

Evaluating Significance of Marketing in Indian IT Companies using DEA

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Abstract

Information technology, and the hardware and software associated with the IT industry, are an integral part of nearly every major global industry. The information technology (IT) industry has become one of the most robust industries in the world. IT, more than any other industry or economic facet, has an increased productivity, particularly in the developed world, and therefore is a key driver of global economic growth. Economies of scale and insatiable demand from both consumers and enterprises characterize this rapidly growing sector. This paper evaluates the relative efficiencies of various Indian IT Companies with the use of Data Envelopment Analysis (DEA) in the presence of different factors of marketing (Total Income sales as output and Selling and Distribution expenses Communication expenses as Input).

Index terms— software industry, strategic partner, marketing, DEA.

1 Introduction

a) Service Sector in Indian Economy The contribution of the services sector to the Indian economy has been manifold: a 60 per cent share in gross domestic product (GDP), growing by 10 percent annually, contributing to about a quarter of total employment, accounting for a high share in foreign direct investment (FDI) inflows and over one-third of total exports, and recording very fast (27.4 per cent) export growth through the first half of 2010-11. It is also a significant employment generator. Service sector encompasses a variety like tourism, rail freight, logistics, hotel industry; healthcare, financial services like insurance and banking have been growing at 28% over the last 5 years, which is remarkably higher than the GDP growth of 7%. India ranks fifteenth in the services output and it provides employment to around 23% of the total workforce in the country. The various sectors under the Services Sector in India are construction, trade, hotels, transport, restaurant, communication and storage, social and personal services, community, insurance, financing, business services, and real estate.

Source : Indian Central Statistical organization 2011. Information technology is a collective term used to describe developments in the mode used for the acquisition, processing, analysis, storage, retrieval, dissemination and application of information. Recent developments in the field of IT have revolutionized programmer capabilities and application. The impact of these developments affects increased computer speed, smaller hardware size, lower hardware and software costs, improved reliability, compatibility and interconnectivity. India is one of the world's fastest growing economies and is emerging as a global Information Technology powerhouse. India offers high quality IT and IT-enabled Services at low cost, using state-of-the-art technology. Convergence has led to lowering of tariffs, plentiful availability of bandwidth at increasingly lower cost, competition and growth in technology, especially fiber optics and wireless technology.

The Indian Information Technology sector has shown remarkable resilience in the year 2007. Industry performance was marked by sustained double-digit revenue growth, steady expansion into newer servicelines and increased geographic penetration, and an unprecedented rise in investments by Multinational Corporations (MNCs) -in spite of lingering concerns about gaps in talent and infrastructure impacting India's cost competitiveness.

The Indian software and services exports including ITES-BPO are estimated at US\$ 40.3 billion in 2007-08, as compared to US\$ 31.4 billion in 2006-07, an increase of 28.3 per cent. The Indian IT sector has built a strong reputation for its high standards of service quality and information security -which has been acknowledged globally and has helped enhance buyer confidence. While the larger players continue to lead growth, gradually increasing their share in the industry aggregate; several high-performing Small and Medium Enterprises (SMEs) also stand out.

The total IT Software and Services employment is expected to reach 2.0 million mark in 2007-08 (Manpower demand for IT software and hardware sector in 2008 is projected as over 9 million), as against 1.63 million in 2006-07, a growth of 22.7 per cent year-on-year. This represents a net addition of 375,000 professionals to the industry employee base, this year. The indirect employment attributed by the sector is estimated to about 8.0 million in year 2007-08. This translates to the creation of about 10 million job opportunities attributed to the growth of this sector. The outlook for Indian IT remains bright, and the sector is well on track to achieve its aspired target of US\$ 60 billion in export revenues and US\$ 73 -75 billion in overall software and services revenues by 2010.

