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**THE IMPACT OF OFFSHORING ON VALUE CREATION IN
FINNISH VENTURE-BACKED SOFTWARE COMPANIES**

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INTRODUCTION – OFFSHORING AND VALUE CREATION IN SOFTWARE COMPANIES

1.1 Introduction

Software companies worldwide are seeking new ways to enhance their profitability, and Finnish companies are no exception. In order to accomplish this, they are looking to grow globally, both in order to grow their revenues faster, and in order to find new ways to reduce or contain their costs. This study looks into the motivations for Nordic software companies to outsource their production, seeking to understand the decision-making process.

This study relies on two trends that intimately affect the growth of Finnish industry: Finland has identified software development as a focal area for future growth, where it is believed that significant job creation can occur. For example, in their 1999 study, Nukari and Forsell projected that the Finnish software industry has the potential to generate over 9 billion in revenue by 2010, compared approximately 1 billion in 2003.¹ Assuming a GDP growth rate of 3.5%, that number would equal about 5% of GDP in 2010, compared to less than 1% today. This study seeks to examine in depth the outsourcing decision as a key enabling factor to that growth.

Second, there is a major shift ongoing globally across many industries, from using internal production (of which the R&D and product development resources form a significant component) to lower cost and potentially high quality offshore resources in countries like India. For example, telecom giant Motorola recently announced that it will open its first research centre in India, which will work on such diverse applied areas as converged networks, autonomic networking, enterprise applications, embedded systems and physical sciences.² Software companies including SAP, Microsoft Research and Google have opened research facilities in Bangalore, and Finland's own Nokia recently announced plans to open a plant at expected investment of 100-150m euro for cell phones in Chennai, India.³

This study takes the view that, while it is true that while tremendous opportunity exists for Finnish software companies, three primary factors inhibit its growth.

1. Finland's small internal market for software, in terms of both number of customers and aggregate size of the market, limits the ability of software companies to develop products new products jointly with local customers,
2. Finland has a relatively small base of product development human resources, given the small population, which limits companies' ability to build its internal R&D.
3. Finland has a relatively small amount of risk capital available for young companies compared to larger markets like the USA.

¹ Nukari, J., Forsell, M., "Growth Strategy for Finnish Software Industry", *Technology Review* 67/99.

² "Motorola Labs Launched in India", Motorola news release, 07 April 2005

³ "Nokia selects Chennai for manufacturing mobile devices in India", Nokia news release, 06 April 2005

Together, these three factors necessitate that Finnish software make it necessary to take critical decisions regarding the make-up of software development resources (i.e. internal developers vs. external sub-contractors) early in the development of the company. Finnish companies must optimize the development resources in such a way that flexibility is maximized and production costs are minimized in order to stay competitive with their larger rivals abroad.

In particular, we focus on the decision of whether or not to outsource part or all of their R&D activities. We believe that the above factors necessitate growth-oriented Finnish software companies to constantly evaluate the options of whether to:

1. Add internal software development resources, or
2. Outsource part or all production to nearby providers of software development resources (i.e. within Finland or Baltic countries), or
3. Offshore to farther flung software development resources (e.g. India and Philippines).

In order to evaluate the options available to Finnish software companies, we set out the following tasks:

1. Define the decision criteria from the software company's perspective, and
2. Interview and survey Nordic software company managers, investors and experts to gain insight on the decision criteria.

1.2 Value creation in software companies

In order to evaluate the way companies evaluate outsourcing opportunities, we must understand the objective function the company is seeking to optimize. We believe the best way to characterize this decision is within a "value maximization" framework, where the manager in general is taking the decision that maximizes the discounted future cash flows he expects to result from that given decision.

It is important to recognize the relationship between "high-value" and "high-employment" firms. The most valuable software companies tend to also have a large, skilled and well-paid personnel base. This is particularly the case when the company has external capital providers like venture capital investors, who are looking to generate a significant return on the capital they allocate to the company and thus demand the highest quality human capital inputs. It is very relevant that these venture-backed companies also tend to be the companies that are designed to be "gazelles" – those companies that will potentially grow the employment base the fastest.⁴ The "gazelle" software company's management must identify the "value drivers" that have the most significant impact the value of the firm, and then focus on how to optimize the resources that are associated with those drivers.

⁴ A gazelle company is an American expression for small, fast-growing companies, that create many job opportunities

We will discuss the value-based decision model more fully in a later chapter, but here we identify the high-level decision to maximize the following formula across activities in which the firm engages:

$$\text{Company Value} = \text{Sum}[(\text{Revenue} - \text{Costs}) / (1 + (\text{Cost of Capital}))^{\text{time}}]$$

Thus, when a firm must decide whether to use internal or outsourced resources to develop a new product (or enhance an existing product), it really tries to determine the direction of the following inequality from the TOTAL FIRMS perspective (we leave out the sum and discounting functions below for the sake of simplicity):

$$(\text{Revenue}^{\text{INTERNAL}} - \text{Costs}^{\text{INTERNAL}}) / (\text{Cost of Capital}^{\text{INTERNAL}})$$

is greater than or less than

$$(\text{Revenue}^{\text{OUTSOURCE}} - \text{Costs}^{\text{OUTSOURCE}}) / (\text{Cost of Capital}^{\text{OUTSOURCE}})$$

where INTERNAL means that internal resources for the *new product/project* are used, and OUTSOURCE means that outsourced resources are used. In other words, we hypothesize that the decision should not be as simple as trading off the costs of local vs. the cost of offshore resources. We believe that there are other factors that need to be considered to optimize the value of the company.

In order to understand the decision better, we discuss the firm's product development resource allocation in simple terms of three "degrees of outsourcing":

1. Using purely internal development resources (i.e. no outsourcing)
2. Using a combination of internal and "near-shore" resources
 - Using a combination of internal, "near-shore" and "far-shore" resources. (It is possible that the amount of "near-shore" resources is zero).

