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The Economics of Outsourcing

A Comparison Among Four IT Staffing Models

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Summary

Ever since the very first IT project went over budget, management has pressured IT to cut costs. Unit computing costs have consistently declined over the past forty years. Computers are so cheap that every office worker has one on his or her desk. Unfortunately, the total budget for IT both in absolute dollars and as a share of total expense continues to rise. The expanding use of computers is one of the causes. The huge inventory of applications that companies is another. Better application development tools, more packaged software, and improved design and maintenance tools help mitigate this increase. However, since IT costs keep going up and most organizations cannot directly link IT costs to profit, IT costs come under intense scrutiny and IT managers are under intense pressure to cut cost.

This paper discusses four major models for staffing an IT organization and for acquiring computing resources. The four staffing models are:

1. Own all the staff and supplement staff peaks and unfamiliar technology needs with contractors;
2. Outsource everything to a third party;
3. Own the resources necessary to plan and manage the IT organization and outsource the programming and operations functions domestically;
4. Outsource operations domestically and programming offshore.

The costs and risks associated with each strategy are discussed and a relative cost analysis is presented. This analysis shows that the fourth option – Own the management and planning functions, operations domestically and outsource the programming offshore - will far and away provide the lowest cost. A summary of these results, for a typical medium-size IT shop (100 people) is presented below:

Cost Summary

	In House supplemented with contractors		Outsourced IT Function	Outsourced Operations	Outsourced Operations and Programming - All Domestic	Outsourced Operations and Programming - Domestic Support and Offshore Programming
	Static Staff	Dynamic Cost				
Domestic Employee Cost	10,500,000	10,428,600	555,000	8,565,000	555,000	1,350,000
Domestic Contractor Cost	0.0	652,800.0	0.0	0.0	0.0	0.0
Domestic Outsourced Cost	0	0	2,092,800	1,497,600	13,232,000	2,332,800
Offshore Outsourced Cost	0	0	0	0	0	3,333,120
Outsourced Contract Cost	0	0	8,400,000	0	0	0
Total Staff Cost	10,500,000	11,081,400	11,047,800	10,062,600	13,787,000	7,015,920

Outsourcing – The Next Great IT Wave

Ever since the first IT project was over budget, management has pressured IT to cut costs. Cost containment and cost cutting have always been major themes in managing IT. Part of the reason is the very visible and very high cost of IT. Other administrative departments rarely buy multi-million dollar machines or do projects cost hundreds of millions of dollars. Few other areas in companies spend so much money without easily demonstrable cost savings or sales improvements. Other departments such as manufacturing, purchasing or sales can tie their spending directly to its effect. IT is stuck with explaining its benefits as intangibles and cost avoidance. Senior managers skeptically view both of these benefits

While computer hardware prices have plummeted, total computer hardware budgets have not. This is easy to see if you examine an example. The original IBM PC cost $5,000. A department often shared two of these machines. People would keep their Lotus spreadsheets on a floppy diskette and when the machine was available, pop the floppy in and do 1-2-3. Add $700 for two dot matrix printers and the department has all the computing power they ever dreamed of owning.

Today, the same department has a desktop computer for each person. Although a personal computer 1,000 times more powerful than the original IBM PC costs $1,500, the same ten-person department spends $15,000 instead of $10,000. To complete the network add a server with backup capabilities for $8,000; add a network laser printer for $2,000; add a color printer for $500; and add a switch for $1,000. The total for the same department is $26,500 instead of $10,700. Add to this network administration and support costs and the difference rises dramatically.

Admittedly, everyone has a computer to use and each person can be much more productive. This network eliminates all typewriters and typists but substitutes computers, analysts and managers for them. The bottom line however is that the unit-computing price of hardware has obeyed Moore's Law and dropped dramatically. Unfortunately, the total budget has risen dramatically as the usage of computers has risen also.

