

The Role of Outsourcing in Software Development

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Introduction:

In today's digital industry, there are essentially two major disciplines; information systems, and information technology. The chicken and the egg theory suggest that one could not exist without the other, and the computer industry is simply no different in its inception. Both segments of the industry are in constant competition, with one major difference between the two. Unlike hardware, software development is typically not relegated or tied to any particular location. With huge demand and competition in software development, corporations have had to rely on programming talent anywhere they can get it, and as efficiently and inexpensively as possible. This paper seeks to prove that outsourcing remains a crucial need for software development to keep pace with emerging hardware and that it will continue to be a viable option for corporations well into the future.

Early Software Outsourcing:

In the early days of hardware and software development, there was little need for outsourcing. Most projects were in-house, and highly specialized. With timely progress, platforms became more common and companies began focusing more on productivity software. This encouraged the requirements for software development to change. As hardware began to improve, processing capability increased and the level and quality of software it could support also grew. As such competition between software companies with similar products became quite fierce. Instead of having a small dedicated group of programmers on a particular project, software development soon required massive teams just to stay competitive in their market. This led to a significantly increased demand on the work force and a reduction in overall profit. By the early 1980s, software technology was still fairly young, but demand continued to grow steadily. Experienced software developers were becoming a commodity. Not enough people were entering the workforce and those that had, lacked the needed experience and work ethic, or were all together far too costly (Yourdon, 1993).



Fig. 1 – Tata Consultancy Services Logo
(Tata Sons Ltd., <http://www.tata.com/>)

Some organizations saw this growing demand and capitalized on it with globalized solutions. Companies such as Tata Consultancy Services, Winpro Technologies and

Infosys, almost all in India, began creating specialized consultant groups specifically for this purpose. These groups of developers were at a significantly reduced cost individually compared to that of domestic workers, and often had more drive and desire to compete for the project. The industry began moving so quickly, and outsourcing so significant, that it was thought nearly all software development would be outsourced to India by the year 2000 (Yourdon, 1993). This wasn't to be the case however as the information technology market literally exploded with the advent of internet access nationally and throughout the world. Billions of dollars flooded the industry creating hundreds of thousands of IT jobs. Outsourcing remained viable, but speed and visibility were critical. After two to three years of solid gains, the technology market crashed. Hundreds of thousands were laid off, and the technology sector became saturated with skilled workers (Benson, Bugnitz, Walton, 2004).

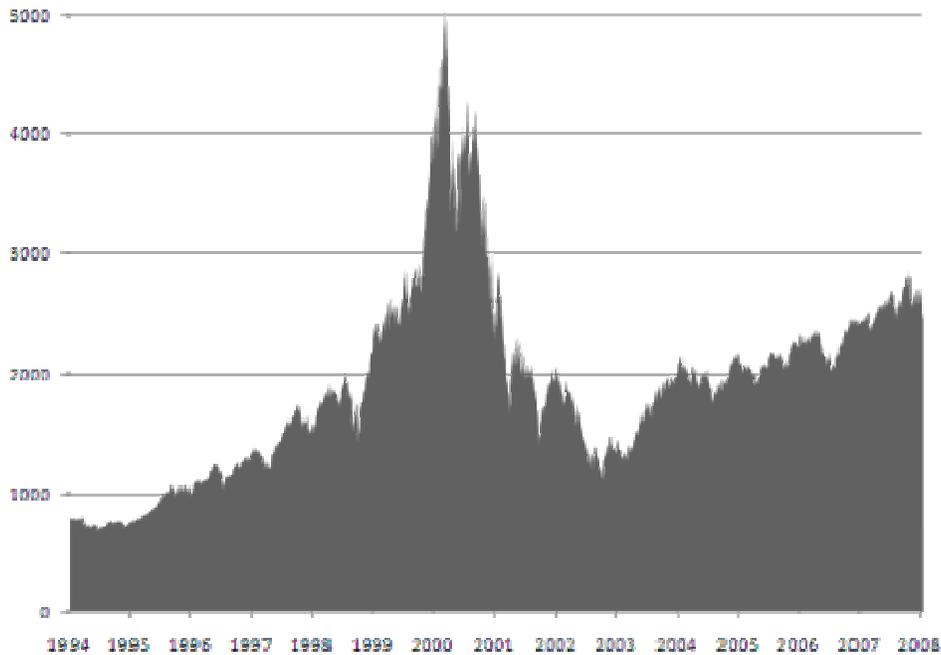


Fig. 2 – NASDAQ Composite / Technology Sector Index
(The DotCom Bubble Burst, <http://www.futuretimeline.net/>)

The Goal of Outsourcing:

Having recovered relatively quickly from the “DOT COM” bubble burst, the information technology sector in America has remained fairly consistent in its demand for software developers. Software outsourcing remains a critical component of the development process in most corporations. There are however many different reasons for and against outsourcing. The primary reason for a company to express interest in outsourcing is typically for the cost solutions. In any business, generic departmental demands can often be outsourced to various corporations that specialize in exclusively those categories. This allows the company to focus primarily on their business goals, rather than having to micro-manage certain departments. A human resources department, for example, can often be outsourced by a local company provider. This is known as Human Resource Outsourcing, or HRO for short. HRO consultancy provides all the necessary benefit handling and employee remediation in the company, so the business doesn’t have to.



