demands for faster implementation, and partly a result of very high growth. Clients nowadays, are more and more vague about initial specifications, and want to make changes as the project is implemented. They also want projects to be completed fast. In this situation, it is sometimes less risky to send people overseas and get the job done on time at the client site. Some clients in fact insist on this. This is particularly true of web based projects, which are growing fast. Some Indian firms are now setting up overseas development centres in Canada and Mexico to provide faster response to US based clients. Thus the low cost model overseas model with off shore development in India is increasingly under threat.

Challenge of managing multiple agencies in a single project

Sometimes clients had IT management consultants who were involved up front in specifying requirements. This meant that Indian companies had to satisfy two parties: the IT consultant, and the eventual client. These consultants were often paid more than the eventual service provider, for what was seen by Indian companies as less demanding work involving far less effort and time. Apart from this, Indian firms had to interface with the IT Department in the client firm, and the eventual users. Any one of these three groups could interface with the software provider and specify its own requirements. Sometimes there were differing perceptions between them, adding to the complexity of operations. If they got too close to the users during the project, the customers felt they were being bypassed. If they did not interact with the eventual users, then there were late changes in specifications.

Nearly all service providers have to satisfy both users and customers. However, for high end service providers who work closely with the CIO, it is easy to sort out some of these issues. For low cost service providers this is not so easy. Further, an additional complexity sometimes arises when an external IT consultant oversees the implementation. The Indian firm has to coordinate between the IT consultant, the customers and the users. This becomes all the more difficult since Indian firms keep only one or two persons at the client site during the project to minimize costs.

Cultural challenges of operating in overseas markets

There were usually some cultural issues that surfaced in most projects. Project managers who had spent most of their life in India were brought into close contact with customers and users from the US and other Western countries. Sometimes there were communication gaps leading to problems that surfaced much later in the project. However, Indian firms had recently started addressing this issue. Software professionals were also typically happy to work with given specifications without worrying too much about whether they were the right ones to begin with, or to communicate clearly with the clients about what was possible and what was not. Peer pressure and professional interest was focused on expertise in technology rather than on business solutions.

A Cambridge, Massachusetts based customer contrasted his experience working with Indian companies and Compaq-Digital in the following way. "When Compaq was bidding for a project with us, an entire team visited us at 8 o'clock in the morning and spent the day interacting with us to understand our software needs for the project. When they left, we had spent the whole day in close interactions, and felt that they understood what we needed. Within the next two days, we had a detailed proposal. On the other hand. when we talk to Indian firms, we do not have the same level of communication. They hardly ask questions, but simply take notes. All communication is usually from the project leader and the rest of team hardly communicates. After a long meeting we are not sure if they understood our needs. Later they would submit a proposal, which showed that they had indeed understood everything we said. But until we see it in writing we are not sure. Communication is 'over the wall' where we say something, they go away and come back with a response, then we give our reply, wait for theirs, and so on. There is no real time, on line face to face communication."

In another telling instance, an Indian CEO hired a leading business school to do some training for his employees. One of his concerns was that employees were a little overawed when facing overseas customers, especially from reputed companies. He said, 'my biggest challenge is to make some of my people look the customers in the eye'. At a general level, with rapid increase of communications, exposure to mass media and overseas travel this issue was getting sorted out. However. it is still worthwhile for an individual company to address this problem.

An American employee of an Indian company working in marketing noticed that software professionals silently accepted several demands made by the client. Later when delivering results in a compressed time frame became impossible, they went to the other extreme and became very aggressive with the client. He was unable to understand this switch from silent acceptance to aggressive rebuttal. A lot of this has to do with Indian culture where saying no to a client was unthinkable even if it meant going beyond what was feasible or initially agreed upon. There is also some feeling that some of the demands would be forgotten or not insisted upon. It is fairly common in many Indian organizations that some of the things people are asked to do are not insisted upon later especially if management thinks that it is unlikely to get done.

Communication was a key aspect of doing business in the services market. From the initial sales pitch, negotiating the terms of a contract to implementing a project over several months, clients looked for clear communication from service providers. If conflicts arise during a project, especially between customer and user requirements, it is up to the service provider to call a meeting between everyone concerned and resolve the issue. However, communication is not always a key strength for a low cost service provider operating in an alien culture.

No doubt these issues are rapidly getting sorted out with more contact between Indian service providers and overseas clients. However, how well it will be resolved remains to be seen. A student might communicate well with a tutor and a professor. But the student-tutor relationship is different from a student-professor relationship. A tutor, especially if he or she is a teaching assistant to a professor, is rarely given the same status as a professor. A low cost service provider can sort out the communication problem eventually, but will find it difficult to move up the value chain. That requires a different type of communication.

Entry barriers to higher end value added work

Entry barriers are both *external* and *internal* to the firm. External barriers are usually well understood. These include client and market perceptions of the firm that has traditionally occupied the low end of the market. It also includes the stiff competition provided by leading international companies. There is also the fact that capabilities required for high end work are different. These include consulting skills, domain knowledge of the clients business, ability to take responsibility for technology choices, clear communication with client and so on. Indian companies have not been acquired some of these capabilities in the past. A few firms however, felt they had the capability to do so, but selling this to Western clients was still a challenge. Clients often had certain images and perceptions about Indian firms, and Indian companies were wondering how to break through these cultural barriers. Some people felt that several Indian firms were willing to continue with the low cost, low value added type of business and added to the general perception that Indian firms were merely a source of high quality programming skills.