1.3 Summary of findings

Among others, our study finds following important results:

- The most important single factor driving the outsourcing decision is the desire to achieve "resource dynamism". In other words, managers are seeking to be able to more freely add or subtract from their development resource base at a moment's notice.
- The desire for resource dynamism is followed closely by the objective to leverage lower wage rates. This is the most widely-cited reason for offshoring according to our literature study, but was not the most important factor according to our survey and interviews.
- Access to new competencies was also a significant factor, so in some ways it may be easier to find experts employed by outsourcing providers than to hire them locally.

- We find that there are a number of factors related to increasing the revenue side of the equation as well, by leveraging offshoring as a step toward expanding the addressable market, and in terms of enabling agility in achieving a company's optimal product mix.
- Some traditionally supported reasons for offshoring, like achieving production in multiple time zones, was discounted by the managers and other interviewees.

1.3.1 Implications to policy makers

We believe our results have the following implications to policy-makers, which will be discussed in more detail in a later chapter. Accordingly, policy makers should:

- Use their leverage with counterparts in offshoring hotspots to help Finnish firms locate qualified partners, and facilitate the setup of those partnerships.
- Acknowledge that nearshore opportunities seem to be more relevant to most high-growth software companies than far shoring, except to some extent in the case of India.
- Recognize the key implication of the fact that, for most high-growth software companies, the largest value-creating benefit of offshoring is resource flexibility: Namely, since conventional wisdom seems to be that offshoring is detrimental to Finnish society because of the lost jobs, the most prudent way to combat outflow of skilled software development-related jobs is to address the human resource inflexibilities in Finland.
- The offshoring trend implies national educational and training programs for the software industry should be focused on design, specification and testing – functions which will facilitate the execution of seamless offshoring projects - as opposed to underwriting large training programs target to create more software coding resources.

1.3.2 Implications to software company managers and investors

Our study shows that offshoring, done efficiently, can be a major value driver for a Finnish software company. In fact, it can be the major factor determining success and failure.

- In a fast-moving, time-to-market-driven sector like software, utilizing offshore resources will optimize the production costs while at the same time enabling efficient the shifting of resources towards to the most valuable projects and products.
- Offshoring puts significant stress on a company's project management processes. These must be well-designed and well-staffed in order for an offshoring project to pay off. Indeed, if a company is successful in implementing offshoring projects, this can become a key component of the company's competitive advantage.

- Certain physical resources, like secure and fast communications, are necessary and thus part of the cost savings from lower wages are offset by increased communications and monitoring costs.

2 SOFTWARE OFFSHORING

2.1 Software development business models

The “Software Business” is a very broad and complex concept. The wide variety of products, producers, end users, and media indicates that an array of coexisting and potentially valid business models is possible. In this chapter, we present a framework that describes the key factors of any software business model, and then briefly outline the most common business models present today in the software industry. The main source for the model framework⁵ is a study written by Rajala, Rossi, Tuunainen and Korri.

The term “business model” is widely used in literature and industry conversations, but the definition of the term varies depending on the context. The definition usually incorporates a description of the product or service provided, and the means of producing, delivering, and charging for it. Often the end customer is included in the model’s description. Rajala *et al* defines the main elements of business model to be value creation and value appropriation through sets of processes and transactions. In short, it is a practical adaptation of company’s strategy. It answers the questions “What?” “To Whom?” and “How?”

Factors affecting the software business model

The business model is to a significant degree dependent on several external and internal factors affecting the company. In their framework Rajala *et al* recognize six factors, four of which are external and two internal.

External factors:

- Competitive Environment
- Customers
- Financing Environment & Stakeholders’ Utilities
- Resource Environment

Internal factors:

- Business and Corporate Strategy
- Characteristics of Product or Service Offering

⁵ Rajala, R., Rossi, M., Tuunainen, V., Korri, S., “Software Business Models – A Framework for Analyzing Software Industry”

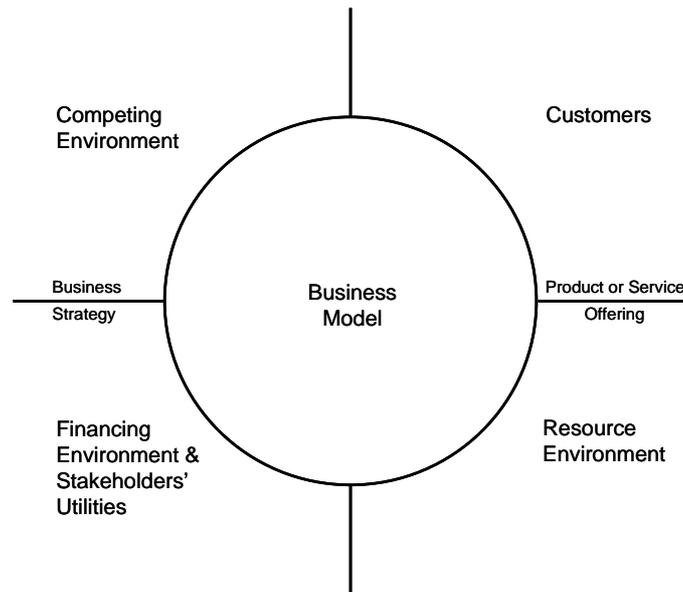


Figure 1 - Factors Affecting a Software Business Model⁶

2.2 Offshoring business models

In the early days of offshore outsourcing, most companies viewed offshore countries almost purely as providers of cheap labour and, as such, a means to cut product development costs. The idea resembled very closely what the manufacturing industry had used successfully for a couple decades; i.e. the company would set up a business unit in the target low-cost country and staff it with local workers, while most of the management was brought over from the offshorer's own country. Due to this approach, software offshore outsourcing was solely a game of big companies, whose projects were large and who had the resources necessary to undertake the required investments.

The next stage in software offshoring evolution was the birth of independent offshore software houses, which started to offer "body-shopping" type of software development for foreign companies. They were generally engaged in non-business critical projects, which did not require close and continuous cooperation with the client. Examples of such projects are protocol implementation, platform conversion and euro/Y2K conversions. The independent offshoring houses also enabled medium-sized companies to take part in offshore software development, because the required investments were considerably smaller than in the full business unit approach.