2 II.

3 Computer Software Industry in India

The importance of the software industry can be judged by the fact that its contribution to the country's GDP will increase from 1.4 per cent (2001) to about 7 per cent (2008). More importantly, it is expected to contribute nearly 20 per cent of incremental GDP growth between 2001 and 2008. The industry, which employed 0.8 million people in 2001, is expected to employ over 2 million people directly and create direct employment opportunities for at least an additional 2 million people by 2008 (Nasscom, 2002). The industry's contribution to India's total exports has been rising. Realizing the potential of the industry, the captains of the industry speak very highly about the firms. Many professionals and policy makers have called India the software super power of the world. The immense enthusiasm surrounding the industry is understandable as hardly any other Indian industry matches its growth rates in the last decade. Yet, it is useful to put a little global perspective on India's ambitions in this area. The global software market is estimated to be about US\$550 billion (2002), and has been growing at about 15 per cent per annum (five-year, trend rate) (ESC Data, 2003). India's share in this market is 1.5 per cent (2000) and is estimated to rise to less than 5 per cent (2008).

The Indian success story has, been a combination of resource endowments, a mixture of benign neglect and active encouragement from a normally intrusive government, and good timing. By the late 1980s, India was graduating approximately 150,000 English-speaking engineers and science graduates, with only a limited demand for their services from the rest of the economy. By the late 1980s as well, India's economic liberalization was also well under way.

Around this time, the information technology revolution in the developed world had begun to take root and shortages of skilled programmers and IT professionals were beginning to develop. By this time a number of Indians were working in very substantial numbers in US firms. Some of them played an important, although as yet undocumented role, in bridging the gap and matching the buyers in the US with the suppliers in India. Responding quickly to the growing demand, a number of Indian firms arose in quick time. The State encouraged this growth by considerably simplifying the process for obtaining the numerous clearances and permits that any firm in the organized sector in India typically needs.

FY 2006-07 witnessed a revalidation of the Indian Information Technology -Business Process Outsourcing (IT-BPO) growth story, driven by a maturing appreciation of India's role and growing importance in global services trade. Industry performance was marked by sustained double-digit revenue growth, steady expansion into newer service-lines and increased geographic penetration, and an unprecedented rise in investments by Multi-national Corporations (MNCs) -in spite of lingering concerns about gaps in talent and infrastructure impacting India's cost competitiveness. The sector looks set to close the year at record levels, with the revenue aggregate growing by nearly ten times over the past ten years.

Positive market indicators including large unaddressed white-spaces and the unbundling of IT-BPO mega-deals with increasing shares of global delivery, strongly support the optimism of the industry in achieving its aspired target of USD 60 billion in exports by 2010.

While India is uniquely advantaged to best address these opportunities, they are not lost to others. Timely, coherent and continued action is needed to ensure that India makes the most of these opportunities and maintains its lead.

4 III.

5 Characteristics of the Indian Software Industry

The Indian software sector displays many unusual features from an Indian perspective. The most obvious one is its export orientation, accounting for 65% of the total software revenue. There are important qualitative differences between the export market and the domestic markets. The domestic market has a higher proportion of revenues from the sale of software packages and products. Whereas products accounted for nearly 40% of the

domestic market⁵, they account for a little fewer than 10% of exports. Over 80% of exports are software services including custom software development, consultancy and professional services. For domestic clients the industry provides a wider range of services that usually spans the entire lifecycle of software development.

6 a) Domestic

A large fraction of the domestic software industry consists of resale of software packages developed by foreign, principally US, firms, thus overstating the extent of software written for the domestic market. On the other hand, there is a great deal of in-house software written by users, especially large Indian firms that are not being captured by any figures. A number of Indian software firms have also developed software packages aimed at the domestic market.

7 b) Exports

Indian software exports consist primarily of software services. The activities carried out by most firms in India are essentially maintenance tasks for applications on legacy systems such as IBM mainframe computers, development of small applications and enhancements for existing systems, migration to clientserver systems, often referred to as porting or reengineering.

8 c) Marketing of Software Industries

To certain extent managing services are more complicated than managing products, products can be standardized, to standardize a service is far more difficult as there are more input factors i.e. people, physical evidence, process to manage than with a product. Characteristics of a service The Service marketing mix involves analyzing the 7p of marketing involving, Product, Price, Place, Promotion, Physical Evidence, Process and People.