Similarly, programming tools have greatly increased the productivity of individual programmers. While programmers still produce a small number - often quoted as 10 debugged lines of code each day - each line of code does much more. At the same time, applications changed to soak up the improved productivity. In the COBOL and FORTRAN era, a program read data from cards or a tape, verified each record, did computations or logical operations and then wrote the record out either to a cardpunch, a disk file or another tape. We have gone from OLTP processing which was an order of magnitude more complex than keypunch and sequential processing to real-time data creation. Now, browser interfaced programs freely mix fancy presentation, data entry, validation and processing. Added to the mix is security and methods to complete interrupted transactions. It is no wonder that the cost of major applications easily exceeds $1,000,000 for smaller companies and usually exceeds $100,000,000 for Fortune 200 companies.

Unfortunately, the computer industry and IT management in particular set unreasonable cost expectations with each new generation of technology. My favorite example of this occurred about 20 years ago when IBM introduced their first color terminal. This was the famous 3279. The product was one of the first computer products advertised on national TV. The ad essentially said: "Buy a 3279, plug it in and get color graphics." Nowhere was there any mention of new software to produce color or higher bandwidth communications. No small number of CIOs was skewered when they told the CEO it just was not that easy to do.

This story has been repeated again and again. Technology vendors understate the cost of implementing their technology. Because the technocrats want new toys to play with, they go along with these low-ball estimates even when they know better. The poor CIO is stuck between the vendors who advertise and present to the CEO and the inaccurate cost and time estimates of their own people. The list of technologies that over-promised and under-delivered is too long to go into here but everyone certainly remembers that the Internet would change the world. And, by the way, it would be virtually free.

What can a CIO do to have an impact? Just cutting budgets without changing the way of doing business does nothing except reduce service levels. Heaven knows, everyone thinks service levels are bad enough already. Leaning on new technology to achieve efficiency almost never works. In fact, buying and installing new technology makes everyone less efficient in the short-run. Unless the new technology enables new business opportunities, new technologies do not pay for themselves.

The only avenue left is to spend less on resources. Third-party hardware vendors have existed for more than three decades. They build equipment that plugs in and replaces IBM and other vendors' equipment. The basic proposition is buying the same level of or better performance for less.

Outsourcing provides the same opportunity on the people side. The varieties of outsourcing include completely outsourcing the IT function, management, hardware, software and people; outsourcing operations of hardware and data centers – the server farm; operating and supporting servers and application software – Application Service Providers (ASP); outsourcing people – outsourced development and contract programming. The commonality among these is lowered unit costs. That is, the supplier can offer their service for less because they have some economy that the buyer cannot achieve.

This paper will deal with the advantages of each outsourcing opportunity along with the disadvantages. Additionally, the relative costs of each will be presented.

The Four Major IT Staffing Models

These are:

1. In-house management and staff supplemented by contactors and vendors
2. Outsource all IT services to a third party
3. In-house management, Third Party support services with in-house development services
4. In-house management and outsourced support and development services domestically or offshore.

By far, the leading staffing model is number one. As this paper will later show, it is the most costly than any other model than outsourcing development domestically. Number 2 is very useful for companies in stable businesses and industries and provides a small cost reduction. Number 3 increases control and flexibility while taking advantage of outsourcing operations to reduce costs. Number 4 is the most recent addition to the list and holds much promise. It combines control over the IT function with the flexibility that outsourcing delivers. Domestic development creates the highest cost alternative while offshore development yields the lowest cost.

In-house Management and Staff Supplemented by Contactors and Vendors

This is the traditional IT department found in many large companies. A recent survey showed that well over half of all IT departments use this staffing model. It has its roots in the days when the only way to execute a computer program was to deliver a deck of punch cards to the computer room. In addition, since computers were a scarce and expensive resources, few companies other than the largest ones had computers. In this world, you brought the people to the computer. Of course, you had to supply desks, coding pads, pens and keypunch machines.

Many companies continue using this staffing model today. The need has changed from an economic one to an emotional one. The ardent supporters of this model push the benefits of working in the same environment and being immediately accessible when a problem arises. One recent article on the subject said that companies benefited from the ability of employees to gather around the water cooler to do problem solving. I do not remember that type of water cooler conversation. The topics were either ones that could not be discussed in mixed company or more basic ones such as whether or not the Curse of the Bambino was real or a figment of Red Sox fans' imagination. Certainly, if the central reason for this staffing model is camaraderie, then other benefits are certainly scarce.