Currently software offshoring can be offshored in-house development or offshored outsourced development, as was explained above, or it may take a form which is somewhere between these two extremes. It is quite possible for the development team to consist of both external and internal employees, which are in close

⁶ Rajala, R., Rossi, M., Tuunainen, V., Korri, S., "Software Business Models – A Framework for Analyzing Software Industry", p.26

interaction with each other. Kobitzsch, Rombach and Feldmann identify four basic models of cooperation⁷.

1. Separate teams in legally independent companies

This is the normal body-shopping relationship. The offshore team generally creates a product or a module of larger program according to given specifications. Cooperation between the teams is low, and typically concentrates on schedule and quality management. Contracts are used to control the schedule, fee, quality, testing and IPR and other similar issues.

2. Separate teams in legally related companies

The offshore organization is typically a subsidiary of the mother company, but the offshore team is given an independent module or product to work on. The amount of cooperation between domestic and offshore teams depends on how much integration is needed between the offshore-developed product and the local product. Formal contracts are less common and IPR, knowledge transfer and quality issues are easier to work with.

3. One team distributed across multiple sites of legally related companies

In this model the offshore and domestic locations are both working for the same group, typically in mother-daughter company relationship. The difference when compared to model number two is that they are working on the same part of the project. Once again legal contracts are rarely needed. However, since both sites are working in tandem, the interaction between parties becomes much more important. The key challenges lie in project management, communication and knowledge transfer.

4. One team distributed across multiple sites of legally independent companies

This model is often the most challenging one to manage efficiently. Outsourced offshore resources and in-house resources form a single team, and they work on the same product in cooperation. The managerial challenges are the same as in model number 3, i.e. project management, communication and knowledge transfer. Furthermore, this model has serious legal challenges with IPR and quality, similar to model number 1.

⁷ Kobitzsch, W., Rombach, D., Feldmann, R.L., "Outsourcing in India", IEEE Software March/April 2001, p.78

		Relationship of participating companies	
		Legally independent	Legally dependent
Team setup	Separate teams	Model 1	Model 2
	One team	Model 4	Model 3

Figure 2: Cooperation models (source: Kobitzsch et al, 2001)

The portfolio of different offshoring business models is still very much evolving. One of the main trends is that many foreign offshoring houses strive to move up the software development value chain from low value execution to higher value design and architecture. They hire and offer specialized talent and prefer longer-term partnering agreements as opposed to one-off outsourcing agreements. They also tend to prefer working with companies that are technologically advanced in their own fields.

Another example of business model evolution is that the offshoring houses are establishing their own subsidiaries in the countries of their clients to proactively offer their development services. Wipro serves as a good example – they opened their Finnish development centre in Tampere in November 2002, presumably to get closer to Nokia. "The establishment of this localised development centre is part of Wipro's strategy to offer a global execution model by combining a next door presence with the cost savings associated with India," claimed Sudip Nandy, head of Wipro EMEA.

This makes offshore software development a viable alternative for an even larger portion of companies, since it effectively removes many of the barriers commonly associated with offshore development. In the previous models, the interface between the client's team and the offshore development team has generally been in the offshore country. Now the interface can be moved to the client's country and, at best, the whole offshore organization becomes transparent to the client.

Drivers and inhibitors of offshoring

As mentioned before, software development is a very labour-intensive business. The most effective way to cut development costs is therefore to cut personnel costs. The difference in wages between US or western European countries and low cost countries, such as India, still is quite significant. Hence, it's hardly surprising that

traditionally the main reason to offshore software development was the attraction of lower costs⁸.

While being most obvious, costs are not the only driver of offshore software development. Ebert and De Neve recognize the importance of being physically present in remote markets and the access to scarce competent resources as two more reasons to go offshore⁹. Jennex and Adalakun continue the list with economies of scale and round-the-clock development¹⁰. Finally, Herbsleb and Moitra identify the advantage of having shorter time to market and having flexible resources¹¹.

On the other hand, there are several factors that discourage companies from offshoring. We refer to these negative drivers as “inhibitors”. Some inhibitors are well-founded identifiable problems, which need to be addressed. Others, however, are solely based on perceptions and prejudices of individuals. Herbsleb and Moitra list strategic issues, cultural issues, inadequate communication infrastructure, knowledge management, project and process management and technical issues as inhibitors of offshoring¹². Kobitzsch, Rombach and Feldmann write about the difficulty of IPR management¹³. In addition to these it is easy to see the importance of geopolitical instability, xenophobia, fluctuations in global economic environment and lack of information on offshore locations and companies. Figure 3 summarizes the effect of drivers and inhibitors on the willingness to offshore.

⁸ Kobitzsch, W., Rombach, D., Feldmann, R.L., 2001, p.78

⁹ Ebert, C., De Neve, P., “Surviving Global Software Development”, IEEE Software March/April 2001, p.62

¹⁰ Jennex, M.E., Adalakun, O., “Success Factors for Offshore Information System Development”, Journal of Information Technology Cases and Application, vol. 5, number 3, 2003, p.12.

