

**DEVELOPMENTAL PATTERNS OF OFFSHORE IT SERVICE COMPANIES:  
APPLICATION OF INFORMATION TECHNOLOGY VALUE CHAIN**

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**ABSTRACT**

During the past decade, globalization of software sourcing has been one of the major issues in Information Technology field. A majority of the published work focused on the companies that outsource their IT functions. Studies pertaining to the outsourcing vendors themselves are limited. The objectives of this paper are two fold: first using past literature we propose an IT Value Chain (ITVC) to capture the scope of value addition in IT services, and second, we explain the developmental patterns of overseas IT vendors using the proposed ITVC. This paper also applies ITVC in the context of Indian IT vendors and identifies factors that contributed to their global successes.

**Keywords:** Offshore IT Outsourcing, IT Value Chain, Global Outsourcing

**INTRODUCTION**

Overseas sourcing of Information Technology (IT) work has become one of the major issues faced by companies. Various benefits of overseas sourcing are highlighted [17]. In the early nineties companies adopted offshore outsourcing due to compelling reasons such to reduce cost and to avail skilled IT workforce. Since then overseas sourcing of IT work has matured and had spawned many companies that specialize in such work. In the year 2003, the United States alone has spent \$ 10 billion in offshore outsourcing and this figure is expected to grow to \$ 31 billion by 2008 [15]. Majority of the scholarly work in IT outsourcing focuses on the companies that outsource and the IS literature is devoid of any major work focusing on the vendor companies. Over a period of time, overseas vendors of IT services have grown in stature and expanded their scope of activities. This paper analyzes these companies' and maps their development patterns using concepts from Systems Development Life Cycle and Porter's Value Chain analysis. Factors that contributed to the progression of outsourcing companies in the IT value chain are analyzed and presented.

**Outsourcing of Information Technology Services:** Like manufacturing sector, sourcing of IT products and services from outside vendors has become popular. There are usually two parties involved in such transactions and this paper calls the company which outsources its work as client and one that does the work is referred to as vendor. This paper specifically delves in the overseas sourcing of information systems and equates this to broader conception of Information Technology (IT) outsourcing. Domestic outsourcing of IT work had its evolution in the 1960s focusing on services and facility management and progressed to total solution in the 1990s [9]. Global outsourcing of IT work started much later in the 1980s and has followed a progression that is very different from the domestic outsourcing and this can be attributed to reasons such as the geographical separation of clients and vendors.

There have been numerous studies on what clients should outsource and what not to outsource. These studies have used various theories such as Transaction Cost Economics [2], Resource Based Theory [14], Institutional Theory [1], and others. Research studies have typically recommended outsourcing non-core IT functions [3] and prescribe selective sourcing strategies [8]. This poses an interesting question: If clients are sourcing selectively then how can vendors thrive and improve their stature in the market for IT services? Hitherto, scant regard has been given to the role of vendors on these outsourcing transactions and this has been highlighted in the IS literature [10]. It would be germane to study how software is developed, and used in order to explain the strategies adopted by these vendors. This paper is organized in the following fashion: the second section proposes the IT value chain, and the subsequent section explains the methodology adopted to support the proposed value chain. The last section analyzes IT companies using the ITVC and identifies the factors that had contributed to their success.

### IT VALUE CHAIN

Boehm & Papaccio [5] proposed software development value chain based on Porter's concept of value chain [13]. According to Porter, the value chain consists of value activities and "value activities are the physically and technologically distinct activities a firm performs". Concepts from value chain have been used extensively in analyzing product / service delivery processes. Practitioner press has also mentioned about software development value chain [11]. The value chain proposed by Boehm & Papaccio included only the activities that are directly related to software development. Modern software companies are involved in wide array of IT services. The IT value chain proposed by this paper includes other unique services performed by companies operating in the IT services industry. These services include: consulting, systems integration, and implementation of package software to name a few.