Internal barriers are however more subtle. As mentioned earlier, there is a strong self image among senior executives about what kind of a company they are. The current situation is akin to shadow boxing between clients and service providers. Thus, clients who are impressed with an Indian service company would like to take advantage of the low cost and get more value added work done. However, the Indian company would need to send more business savvy consultants to the client. Often they do not have such people in adequate numbers. They are forced to decline such offers. They hope that they will be able to execute such projects later. The crucial question is whether they have the potential to move up, and if so, how they can build up these capabilities. Given the internal barrier created largely by their own self image, they are reluctant to make the effort to change.

Issues arising from overseas development, managing multiple agencies, cultural challenges, and entry barriers to value added markets are summarized in Table 3.

Summary and Conclusions

The low cost model driven by off shore development in India has been spectacularly successful. However, the nature of markets and technology is changing. Other changes include rising salaries in India, fast growing higher end markets, talent shortage worldwide, and need for faster implementation of projects. However, for Indian companies a key change could be the growth of market segments that are not so price sensitive, and price based competition from China, Mexico, Philippines and other countries. In this paper, we have described important challenges faced by Indian service companies. These include challenges arising from sustained high growth, operating as a low cost service provider, challenge of overseas development, managing multiple agencies in a single project, cultural challenges of operating in overseas markets, and entry barriers to higher end value added work.

There are no clear cut answers to these challenges. Taking time off to re-engineer the firm in a high growth era is difficult. However some change is needed. It is not only in terms of changing the market perceptions, re-positioning, and deciding whether to move up the value chain. Such changes are strategic in nature. However, Indian firms also need to pay attention to details. Perhaps they need to come up with operational and tactical responses to the challenges described in this paper and summarized in Tables 1,2 and 3. This might include a different sales and marketing approach, and training sales people for negotiating and getting better prices and rates. It might also include re-training software professionals to manage clients and communications better and to handle client requests for changes in specifications. Overseas, top service companies spend a lot of time and money training technical people in communications. Otherwise, non technical people at client companies sometimes find it difficult to communicate with them. Clients usually prefer regular updates on projects. This does not mean submitting written progress reports. It also includes face to face communications. While managing people, it is important for the firm to identify talent and put it in the right projects. It requires tracking of individual employees, and their current skills and experience. It also means keeping track of upcoming projects and their requirements so that the right people can be put on the right job. Project execution is sometimes a matter of concern. Few Indian companies use systematic processes. Research shows that putting the right processes in place helps to cut down re-work, improve quality and reduce project execution time. Finally, firms might also have to change some of the beliefs that employees hold about themselves, markets, clients, and the company they work for. These responses would help firms to improve operational efficiency. However, in the long run, it will also help to improve brand image and sustain marketing efforts to reposition the company higher in the value chain.

Table 1: Issues arising from High growth

Issue	Problem	Current response	Adequacy of response
Industry needs tens of thousands of new employees every year	Shortage of quality people	Pay more to attract people	OK so far. Does not match with low cost strategy in the long run
Firms doubling employees every two years or less	Organization under stress. Recruitment, induction, training difficult	Put more resources into recruitment and training	Ok so far, but new approach might be needed in future
Firms accepting lots of new low value work	Younger brighter employees dissatisfied	A few top firms now refuse low value work	Insufficient
People constantly overstretched in projects	Everyone too busy to notice market changes or implement organizational change	Problems are discussed	Inadequate
Many new projects taken up	Need to man projects at short notice	Keep people on the bench, recruit aggressively	All right so far. Younger employees unhappy on bench
Needs lots of new projects managers	They are not available	Send younger people with 2-3 years experience as PMs	Ok in low value projects. Not OK for high value projects
Putting right person on the right job	Shortage of people	Put anyone available on a project	Employee dissatisfaction in low value projects

Table 2: Issues arising from Low Cost

Issue	Problem	Current response	Adequacy of response
Low salaries by international standards	Could lead to high employee turnover	Top Indian companies: give stock options	OK so far. But top employees might encash stocks and leave.
		Other companies: plan for high turnover	These companies get stuck in low cost operations
Sales approach to middle managers in client companies	Does not attract value added work	Charge more for similar work from new clients	Limited
Sales approach to CIOs and CEOs	Needs organizational change. Technical people and consultants need to support initial sales bid	Limited	Limited
Self image as low cost provider	Shy away from value added markets	Limited	Limited
Market image as low cost provider	Limited enquiries for value added work	Limited	Limited

Table 3: Other Issues			
Issue	**Problem**	**Response**	**Adequacy of response**
Overseas development	Stricter deadlines, vague and changing specifications	More work done at overseas client site	Adequate, but low cost model under threat
Managing multiple agencies	How to resolve conflicting requirements, take ownership or leadership of the development process	Limited	Limited
Cultural challenges	Communication skills	Limited	Limited
	Managing clients, requests for change	Inadequate	Inadequate
Entry barriers to value added segments:			
-external barriers	Market perception, brand image, competition, lack of track record	Increasing rates for same type of work.	Inadequate for value added markets
- internal barriers	Current level of capabilities, self image, reluctance to change in spite of good potential	Inadequate	Inadequate