¹¹ Herbsleb, J.D., Moitra, D., “Global Software Development”, IEEE Software March/April 2001, p.16

¹² Herbsleb, J.D., Moitra, D., 2001, p.17-18

¹³ Kobitzsch, W., Rombach, D., Feldmann, R.L., 2001, p.78

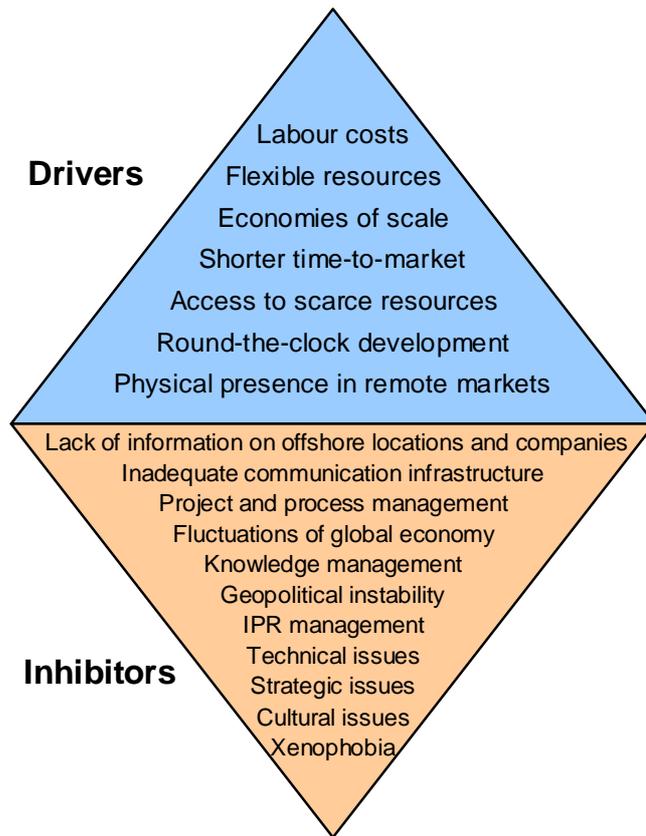


Figure 3: Drivers and inhibitors of offshoring

2.3 The case study of India's emergence as a software development offshoring powerhouse

While China has traditionally been the number one country in terms of foreign manufacturing offshoring, India has been gearing its economy and industry towards IT, especially software development. Current estimates show that there are over 300,000 engineers with college degrees in India, and the schools are churning out some 100,000 more every year¹⁴. Software offshoring houses, such as Infosys Technologies, Wipro and Tata Consultancy Services, in addition to the call centres have sprung up all around India, are largely responsible for the astounding 8% annual economic growth India is experiencing¹⁵. In a globally challenged IT services market since the boom days of Y2K, these companies have continued to post 30-50% annual growth rates, generating operating margins up to 20-30%¹⁶.

However, the foundations of Indian IT industry were laid much earlier. Tata Consulting Services, one the today's leading offshoring houses, was established as early as in 1960s on the legacy of the industrialist Jamsetji Tata. The third largest

¹⁴ Kripalani, M., Engardio, P., "The Rise of India", Business Week, December 8, 2003

¹⁵ Marcus, A., "Insights on Outsourcing", Aaron Marcus and Associates Inc., July+August 2004

¹⁶ Lagerling, C., Roman, P., "Offshore Outsourcing – An Analysis of the 'Dual-shore' IT Services Delivery Model", Bullhound Ltd, 2005, p. 5

Indian software house Infosys was established in 1982, and perhaps the most well known outsourcing vendor, Wipro, was founded in 1990.

Having been part of the British Commonwealth, the English language has a fundamental role in the Indian society. For a country that has 15 official languages and a myriad of dialects, this has greatly helped integrate business and trade with foreign nationals, and also between Indians of different backgrounds. A hardworking culture, geopolitical stability, and the early establishment of engineering-focused educations are also often listed as factors which helped the country to get a head start in the offshore market. According to consulting group Bullhound, India is today by far the largest offshore outsourcing region, accounting for about 95% of the total offshore market¹⁷. In India, Bangalore is the biggest centre followed by Mumbai and New Delhi.

The market, even though growing rapidly, is still at its infancy. NASSCOM (National Association of Software and Service Companies) estimates the value of Indian software and services exports in 2004 to US\$12.2bn, or 63% of the total Indian IT market (US\$19.6bn). Gartner estimated the total IT services market to be worth US\$568.9bn in 20035. This would suggest that Indian exports would be little more than 3% of the total market.

SWOT

A traditional tool for analyzing a country's (or company's) competitiveness is the Strengths - Weaknesses - Opportunities - Threats Matrix (SWOT). Here we try to identify how India's offshoring environment rates according to the aspects of SWOT matrix. We explain the key SWOT drivers in the following section.

Strengths	Weaknesses
English language widely used	Poor infrastructure
Good demographics	Huge income differences
Diligent working culture	
Large pool of human resources	
Good education system	
Close ties to the US	
Proactive government	
Capital markets	
Legal system	
Quality orientation	

Threats	Opportunities
Public animosity towards offshoring	Move higher in value chain
Salary inflation	Offshore to other developing countries
Increasing competition	
Even lower cost countries	
Emerging skill shortage	

Figure 4: SWOT Matrix of India as offshoring location

¹⁷ Lagerling, C., Roman, P., "Offshore Outsourcing – An Analysis of the 'Dual-shore' IT Services Delivery Model", Bullhound Ltd, 2005, p. 10

Strengths

In the Strengths section “good demographics” refers to the fact that a high portion of the populace in India is young – some 53% is under age of 25¹⁸. The importance of the Indian education system has been stressed earlier in the document. Not only is the education on par with the Western schools, it is also geared towards science and engineering. This ensures that huge amounts plenty of competent human resources are available for the software companies.

“Close ties to the US” means that there are a lot of Indians working for software companies in the US. This fact can greatly help offshoring partnerships by functioning as a liaison between the US and Indian companies. The Indian government is very supportive of the offshoring business and the threshold of offshoring has been actively lowered by legislative changes and tax benefits.

The capital markets have developed strongly in India over the last ten years. India currently has 23 stock exchanges, and venture capital activity has increased significantly. Companies can currently tap a reasonably large pool of capital in the different stages of company life cycle. The legal system – also courtesy of the Commonwealth heritage – is more developed than in China or many other potential offshore locations when it comes to copyrights and intellectual property¹⁹. Finally, many Indian software companies take quality very seriously and have invested substantially into processes and systems which improve the level of quality. According to NASSCOM, India had 42 companies at SEI CMM Level 5 assessment in March 2002. The quality maturity of the Indian software industry is also indicated by the fact that already 316 Indian software companies have acquired quality certifications and more companies are in pipeline to do so.