The IT Value Chain (ITVC) which is proposed in this study integrates concepts from Porter's Value Chain and System Development Lifecycle to come up with a model for value addition for outsourcing vendors. As in Porter's Value Chain, ITVC consists of two activities namely primary and secondary activities. Primary activities consist of activities that go directly in the manufacture and sales of products. In the ITVC, primary activities are related to the development of the software itself. As mentioned in the previous section, various activities in software development can be depicted by the phases involved in SDLC. Hence the various phases involved in software development forms the chain and this is in analogous to the stages involved in the manufacturing of a product that was represented in Porter's original value chain.

For an IT service company, activities such as project consulting and technology development are a primary activity as they can be offered to the customers. Marketing spans the entire cross-section of software development as software products / services at any one of the intermediary stage can be contracted. When an IT company develops its own branded products, then their value chain spans the entire spectrum. For instance, a company with a product for the banking industry would cover all the segments of the ITVC. Secondary activities are the activities that a firm performs to support the primary activities. Secondary activities included in ITVC are same as that of the Porter's value chain. ITVC represents a spectrum of product and service offered by vendors of IT services. Though jobs that are performed at the lower end of the ITVC add value to the entire chain, but the resultant profitability for firms servicing in that segment will be less when compared to segment higher in the service chain. In order to be more profitable and expand its stature, overseas IT vendors should move up to segments that are up in the value chain.

Secondary Activity	Other support services such as HR, Accounting, Finance, etc.					
	Technology Consulting					
	Technology Development					
Primary Activity	System Integration					
	Marketing					
	Own Product Lines					
	Requirements Analysis	Design and Development	QA/ Testing	Implementation	Maintenance	Support
Consulting	Application development	Testing services	ERP Implementation	Y2K	Call centers	

Figure 1: IT Value Chain

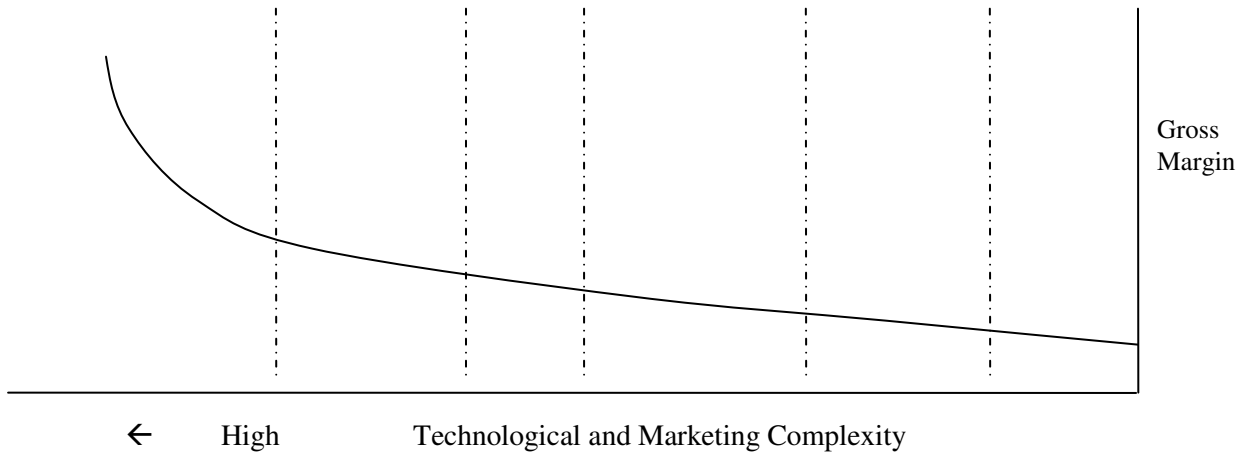


Figure 2: Value Curve - Adapted from Bartlett et al.[4]

Bartlett et al.[4], in their work on globalization of companies from underdeveloped countries, point out that these companies enter in the lower segment of what they call ‘value curve’ and then go up the curve. Offshore IT service companies at various points in time have concentrated on market niches. For instance, maintenance programming was the primary service outsourced to overseas companies during the year 2000 problem. Since then these companies have moved to higher end of the IT value chain such as implementation, technology development and consulting. When a company develops and markets its own product to the customers then their activities span the entire spectrum of the ITVC. In the past there have been attempts to explain the movement of pharmaceutical companies from the lower end of the value chain to the higher end [6]. Figure 1 and 2 show the IT Value chain interspersed with Bartlett et al.[4] ‘Value Curve’. The central theses of this paper is to argue that the overseas IT companies with aspirations to become major players in the global IT services market should adopt strategies that move them from the lower end of the ITVC to the higher end of the ITVC. Next section explains the methodology adopted to study this phenomenon.