While this staffing model promises continuity, it has a number of shortcomings. The biggest shortcoming is inflexibility. In IT, a fixed staff means two things: a fixed personnel budget that is difficult to alter in the short run and a fixed skill set that only changes with training, new hires or supplemental staff. These two factors

along with the second highest cost structure of all the IT staffing alternatives makes this less attractive than other alternatives.

Beyond these disadvantages lie two others that are less obvious and harder to measure or observe. Turnover has always been a major factor in maintaining IT staff quality. The best and brightest programmers, analysts and managers are always the most marketable. People who excel when taught new skills or technologies are very marketable. Because the top performers in an IT department are overwhelmingly more productive than the average performers, if the best and brightest leave because they are more marketable, than the department's productivity falls. This further increases staff cost because it requires more people to do the same amount of work. The counter argument is that the staff retains its institutional knowledge. That may be true, but they have a difficult time putting it to work. The second problem results from long tenures. In IT departments with stable staffing, the core staff is constantly seeing their skills erode. This is not necessarily their fault. They are engaged in the daily activities of the department and have little time to upgrade or enhance their skills. The normal way to supplement skills is to then hire contractors or vendors. Because the skill sets that these people bring are not transferred to the existing staff, these people then become permanent parts of the department. However, they do not convert to employees and still are paid their much higher per diem fees. In addition, the company winds up providing the entire infrastructure needed to work at its site.

The advantages of the staffing model are:

1. Easy accessibility to people for meetings and emergencies. Management knows exactly where everyone is or should be.
2. Building and retaining of institutional knowledge. These are smart people and they learn the business and certainly know where things are in the systems.

Summarizing the deficiencies of this staffing model:

1. The best and the brightest hires wind up moving on because they are the most in demand. This causes productivity to stagnate or decline.
2. Investing in upgrading skills makes people more marketable providing an opportunity for them to move on.
3. The company builds a coterie of contractors and vendor people who work with newer technologies making upgrading systems very costly.

Outsource All IT Services to a Third Party

This is the second oldest way of staffing IT. The oldest, largest and best-known player in this field is EDS. They have been doing this very successfully for a long time. The business is very simple. They buy the IT department and then charge for using it. The company sheds hardware, software and people in one transaction. The best part of this transaction for many organizations is shedding the people. The second best part is the balance sheet clean up from selling the hardware along with

the financing of it and getting rid of accrued vacation, unfunded pension and other liabilities that go along with the people.

Notice that the top benefits have little or nothing to do with making systems better or more effective. That is because initially you are running exactly what you had before but doing it "under new management." However, if this all that you received after the managerial and financial benefits, then this business would not support the number of companies that are successful at it. For many companies, outsourcing IT puts it on a professional management basis for the first time ever. These people are good at IT operations and can afford the R&D and specialized professionals to needed to tune the operation and make it successful. In addition, certain vendors specialize in application areas. For example, Perot Systems does Medicare and Medicaid claims payment. It makes sense to let them do it because of all the compliance issues associated with operating those systems. However, if the company must continue to run its existing systems and enhance them, then the benefits are fewer.

What the company gives up doing this is control. The people are no longer employees of the company - they work for the vendor. Like many vendors, they will try to keep the customer happy consistent with making money. When the company's interests and theirs align, everything is great. They will respond to emergencies as they arise. However, when this does not happen, IT management sits in a conference room and negotiates rather than wielding the axe. They shuffle people around as it fits their needs. Usually, you can rely on having many of the same people around. Sometimes too many of the people assigned worked for the company before the contract started. However, if they have a need for a critical resource to make another deal happen or fix a problem that threatens another client, that person disappears.

Giving up control and having new development as the highest cost add-on to the contract can limit growth. For some companies, this is not an entirely bad idea. Community banks by the nature of their business have little opportunity to invent innovative products. A successful community bank thrives on service and low cost. Outsourcing the IT function works well. However, if company relies on systems to gain a competitive advantage, then not having full control of IT might be a problem. The original agreement covered the systems that existed when you signed the contract. If the company's industry changes afterward, then new development is available at very high consulting rates. This then becomes a barrier to innovation worse than previously existing barriers.