Fig. 3 – Facts on Outsourcing
(GGK Technologies, <http://www.ggktech.com/outsourcing.htm>)

Software development is simply no different, and typically makes up more than 25% of the overall outsourcing in corporations today. Generally speaking, the cost structure of outsourcing provides a more detailed and consistent expectation from the department. For companies whose corporate focus is primarily not in software development, outsourcing

becomes a very viable solution. In most situations, a software department can be completely outsourced for a simple reoccurring fee with no additional costs. This type of outsourcing has on retainer numerous developers for an otherwise dedicated time, or until which point the contract is cancelled. In addition to the return on investment, speed to market, and improved quality in product are also some of the major considerations. The outsourcing can be handled in one of two ways, both typically with different cost structures. Some companies prefer to outsource in a more minimal manner by bringing in outside contractual help locally into the organization. This is generally regarded as a more favorable choice when a company needs to add a specialization into an already existing in-house software development team. With security concerns increasingly mounting in today's web-enabled society, this method can also be more idealistic. For companies handling government contracts, personal information, or development that's competitive in nature, this becomes a serious consideration when weighing outsourcing options (Benson, Bugnitz, Walton, 2004; Murphy, 2002).

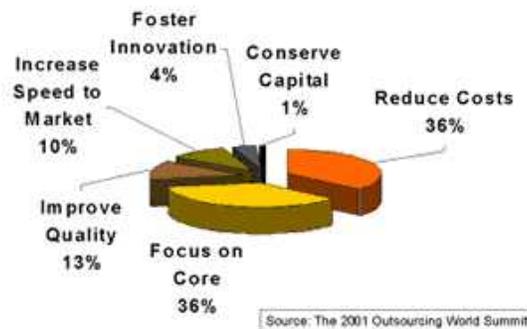


Fig. 4 – Top Reasons for Outsourcing
(I.A.O.P., <http://www.iaop.org/>)

The other method of outsourcing is more suited for corporations who wish to outsource entire projects, or their entire development department. This method of outsourcing, known as *in-sourcing*, can typically be much more cost effective to the company. The

biggest advantage to this type of outsourcing is with respect to its hands-off approach (Jessup, Valacich, 2009). Corporate management typically will decide to outsource a project when it's determined what all the necessary goals, cost, and timeline will be. A responsible and reputable outsourcing vendor will meet with the company's program manager regularly. The program manager, typically employed by the parent company, is the person in charge of seeing the project through to completion at the direction of the stakeholders. The project manager on the other hand, would typically be employed by the consultancy firm and work directly with the program manager to ensure that the requirements and needs were being met. Once the project manager gets the requirements, as well as the cost directive, he or she will work with the independent firm's development team. The project manager may seek to break the project up into modules or sub-projects depending on the overall scope of the master project. Each manager or team lead will then report back the weekly progress to the project manager. From this point, the project manager will report back to the program manager at the corporation. The entire process of this type of programming environment is modeled after an efficiently running in-house software development team (Schwalbe, 2010). Consultancy companies specialize in this type of environment and have perfected it to a near-science. However, because these departments are remote and disassociated from the stakeholder's company, security can often become a considerable risk. More than 50% of companies presently outsource their development needs, much of it in this manner of remote development. Because the consultancy firm often requires access to the corporation's network and servers, security costs can rise astronomically (Murphy, 2002). In many cases, the costs associated with improving security and supporting a secured pipeline to and from the company often

outweigh the cost benefits of outsourcing in the first place. In one example of a major security breach, the outsource-derived AmeriTrade online trading software allowed for the release of personal information of nearly 6.3 million customers. This was due to an un-approved back-door feature by one of the third-party outsourcing vendor's developers that became susceptible to a hacking attempt. AmeriTrade ultimately had to settle the matter in courts with one particular payout in excess of 1.8 million dollars. The total cost of clean-up and damages resulted in an amount nearly four times would have been necessary to develop the site in-house (Khan, 2008).

Security has become a significant issue of outsourcing in recent years, particularly with the US Government. While much of the government's software development remains in-house, a growing number of its projects have been outsourced.

軍民結合
平戰結合
軍品優先
以民養軍

Fig. 5 – Deng Xiaoping's 16-Character Military Philosophy
(Before It's News, <http://www.beforeitsnews.com/>)

Over the past decade or more, the Peoples Republic of China has become steadfast in illegally acquiring top secret US military and economic information. Everything from mathematical formulas, to engineering practices, to designs of thermonuclear bombs has been stolen by the Chinese government through hacking and security flaws (Johnson, 2009; Parrish, 2010). Since the majority of the information maintained by these projects is top-secret in nature, the government requires its consultancy vendors to meet radically new strict security guidelines. These policies increase the costs associated with the contracts, but ultimately still costs less than hiring government workers (Ciampa, 2009).