## RESEARCH METHODOLOGY

In order to identify the developmental patterns of overseas IT companies using ITVC, this paper selected companies based in India for further analysis. Indian companies had a modest beginning in exporting software services during the late 1980s. During the past couple of decades they have grown to be a major force to reckon with in the IT services industry. During the year 2002-2003 Indian IT service companies have exported \$ 9.5 billion and it is expected to grow to \$ 12.2 billion in 2003-2004 [12]. The same NASSCOM report mentions that 58% of the exports pertain to custom application development and maintenance, and applications outsourcing. Nevertheless, approximately 20% of the revenues came from systems integration, technology development, IT consulting and other higher value added services. With this interesting mix of service offerings, Indian IT companies are appropriate choice to the applicability of the concepts from the proposed ITVC.

**Methodology:** There are many ways to study the developmental patterns of Indian IT companies using ITVC. Because of the extensive historical data available about the public Indian IT service companies, content analysis of these data was carried out. In the past content analysis has been successfully used in IS research [16]. Moreover, content analysis is well suited for the exploratory nature of this study.

**Sample:** For this exploratory study, top 10 Indian IT exporters were identified based on India's National Association of Software and Service Companies (NASSCOM) report for the years 2002-03. The list of top 10 Indian IT companies excluded companies that were subsidiaries of multinational companies. Information from various published sources that included annual reports was collected. Three of the top 10 companies were private and they were excluded from this study due to the absence of annual reports. For the US Stock Exchanges listed companies data from *Mergent Online* database was used and for the companies listed in India, *Indiainfoline.com*, was used to gather financial and other data. *Lexis-Nexis* was used for finding press releases and news articles about the selected companies. Appendix contains the listing of selected companies.

**ITVC and Company Operations:** Detail analysis of the collected data was done through content analysis and discernible patterns in the market these companies have operated in were identified. In the early years, these companies were primarily carrying out contract programming and maintenance support. Annual reports belonging to the middle of the 1990s speak of how companies are targeting the Year 2000 problem and Euro currency conversion contracts. These jobs are primarily oriented to maintaining existing business applications. Company I and S in their annual report mention how they are trying to move away from time and materials contracts to more remunerative fixed price contracts for the IT services they offer. Similarly reports pertaining to late 1990s talk of these companies venturing into Enterprise Resource Planning (ERP) applications implementation. This is again in the lower end of the ITVC spectrum. The Year 2000 (Y2K) problem also helped company S, to develop a dedicated product for resolving issues related to it in large software applications. This helped that company to have their own branded products in the market. Late 1990s saw the push by these companies in expanding their service operations in many industries. Some of the annual reports even stressed on the reduction in business related to Y2K problems. Developments in the e-commerce arena helped these companies to setup dedicated consulting practices in at least three of the companies. This gave these overseas IT companies a toehold in the consulting practice.

With increasing market presence, three of the ten companies included in the study went for overseas listing of their shares, a move clearly indicative of their global aspirations. Advent of the millennium saw these companies to get into Research and Development contracting. One of the companies ventured into performing research and development for other companies in integrated circuits design field. This company has patented its design in the United States. Recent news items on one of the companies (Company I) in the study indicate its expansion to the high end of IT consulting field. With this move they have clearly moved higher up in the IT Value Chain.

### **PROGRESSION IN THE ITVC – CONTRIBUTING FACTORS**

Analysis of the top 10 Indian IT exporters revealed many interesting facts on their presence in the various segments of ITVC. Though the cost competitiveness of Indian IT services is often cited as the reason for their phenomenal growth, there were other reasons that distinguished them from other players in the industry.