Systems embody the business rules and processes of the organization. These rules and processes are what make the business a unique competitor. Managing the technical side of IT is difficult, complex and frustrating. Other staffing models address this. However, this model takes away from management some of the ability to change the rules and processes. This is a handicap when trying to reinvent a company to address new competitors, new products or other new marketplace opportunities and issues.

The advantages of this staffing model are:

1. Quick financial benefit from transferring the IT resources to an unrelated third party.
2. Headcount reduction by transferring IT resources to an unrelated third party along with all the balance sheet liabilities.
3. Acquisition of a broader talent pool to address technical issues.
4. Access to proprietary applications.

The disadvantages of this staffing model are:

1. Loss of management control over IT operations, systems and personnel.
2. Services are defined as what you already own, not what you will need in the future.
3. High cost of changing systems is a barrier to replacing old, ineffective systems.
4. Constant monitoring and negotiating of service level agreements and all the issues involved with doing that.

In-House Management, Third Party Support Services with In-House Development Services

This is a newer IT staffing model. Before the advent of large scale, networked computing, this model was limited to those companies who used computing service bureaus. In many ways, these service bureaus are the ancestors of "server farms" and ASPs. Now, in a completely connected world, more and more companies are moving at least some part of their IT operations to this model.

This model starts with the traditional in-house IT staff. Management stays in place. The development staff stays in place. The computing and related support operations are contracted to a third party. The big advantage is the economy of scale in operating many servers. A few operators can run hundreds of modern servers equipped with modern operating systems and monitoring software. Modern backup systems backup many servers at once. In addition, the technical knowledge required for modern networks and security systems is a scarce and expensive resource.

This model gets management out of one of the more difficult tasks in managing IT. They now can rely on a specialized third party to perform vital yet very specialized tasks. In doing so, this model improves the operational reliability of IT. However, it does not address the high cost of system maintenance and development. Since this part of the staff is still in-house, it still is costly and a management challenge.

The advantages of the staffing model are:

1. Management retains full control over development.
2. Highly qualified specialists manage the operations functions and provide services in the complex technical areas of security and networking.

The disadvantages of this staffing model are:

1. The same development staff is still in place with same cost structure.
2. This works best for server-based computing and less well with mainframe operations.

In-house Management and Outsourced Support and Development Services

As IT departments constantly look for new ways to save money, they come up with new ideas and combine them with old ones. This staffing model takes pieces of the old, service bureaus and contract development and puts them together to build a new way of doing business. Because of the modern, connected world, this model can generate substantial cost savings using offshore resources.

In this model, IT management remains in place to provide the connection between IT and rest of the organization; to guide IT technically and from the business side; and to manage priorities and budgets. IT contracts Operations out using one of the existing operations models: complete outsourcing including turning over all hardware; outsourcing operations to a server operator; or buy computing resources using the ASP model. All of these may be combined to build the right mix of computing resources in the modern multi-platform, networked environment that most companies use. Maintenance and development are contracted by application and project. Wherever used, offshore resources greatly reduce the unit cost and generate substantial savings.

The big advantage of this model is getting the company out of managing computer technology and programmers. This model leaves management in control of key decisions and allows for more flexibility than outsourcing the whole IT function. While people in the supplier world often say that user companies should not be in the IT business, they are still stewards of their business rules and processes and makers of their own priorities. Since management under this model continues to make decisions about resource allocation, they also retain much more control than if they completely outsourced the function to a third party. This allows them the flexibility to react as quickly to changes in the business and business environment as in the traditional staffing model. Because the work can be shared among many suppliers, selecting a bad supplier does not threaten the company's viability.

The advantages of this staffing model are:

1. Significant cost savings are possible using offshore resources.
2. Management can select the best supplier for each project based on cost and ability.
3. The company has access to a broader range of technology without the risks and costs of training employees.
4. Management retains control over the business and strategic direction of IT.

The disadvantages of this staffing model are:

1. Management needs to coordinate among the different suppliers.
2. Projects must be carefully planned and managed so that outsourcing them will succeed.
3. Management needs to carefully evaluate and track work with each supplier.