Weaknesses

On the weaknesses side, the current infrastructure, or the lack of it, is most prominent hindrance. Telecommunication links have admittedly improved and the price and availability of the bandwidth is now acceptable. According to the Bullhound research²⁰ the price of 2MB dedicated line from India has more than halved since 2001. However, road infrastructure still remains very poor. In regions like Chennai and Bangalore the travel is excruciatingly slow - a 40km trip might take up to two hours. For this, Bullhound notes that local political reasons are often to blame; for example, the latest local government in south India (Bombay, Bangalore, Chennai area), came to power on a promise of focusing more on the poorer rural areas as opposed to the cities.

¹⁸ Kriplani, M., Engardio, P., “The Rise of India”, Business Week, December 8, 2003

¹⁹ Kriplani, M., Engardio, P., “The Rise of India”, Business Week, December 8, 2003

²⁰ Lagerling, C., Roman, P., “Offshore Outsourcing – An Analysis of the ‘Dual-shore’ IT Services Delivery Model”, Bullhound Ltd, 2005, p. 35

While the rise of the Indian IT industry is funnelling new wealth into the country, it takes time for it to trickle down to poorer layers of society. Some 1/3 of the populace subsist only on \$1 a day. Income differences can, if they become too pronounced, create social unrest and slow down or even turn back the budding economic development.

Opportunities

One opportunity which working with offshoring projects might offer later on is moving up in the value chain to higher value-added tasks such as design and architecture. This is clearly a two-edged sword: as an Indian company begins to design its own products, it will likely to lose much of its offshoring business as former partners are transformed into competitors.

The second very real opportunity is that, armed with the offshoring experience with Western companies, Indian software houses begin to engage in the same practice and move their work to cheaper developing countries, such as the Philippines or Bangladesh. To some extent this practice is already a reality, although it is still rather rare. This, coupled with the opportunity described in the previous paragraph, would effectively reverse tables for the Indian companies and put them in condition to directly challenge global software titans.

Threats

Offshoring white-collar jobs has received its share of bad publicity in the media of Western countries. It is in general politically unpopular, and there already are rising signs that protectionist policies will continue to result. The United States has limited the amount of visas granted to foreign workers to protect the domestic labour market. This, however, according to some critics has fuelled the actual offshoring since the companies now have even more incentive to ship work outside the borders. Regardless, legislative changes to limit offshoring are likely to continue, though they rarely seem to achieve the results they aspire to.

The following three threats are closely related to each other. The fact of the matter is that the Indian offshoring scene is currently very competitive and does not show any signs of cooling down. The heated competition drives up the salaries which cut the companies' margins and causes even wider wage gaps between employees working in offshoring projects, and the rest of the workforce. Moreover, the rising salary level makes India a less attractive place to offshoring destination when compared to the other up-and-coming locations.

Finally, even though the human resource pool of India is considerable, some experts are already seeing signs of it becoming exhausted. According to NASSCOM's predictions the demand for IT professionals will exceed the supply by the year 2008. NASSCOM's assumption is based on the IT services labour pool being 360,000

with 55,000 engineers and 20,000 graduates joining every year²¹. The software industry in India is starting to address the issue, and is trying to get the government to ramp up even more the emphasis on educating engineers. Some companies, such as Wipro, have taken the initiative and started their own training programs in cooperation with universities, offering participants a university degree in software engineering.

Future

For the time being, the future looks sunny for the Indian IT industry. The economy is registering over 8% annual growth rates, and will most likely keep doing so for some time to come. The demographic structure guarantees that India will have the world's largest population of workers and consumers by 2020.

Offshored software development will help fuel the growth for a while, but it likely that over the longer term a move upstream in the value chain is very likely. The margins in offshoring are under pressure thanks to increased competition, and the shape of the Indian software development landscape in five to ten years depends very much on how fast the Indian companies are able to achieve this transition.

²¹ Lagerling, C., Roman, P., "Offshore Outsourcing – An Analysis of the 'Dual-shore' IT Services Delivery Model", Bullhound Ltd, 2005, p. 31

3 FRAMEWORK FOR ANALYSIS AND THE VALUE DRIVER MODEL

Having described the offshoring ecosystem, we have set the stage for analyzing how Finnish companies are participating, and will participate, in the offshoring trends. We now turn to the execution of the value-based analytical model.

3.1 Fundamentals of the value driver model

At its more basic and theoretical form, the following formula represents the impact of all operating factors of a company on its market value (i.e. the value that an investor would pay for all the securities of the company):

$$V_0 = R_0 [m(1-T)(1-b)] \sum_{t=1}^n \frac{(1+g)^t}{(1+k)^t} + \frac{R_0(1+g)^n [m(1-T)]}{k(1+k)^n}$$

where:

V = market value of the company

R = last 12 months revenue

m = expected net profit margin

T = expected cash tax rate

b = expected net increase in investment (working capital and plant and equipment)

g = expected growth rate of revenues

k = cost of capital of the company

n = number of years where the company is deemed to have a defensible competitive advantage

As stated above, we believe that this is an appropriate backdrop for analyzing the impact of various factors, including offshoring practices, on the value of a software company. It is notable that this formula depends on a number of assumptions on the future operations of the company – i.e. the profit margin and the years in which the company enjoys a competitive advantage, and thus this formula is not very useful in this form – it merely serves as the theoretical underpinning for later analysis. As such, if the terms in the above formula are expanded, the first term describes the value associated with a mid-term forecast period of n years, with the second term approximating the value of the company over a “terminal value” period beginning at the point where the competitive advantage is lost, and the firm simply grows at the rate of the overall economy. Often the “forecast period” is deemed to be 3-10 years, depending on the nature and predictability of the industry being analyzed. The software industry, being in a period of rapid flux, would clearly be described by a “forecast period” relatively closer to 3 years than 10 years.