9 i. Product

The term "product" refers to tangible, physical products as well as services. Product decisions includes aspects such as Brand name, Functionality, Styling, Quality, Safety, Packaging, Repairs and Support, Warranty, Accessories and services.

ii. Price Pricing decisions should take into account profit margins and the probable pricing response of competitors. Pricing includes not only the list price, but also discounts, financing, and other options such as leasing, pricing strategy (skim, penetration, etc.).

iii. Place Distribution is about getting the products to the customer. Distribution decisions include, Distribution channels, Market coverage (inclusive, selective, or exclusive distribution), Specific channel members, Inventory management, Warehousing, Distribution centers, Order processing, Transportation & Reverse logistics.

10 iv. Promotion

In the context of the marketing mix, promotion represents the various aspects of marketing communication, that is, the communication of information about the product with the goal of generating a positive customer response through Advertising, Personal selling & sales force, Sales promotions, Public relations & publicity, Marketing communications budget.

11 v. People

An essential ingredient to any service provision is the use of appropriate staff and people. Recruiting the right staff and training them appropriately in the delivery of their service is essential if the organization wants to obtain a form of competitive advantage. Consumers make judgments and deliver perceptions of the service based on the employees they interact with.

12 vi. Process

Refers to the systems used to assist the organization in delivering the service.

13 vii. Physical Evidence

Physical evidence is an essential ingredient of the service mix; consumers will make perceptions based on their sight of the service provision which will have an impact on the organizations perceptual plan of the service.

14 d) Literature Review i. High -Tech Products

High-tech products are characterized by a short product life cycle curve (Rosenau, 1988). Such products typically go through the life-cycle stages in shorter periods of time). To target each customer segment in the diffusion of innovation curve, a different marketing approach becomes necessary (Moore, 1991). According to Utterback (1994), a dominant design is the one that wins the allegiance of the market place, the one that competitors and innovators should adhere to if they hope to command significant market share. Bierstedt, in a general context, has aptly summarized the role of power in any system: "Power supports the fundamental order of society and

the social organizations within it, whenever there is order. Power stands behind every association and sustains its structure. Without power there is no order". The study of power must be, therefore, an important part of the study of distribution channel behavior and will have important implications for the study of physical distribution management.

In a general context, Emery and Trist have pointed out that the type of environment increasingly facing organizations of all kinds is such that no longer can individual organizations cope effectively by themselves. One aspect of this is the situation of the organizations comprising a distribution channel. The rise of consumerism and the increasing concern being given to man's effects on his natural environment create problems with which individual organizations cannot cope alone. Partly, these problems can be met by better co-operation and co-ordination between organizations in distribution channels. However, these environmental changes also suggest the need for some degree of cooperation and co-ordination between whole channels. ??008) observed that the R&D efficiency of Japanese pharmaceutical industry has worsened throughout the decade 1983-92. In the Indian context, after controlling for firm size and initial efficiency levels, Saranga and Phani (2009) found that in the era prior to the introduction of the product patent regime, higher R&D investments in pharmaceutical firms translated into higher efficiencies.

Manandhar and Tang (2002) incorporated intangible aspects, e.g. the internal service quality, into DEA. They considered internal service quality, operating efficiency and profitability as dimensions of performance. Portela and Thanassoulis (2007) analyzed the three dimensions of branch performance: Usage of new transaction channels, efficiency in increasing sales and customer base and generating profits. Relations between operational and profit efficiencies and also transactional and operational efficiencies were identified. Comparison of different dimensions allows us to see superior and inferior branches. They found positive links between operational and profit efficiency and also between transactional and operational efficiency. Service quality is positively related with operational and profit efficiency.

15 f) Research Objectives

The main research objective of this paper is to understand the importance of marketing and marketing efforts undertaken by various Software companies and their influence on the overall performance of the companies.

Marketing and marketing efforts are evaluated by following five factors (two initial factors and three extended factors): The count of companies operating in Indian I.T. sector runs in thousands, and considering all of them is a tedious task for this particular research. So the target population was the companies available in CMIE database. Finally 139 companies with complete data qualified for the research analysis.

In second stage top 10 and bottom 10 companies were selected on the basis of their efficiencies and data for extended factors was collection from individual company's website.

16 IV.

17 Research Methodology

ii. Paired T-Test Paired sample t-test is used in 'before-after' studies, or when the samples are the matched pairs, or the case is a control study. The paired sample t-test is used in this research to statistically conclude whether or not extended input factors have improved the efficiency of the companies.

V.