Financial Analysis of the Staffing Alternatives

This section presents the economics of outsourcing as simply as possible while remaining consistent with the realities of operating an IT department. The costs of each staffing model are presented in summary form on the next page and in detail in Appendix 1. The principal simplification is calculating all costs based on the cost per 100 employees. To make the results more realistic, the presentation includes both a static staff and a dynamic staff with peak staffing 20% above and below the average. The peak occurs for 4 months per year and the trough for 3 months per year. These are the assumptions:

1. Employee salaries are:
   Executives receive $150,000 per year.
   Managers receive $110,000 per year.
   Development programmers receive $90,000 per year.
   Maintenance programmers receive $70,000 per year.
   Support and operations staff receives $50,000 per year.
2. Taxes and direct employment costs are 30% of salary.
3. Space, hardware, software and telecom costs are 20% of salary.
4. Contractors are paid:
   Development programmers receive $100 per hour.
   Maintenance programmers receive $75 per hour
   Support staff receives $50 per hour.
5. Contractors incur space and other costs at the same rate as employees.
6. Domestic outsourced development programmers cost $150 per hour.
7. Domestic outsourced maintenance programmers cost $100 per hour.
8. Offshore development programmers receive $45 per hour.
9. Offshore Maintenance programmers receive $30 per hour.
10. The management charge for outsourced programmers is part of the price. This is reflected as a 10% increased in the Full Time Employee (FTE) count for outsourced programmers.
11. A full week of billing for an outsourced programmer is four days.
12. Billing for outsourced programmers includes all costs within the hourly rate.

Applying these assumptions yields the following costs:

Cost Summary						
	In House supplemented with contractors		Outsourced IT Function	Outsourced Operations	Outsourced Operations and Programming - All Domestic	Outsourced Operations and Programming - Domestic Support and Offshore Programming
	Static Staff	Dynamic Cost				
Domestic Employee Cost	10,500,000	10,428,600	555,000	8,565,000	555,000	1,350,000
Domestic Contractor Cost	0.0	652,800.0	0.0	0.0	0.0	0.0
Domestic Outsourced Cost	0	0	2,092,800	1,497,600	13,232,000	2,332,800
Offshore Outsourced Cost	0	0	0	0	0	3,333,120
Outsourced Contract Cost	0	0	8,400,000	0	0	0
Total Staff Cost	10,500,000	11,081,400	11,047,800	10,062,600	13,787,000	7,015,920

The table shows that two of the three leading IT staffing models cost about the same when looking at the dynamic case for each. Outsourcing operations reduces the total cost by approximately 10%. As most experienced IT managers know, domestically outsourcing programming is very costly. In fact, this analysis shows that this drives the cost up by approximately 1/3. However, outsourcing the coding and preliminary testing offshore generates a saving of approximately 1/3.

If you would like the original spreadsheet used to generate this summary, please send an e-mail to the author. The e-mail address is maxr@it-ontime.com. The full spreadsheet is attached as Appendix 1.

Summary

Outsourcing is an option that helps Senior and IT management achieve several goals. As the economic analysis shows, domestic outsourcing except for programming generates small savings in the 5 to 10% range. The real financial savings begin after shifting programming offshore. Conservatively, this has the potential to generate 30% savings.

Of course, management has other motivations to outsource. If IT is not central to the company's success but just a record keeping function, then outsourcing the function to a firm such as EDS or Perot systems is an excellent option. This relieves management of the need to learn how to manage this function and worry about the technical issues associated with owning the function. Larger companies may choose to do this by function or organization. The most commonly outsourced function is payroll and related human resources functions. Business units where IT cannot provide a competitive advantage are also excellent candidates. As servers, networks and desktops increasingly are commodities, outsourcing this part of the IT function is very attractive. Again, this is a specialty area where significant non-monetary benefits lay. However, most companies are looking at outsourcing as a way to generate significant cost saving. Like manufacturing, outsourcing offshore is the only way to generate significant cost savings.

About the author:

Max Rosenblatt is President and CEO of IT OnTime, an Internet, Intranet, Extranet and client/server application outsourcing provider. Mr. Rosenblatt started IT OnTime after experiencing many of the pitfalls of Web application development while CTO of an E-Commerce startup. Before that, Mr. Rosenblatt spent more than 27 years in the software, computer services, consulting and IT world. He has written or co-authored a number of articles and white papers about application design as well as other current topics in computing. He also hosted a weekly, one-hour radio show on business computing current events.