3.2 How to use the value driver model

In order to use the value driver, the above theoretical formula must be operationalized, and hypothesis must be derived accordingly. In our paper, we use the practical formulation below, with attendant hypotheses developed regarding the direction and magnitude of the impact of offshoring related issues. In the following paragraphs, we discuss the reasoning behind our hypotheses, followed by analysis of the results of our empirical investigation. The graphical representation of

the model is based on diagram²² presented in the book “Value Based Management” by Martin and Petty.

Reading the model

The model has three basic sections, and should be interpreted *from right to left*. The *value driver flowchart* section, consisting of the boxes on the right hand side, show the relationships among the various elements of the model, from the *dependent variable* “Company Value”, to increasingly detailed views of the *independent variables*, or “Value Drivers”. At the most detailed level, we include in braces (“]”) the actual factors that we analyze in the study.

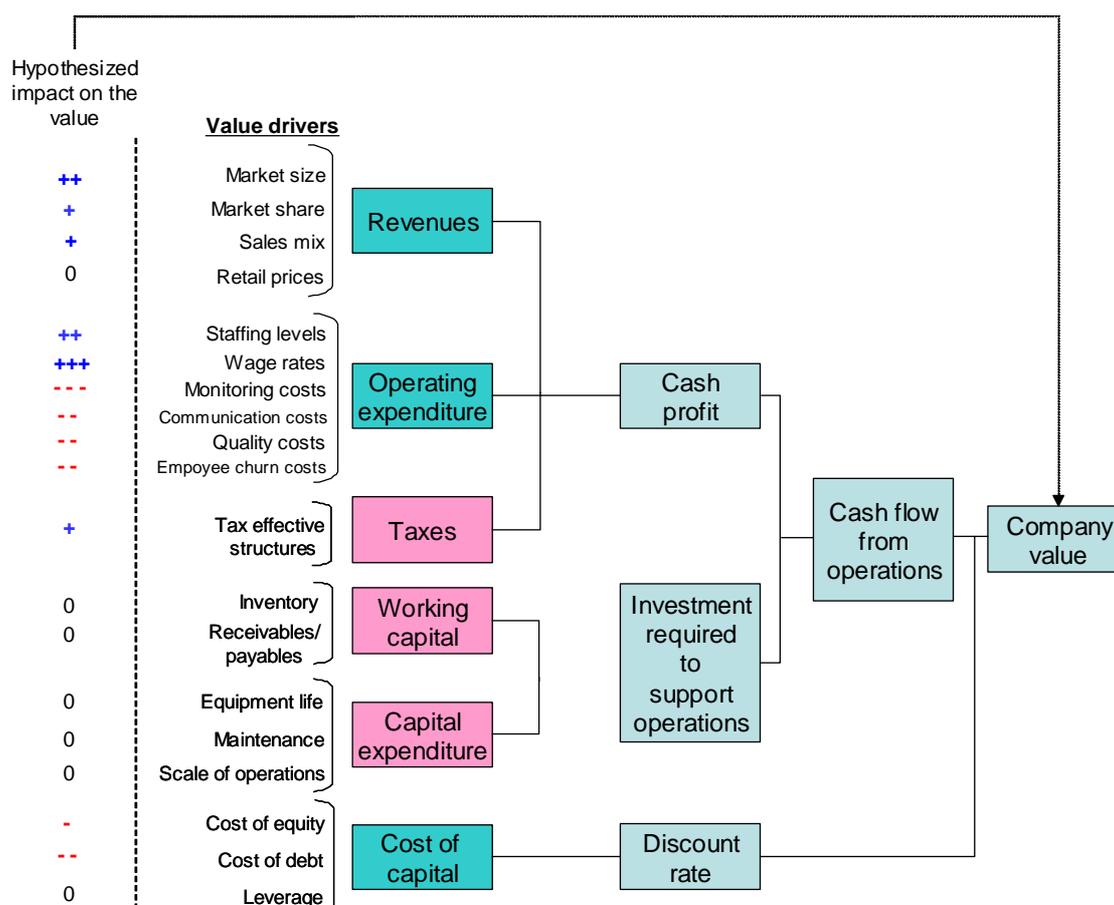


Figure 5: Value driver model and initial hypothesis

In the “Hypothesized impact on the value” column, we relate our hypotheses prior to execution of the study of the relative magnitude and direction of the given value drivers on company value. The scale ranges from “- - -” to “+ + +” and 0 denoting that there’ is no significant impact. It is imperative to remember that the impact is measured on the *company value* not on the value driver variable. For example, the ++ indication next to the “Market Size” value driver indicates that we hypothesize there

²² Martin, J.D., Petty, J.W., “Value Based Management – The Corporate Response to the Shareholder Revolution”, Harvard Business School Press, 2000, p. 69

will be an impact on the addressable market size of a company which engages in offshoring – and it will have a moderately positive effect on the company value.

We focus on three main components of company value – revenues, costs, and cost of equity, and will motivate the relevance of each value driver we have chosen in the following chapters. We choose not to focus on certain components of cash flow – tax differentials, working capital-related issues, and capital expenditure issues. While these factors may have importance in given situations, we believe that they are not key drivers to the offshoring decision except in special cases.

3.3 Decomposing the model

In order to decompose the model, we must elaborate on both the dependent variable (Company Value) and the independent variables, or drivers.

3.3.1 Aspects of the dependent variable: Company value

We define Company Value as the “Enterprise Value” of the company in question. Enterprise Value is defined “the market’s belief of what the company’s ongoing operations are worth”, or the total market value of the company’s equity shares *plus* debt *plus* preferred stock *less* cash and cash equivalents.

Most of the companies in our empirical analysis are in fact venture capital-backed private companies that have no publicly listed shares floated on an exchange and very little debt. The value of the company’s equity shares (the “equity value”) is in theory the share price at which a new investor would buy the company’s shares. Since this value is not at all transparent - in practice the most recent transaction involving any private company’s shares is generally a secret held tightly by the company’s management and investors, and moreover this is still not necessarily related to the price a *new* investor would be willing to pay – we choose not to attempt to mathematically calculate the value of our sample company shares. We instead rely on interviews with managers, investors, and in some cases service providers, to help us assess the impact of the value drivers on company value. Since all the parties are jointly entrusted with the objective of “maximizing shareholder value”, we believe that the insight we gain from interviews and a survey with a heterogeneous group of software companies will be highly related to the actual impact of the value drivers on company value.