18 Analysis and Findings

19 Conclusion and Managerial Implications

The study shows that the extended factor taken in the research i.e. number of branches, strategic partners and number of vertical industry served have a considerable contribution to the comparative efficiencies of the higher efficient companies, at the same time it is also observed that these factors do not contribute to the efficiencies of the lower efficient companies. Hence it? Stage (I)

The efficiency of 139 companies using DEA with two initial factors (Selling & Distribution expense) & two output factors (Total Income & Total Sales). Top ten and bottom ten companies on the basis of efficiencies were selected for further evaluation. Detail in Annexure 1.

20 ? Stage (II)

The performance of top & bottom 10 companies was re-evaluated using the same two initial and output factors. There evaluated efficiencies were used as 'before' sample for t-test. Detail in Annexure 2.

21 ? Stage (III)

Now three more extended factors along with two initial factors i.e. total five factors as input and the same two output factors were used to calculate the efficiencies of top 10 and bottom 10 companies to be further used for t-test as 'after' sample.

22 ? Stage (IV)

The paired t-test was applied to evaluate the significance of extended factors in enhancing the company's performance. The top ten companies showed significant difference between the two factors while the bottom ten companies showed insignificant difference between initial factors and extended factors.

ii. can be considered that these factors have some implication on the overall competitiveness of the companies in this sector. Indian Software companies should, apart from developing technical competitive advantage, should also give importance to other marketing related efforts in order to be more competitively efficient.

23 a) Limitation

The numbers of companies were limited and were dependent on the availability of data as per CMIE database.

The detailed information about the three factors (i.e. no. of branches, no. of strategic partners and no. of vertical industries served) was based on the data available on the respective company site on the day and date of access, and hence was dependent on the updated ness of the respective websites.

Limited factors as a measure of efficiency were used in evaluating the performance of various companies.

Top 10 companies were redefined due to unavailability of data on extended factors.

24 b) Future Scope

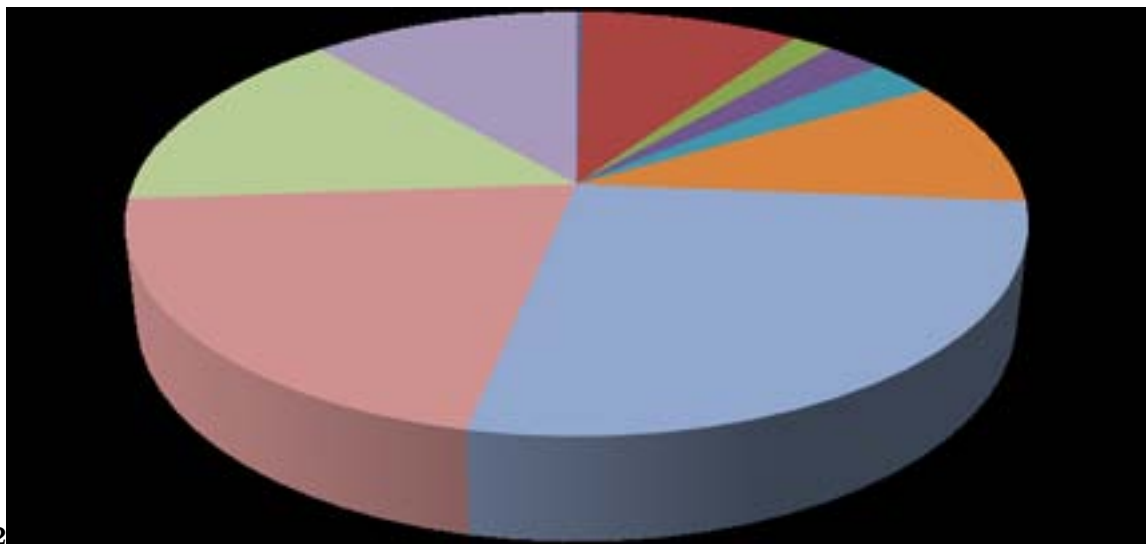
This study can be conducted using larger factor base for more insight understanding of the software sector.

More number of companies can be incorporated in sample for research purpose. Geographical advantage brought by strategic partners can further be researched.

25 Global Journal of



Figure 1: Figure 1 :



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Figure 2: Figure 2 :

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