Appendix 1 – The Outsourcing Financial Model

	In House supplemented with contractors				Outsourced IT Function	Outsourced Operations	Outsourced Operations and Programming - All Domestic	Outsourced Operations and Programming - Domestic Support and Offshore Programming
	Static Staff	33% Peak	25% Trough	Dynamic Cost				
Headcount								
Executives	1.0			1.0	1.0	1.0	1.0	1.0
Managers/Designers	5.0			5.0	2.0	5.0	2.0	2.0
Development Programmers	20.0		(1.0)	19.0	0.0	21.0		2.0
Maintenance Programmers	40.0		(1.0)	39.0	0.0	41.0		5.0
Quality Assurance, Support and Operations	34.0		(1.0)	33.0	0.0	5.0		
Salary								
Executives	150,000		0	150,000	150,000	150,000	150,000	150,000
Managers/Designers	550,000		0	550,000	220,000	550,000	220,000	220,000
Development Programmers	1,800,000		(22,500)	1,777,500	0	1,890,000	0	180,000
Maintenance Programmers	2,800,000		(17,500)	2,782,500	0	2,870,000	0	350,000
Quality Assurance, Support and Operations	1,700,000		(12,500)	1,687,500	0	250,000	0	0
Total	7,000,000		(52,500)	6,947,500	370,000	5,710,000	370,000	900,000
Employment Expenses								
Executives	45,000		0	45,000	45,000	45,000	45,000	45,000
Managers/Designers	165,000		0	165,000	66,000	165,000	66,000	66,000
Development Programmers	540,000		(6,750)	533,250	0	567,000	0	54,000
Maintenance Programmers	840,000		(5,250)	834,750	0	861,000	0	105,000
Quality Assurance, Support and Operations	510,000		(3,750)	506,250	0	75,000	0	0
Total	2,100,000		(15,750)	2,084,250	111,000	1,713,000	111,000	270,000
Space and other Costs								
Executives	30,000		0	30,000	30,000	30,000	30,000	30,000
Managers/Designers	110,000		0	110,000	44,000	110,000	44,000	44,000
Development Programmers	360,000		(1,350)	358,650	0	378,000	0	36,000
Maintenance Programmers	560,000		(1,050)	558,950	0	574,000	0	70,000
Quality Assurance, Support and Operations	340,000		(750)	339,250	0	50,000	0	0
Total	1,400,000		(3,150)	1,396,850	74,000	1,142,000	74,000	180,000
Contractors								
Development Programmers		4.0		4.0				
Maintenance Programmers		6.0		6.0				
Total	0.0	10.0	0.0	10.0	0.0	0.0	0.0	0.0
Contractor Cost								
Development Programmers		307,200		307,200				
Maintenance Programmers		345,600		345,600				
Total		652,800		652,800				
Outsourced Employees - Domestic								
Managers/Designers								
Development Programmers and Application Designers					8.0		20.7	2.0
Maintenance Programmers							41.3	
Quality Assurance, Support and Operations					2.0	12.0	17.0	15.0
Total					10.0	12.0	79.0	17.0
Outsourced Employee Cost - Domestic								
Managers/Designers					0	0	0	0
Development Programmers					1,843,200	0	4,761,600	460,800
Maintenance Programmers					0	0	6,348,800	0
Quality Assurance, Support and Operations					249,600	1,497,600	2,121,600	1,872,000
Total	0	0	0	0	2,092,800	1,497,600	13,232,000	2,332,800
Outsourced Employees - Offshore								
Development Programmers								20.7
Maintenance Programmers								41.3
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.0
Outsourced Employee Cost - Offshore								
Development Programmers								1,428,480
Maintenance Programmers								1,904,640
Total	0	0	0	0	0	0	0	3,333,120
Outsource Contract Cost					8,400,000			
Total Salary and Related Costs	10,500,000	652,810	(71,400)	11,081,410	11,047,800	10,062,600	13,787,000	7,015,982