**Service Quality:** The stress placed on quality products / service has greatly helped these companies in expanding their business operations. All the companies included in the study are either at SEI-CMM Level 4 or Level 5 maturity level. Investments in these quality initiatives are tremendous as it takes approximately seven years to move from Level 1 to Level 5 [7]. Company W, is the first in the world to achieve SEI-CMM Level 5 level. There has been a steady progression in the quality initiatives undertaken by these companies. Quality certifications and initiatives such as ISO 9000, TICK IT, and Six Sigma were found to be common in many of these companies. Company S, has even partnered with Software Engineering Institute to formulate eServices capability model. This obsession with quality of the products and services offered has greatly helped these companies to expand their business offerings over a period of time. Importance attached to quality can be equated to the thrust the Japanese manufacturing companies put on their products during their expansion into global markets.

**Domain Expertise:** Most of the Indian IT companies operate on these ‘industry verticals’ and India’s NASSCOM have identified nine such industry verticals to be focused on. This kind of focused strategy on a particular industrial segment has allowed them to better exploit their customer base and to offer more value added services. Moreover this also helps these companies to better concentrate their resources and provide whole range of services to a customer in a particular segment. Two of the companies (I, IF) studied had whole range of applications for the banking industry alone under their brand name. These products are marketed to banks in various countries. Company IF, predominantly operates in the banking sector and claims to have 2<sup>nd</sup> most popular banking application in the world.

**Partnerships:** Strategic alliance and joint-venture companies have helped a great deal to increase the market presence of these overseas IT services vendors. Most of the companies studied have entered in to joint ventures / strategic alliances at various points in time. Company S had a very successful JV with US based Dunn & Bradstreet; Company H had a JV with Perot Systems of US. Similarly most of the companies included in the sample had alliances with many other multinational companies (MNC). These alliances pertained right from exclusively

marketing arrangements for the products of the MNCs to setting up of dedicated software development centers for the MNCs.

**Human Resource Development:** Most of the companies in the study have given tremendous importance to human resource development. Training and development was stressed to a great extent in their corporate websites / reports. They expanded their employee base tremendously over a period of time. Company I, started to do human resource accounting in the late 1990s and this shows the kind of importance they place on their human capital. Similarly, their annual reports featured extensive information on their employee training and development programs. The continuous training what they offer to their employees has helped them to effectively tackle the pace at which technologies changed in the last decade. Employee stock option programs were aggressively promoted by these companies. Company M started offering its employee stock options in 1992 and this set the trend for others to follow.

**Geographical Spread:** Companies in the study started to establish overseas marketing offices in the late 1980s. At that time the focus was on the North American market. Company I, setup its operations in the US in 1987. These offshore offices helped these companies to market their services in a more successfully. Slowly these companies expanded their overseas market to European and Japanese markets. Some of the companies used tie-up with local partners to spread their global presence. This gave these companies an opportunity to effectively target big markets. In the last few years Indian companies started establishing development centers overseas and company I has such development centers in 9 places. Companies S, W, and N have very active plans to venture into the Chinese market. They have setup marketing offices / development centers in China and they hope to capture a share in the growing Chinese market for IT services.

**Brand Development:** Many of the companies studied gave greater emphasis on promoting their brand. These initiatives can be clearly seen in the company reports. Company I's annual report mentions about the use of "generic brand earnings-multiple model" to value its corporate brand. Similarly, companies S and W too mention their various brand building initiatives. Strong emphasis on promoting their brand has helped these companies transition towards higher end of the ITVC. They have held many annual events for their customers to keep them informed about the latest developments in the company.

## CONCLUSION

Overseas IT service companies are least studied in the IS outsourcing literature and this paper has attempted to fill a void in the literature. This paper proposes an IT Value Chain based on prior research in software development to analyze the services offered by the offshore IT service companies. Longitudinal data from Indian IT companies were used to analyze their progression on ITVC. Factors that contributed to the progression of companies on the ITVC were presented. Offshore outsourcing of IT services has opened up many avenues for research. Exploratory nature of this study was amenable to content analysis and in future validation of ITVC needs to be done using other empirical methods.

**Note:** Appendix I and the References are available upon request from George Mangalaraj (mangalaraj@uta.edu)