3.3.2 Aspects of the independent variables: Drivers to company value

Similar to the dependent variable Company Value, our independent variables, or value drivers”, are not observable based on publicly available data either. While all companies, including private Finnish ones, file for taxation purposes income statements and balance sheets, these filings only become publicly available much later – as of January 2005, we can find operational statistics for companies only as of December 2002. Moreover, the financial data filed for tax purposes is severely lacking for the purposes of this value driver mode. We use the same argument as with company value – i.e. that the best instrument for assessing the impact of the value drivers is from the company managers and investors themselves, with certain views provided by service providers whose reputation depends of delivering timely and appropriate advice on offshoring views.

Our study reviews the impact of three basic types of value drivers: those impacting revenue, costs, and cost of capital. We discuss the factors and hypothesized impacts below.

3.3.2.1 Decomposing the revenue drivers

While most attention has been focused on the cost-saving elements of offshoring, there can potentially be a positive impact on the revenues of a company. This section of the model breaks out revenues into its basic components.

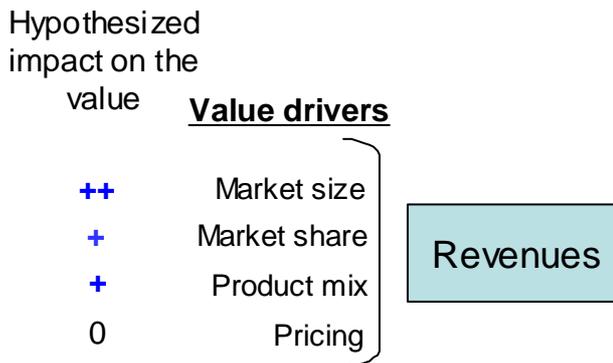


Figure 6: Hypothesis for revenue drivers

We hypothesize that the positive effects are mainly attached to increasing the *addressable market size* of the company in question. This will be true in the cases where the offshoring target country – e.g. India – also represents a significant market for the company’s products or services. We believe that the activity of offshoring may provide general relevant insight and a contact network that can be transferred from the product development side of an organization to the marketing and sales, and thus may raise the probability of opening that market for the company. In addition, having a local offshoring partner may lead to greater visibility within the market, and thus the potential for greater *market share*, though we believe that this will be a weakly positive driver at best. Finally, insight on the local market gained through offshoring may add insight on the correct product specifications for the local market, and thus improve the company’s *Product mix* in that country. While the company may gain insight on the correct pricing strategy for its products, we do not expect that there will be significantly higher *pricing* potential for an offshoring company when compared to any other market participant.

3.3.2.2 Decomposing the cost drivers

The offshoring decision is fundamentally one aimed at optimizing the cost base of the company. A company that has successfully offshored has generally achieved two things at the expense of certain increased organizational management costs. First, it achieves more flexibility among its production resource base, i.e. more elastic *staffing levels* that can expand and contract easily based on the existence of development projects. Second, the average direct wage cost associated with a unit of labour should be lower for an offshoring company. We expect that the wage cost will be the key driver, with staffing flexibility close behind.

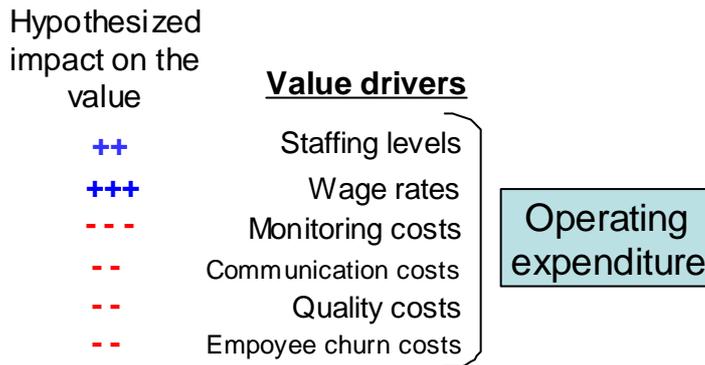


Figure 7: Hypothesis for cost drivers

On the other hand, having development resources distributed outside the firm will certainly lead to increased management costs to make sure that those resources are being sufficiently leveraged. We identify four types of management costs. First, we expect the offshoring company to need to invest in project management skills and tools within the company. This is due to the fact that it is likely that more specification and testing must be done on projects executed outside the boundaries of the company. These we group under a common term *monitoring costs*. It is very important to note that, while this drives some extra costs, they very well could be viewed as an investment as well, since specification and testing could emerge as core competencies and in the long run be important factors for the company to grow and scale operations. However, in the near term they are visible costs – good project managers, and sophisticated management tools, are expensive. Thus we view this as a significant cost driver.

Communication costs refer to increased need for phone calls, secure digital connections, and increased travel to promote face-to-face communication. While the quality processes of many specialized software development companies in e.g. India have much higher quality processes and ratings than many other software companies, there still may be need for more bug fixes etc. if the projects are not perfectly managed (i.e. specified, monitored and tested). This is likely especially the case for first time offshoring companies without the in-house management expertise. We have grouped these additional expenditures under *quality costs*. Finally, there is rising competition in offshoring-focused countries like India, leading to increased employee churn in particular in specialized projects. Key people leaving in the middle of the project causes delays and, in worst case, might leak out confidential information. The costs associated with employee turnover we call *employee churn costs*.

Our expectation is that increased monitoring costs will be the biggest negative factor of offshoring, though as said above; it could ultimately have positive spillover effects on the company's operations as it learns to monitor all projects better. In terms of importance, monitoring costs are expected to be followed closely by communication, quality and churn costs.