Outsourcing in the Global Community:

While overseas outsourcing has been a viable option for quite a few decades, it has only recently become considerably more popular with improvements in modern communications. Dealing with overseas outsourcing companies such as Tata Consultancy services had remained difficult in the past due to the considerable communication breakdown. Meetings were in the past usually held over conference calls, and program managers or stakeholders rarely saw the teams who were responsible for completing the projects. For much of the old business executives, this often goes against their traditional business practices. With the advent of advanced communication technologies such as 802.16 / WiMax and high-speed internet pipelines, inter-business communications have become vastly improved. This has considerably energized a new push towards outsourcing in overseas markets. One such country to benefit largely from this revived movement is India. Tata Consultancy, among others, has created entire cities dedicated to providing software development services globally. While America is their biggest customer base, they support many businesses in Europe and Asia as well.

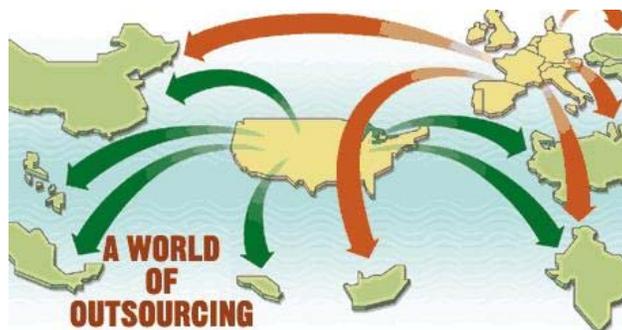


Fig. 6 – Global Outsourcing Patterns
(I.A.O.P., <http://www.iaop.org/>)

India, as well as China, provides some of the best developers and programmers available for outsourcing. Due to the often lower-than-standard economic conditions in their

countries, they are often much more motivated to provide quality and dependable work, and at significantly less cost. The biggest concern however, both for the consultants as well as the company, is the feeling of dedication. The company offering the contract wants to ensure that their project is going to be taken seriously. Likewise, the consultancy company wants to ensure that their developers feel like they are not only part of the project, but as part of the company they are servicing as well.



Fig. 7 – Typical Outsourcing Arrangement in India
(India Web-Zine, <http://www.indiawebzine.com/>)

These departments, while not officially part of the organization, typically go to great lengths to make their developers feel as though they are as much a part of the company as possible. This fosters a better work ethic, and a team spirit mentality that is more agreeable with American and European business practices. Likewise, this gives the company paying for the services the feeling that the organization has more dedication to its company's goals (Laudon, Laudon, 2009).

The Future of Outsourcing:

While the substantial loss in value of the US dollar and Euro have led to considerable cost-cutting, a more significant problem facing America today is the lack of young engineers and software graduates. Annually, America and Europe continue to produce fewer and fewer engineers in the technology sector. In the past few years, the number of American graduates in the engineering field has dropped to below 40,000 per year. Although this is often considered to be a cyclical response to demand, the numbers continue to decrease despite the increase in population. Fewer Americans are being energized to seek careers that require significant dedication and effort, and students are instead focusing on jobs which will provide them with better salaries for less effort. Compounding this issue for America is the fact that engineering graduates in India and China, our two biggest providers of outsourcing, have skyrocketed in just ten years. Graduation rates in China for example were less than 50,000 in 1998, but now account for more than 450,000 annually (Laudon, Laudon, 2009).

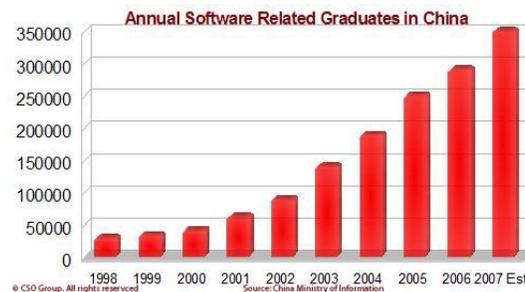


Fig. 8 – Annual Software Related Graduates in China
(CSO Group, <http://www.thecsogroup.com/>)

Similarly, India's economy has grown substantially over the past decade and has positioned itself to remain a dominant force for software developers and engineers. New office complexes are being built every month to house new global outsourcing venues.

Conclusion:

Outsourcing provides a solid and reliable way for companies to grow their business without the hassle of maintaining a software development department. With the globally growing demand for business presence on the internet, and the continuous increase of engineering graduates in countries like China and India, demand for outsourcing will become a very real prospect for most corporations in the future. Although some companies will continue to elect in-house development for security and specialization purposes, outsourcing will continue to remain a dominant force in the American and European business model for the foreseeable future.

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