3.3.2.3 Decomposing the cost of capital drivers

Our final hypotheses are related to the cost of capital for a company offshoring part of its software development. The initial hypothesis is that offshoring increases

complexity of operations, which results in more risk. Given that investors require higher return with increased risk, we hypothesize that offshoring will ultimately increase the cost of both equity and debt. However, in the case of equity investors, there is also a countervailing force. Because industry trend currently clearly advocates offshoring, having no offshoring strategy can be seen as a risk in and of itself. Therefore, offshoring or having a strategy to do so should also have the impact of decreasing the cost of equity. Most likely these effects will offset each other. Finally, we believe that the impact of offshoring on the cost of debt and the leverage ratio will be negligible.

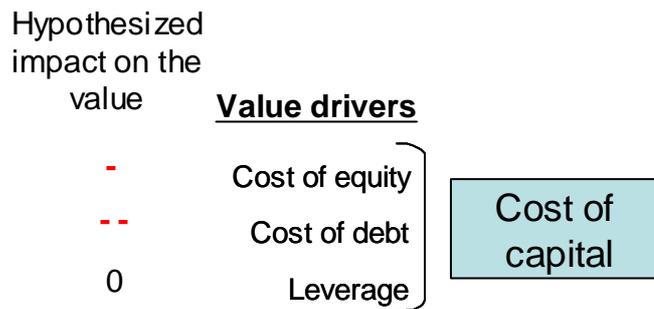


Figure 8: Hypothesis for cost of capital drivers

4 RESEARCH METHODOLOGY AND STRATEGY

The research is conducted in three separate but interlinked parts. Firstly, the information on the background and current state of offshore software development is derived from a literature study. Moreover, literature resources were used to form the initial idea of the offshoring value driver model, around which the study concentrates. Lastly, the literature study is used in the analysis in conjunction with the findings from the empirical parts of the study.

The second part of the research was gathering and analyzing qualitative data. This proved to be the best source of new insight into the world of offshore software R&D. The qualitative data was gathered through a series of domestic and international expert interviews, whose combined expertise covered several dozens of different companies and offshoring endeavours.

Lastly, a set of quantitative data was gathered by using a web-based survey to inquire about offshoring attitudes, experiences and practices of Finnish software SMEs. This component helped us look more deeply into certain issues brought up in the interviews.

4.1 Qualitative study

While manufacturing offshoring has been around for a couple of decades, offshore software development is a relatively new topic. It is also a very controversial one and many articles, which have been written about it, tend to have a bias either for or against the practice. We felt that the best way to approach the subject was to interview a selection of people with varying expertise and try to identify the relevant points of interest from the discussions.

The people selected for the interviews were roughly from three different categories: software company executives, venture investors and experts/consultants. Company executives were selected for the obvious reason of having the most in-depth knowledge on their own company and its offshoring experiences. Some of the executives had also additional expertise from their earlier career. Venture investors were included because their view on the value of the company tends to differ somewhat from the one of executives'. While company executives are clearly the best to evaluate the cost and revenue side effects of offshore outsourcing, the venture investors can help assess the impact on cost of capital drivers and value creation from the investor point of view. Venture capitalists also often sit on the board of one or more companies, and hence, they could offer their expertise on all of these sources. Finally, the experts/consultants consisted of people who had been previously working for software companies and/or venture capital firms and later turned independent, and of people who had particular knowledge on the target offshore countries and markets.

The interviewing process was more in form of free flowing conversation than a strict set of questions. The conversation touched the points identified in appendix 1 and the value driver model, which is presented in figure 4.

All in all, dozens of hours of interviews were recorded and transcribed and several hours more were done “off the record”. The interviewed people were:

Company Executives

Brian Carr	VP of R&D, Smarttrust
Antti Halila	CEO, AffectoGenimap
Risto Niva	CEO, Saraware
Yngve Nyman	VP, Kronodoc
Pekka Ruusunen	VP of R&D, F-Secure
Pirkka Palomäki	CEO, Distocraft

Country Experts

Jyrki Ali-Yrkkö	Eta
Vipul Chauhan	Finpro
Monika Jain	Argent Business Services
Sakari Nikkanen	independent
Ossi Pohjola	Business Integration Group

Investors

Jörgen Bladth	Northzone
Peter Gullander	IntelCapital
Anders Lindqvist	ITProvider

4.2 Quantitative study

The quantitative survey was included into the study to complement the qualitative interviews. The purpose was to statistically examine the experiences and attitudes towards offshore software development in Finnish software SMEs. The parallel use of qualitative and quantitative methods is described by Tashakkori and Teddlie in their book²³. In this particular study the qualitative research was considered the primary source of information and the quantitative component was introduced to support and enlarge the primary component.

The sample used in survey included all venture-backed Finnish software SMEs. The venture capital financing was chosen as the limiting factor because VC-backed companies tend to be more value creation and growth oriented than their purely entrepreneur-driven peers. This is a non-probability sampling method called “sampling for homogeneity” and is identified in Tashakkori’s and Teddlie’s book²⁴.

The sample was constructed using the Thomson Venture Economics’ database²⁵, which lists venture-backed companies, and selecting all Finnish companies with “Computer Software”, “Communications” or “Internet Related” as the business description. The list was then manually processed to eliminate bankrupt and acquired companies, and the ones which did not have software R&D as a significant part of their business. Lastly, the final list was reinforced with a couple of companies, which were recently added to large Finnish venture capitalists’ portfolios. The final sample included 130 names, to which the invitation to the

²³ Tashakkori, A., Teddlie, C., “Mixed Methodology – Combining Qualitative and Quantitative Approaches”, Applied Social Research Methods Series vol.46, Sage Publications, p.44-47

²⁴ Tashakkori, A., Teddlie, C., p.76.

²⁵ www.ventureeconomics.com

survey was sent. We estimate the sample to cover at least 95% of all Finnish venture-backed software companies. The survey form is presented in appendix 2.

The received responses were tabulated and rescaled. The scores relating to attraction of offshoring and importance of certain location selection criteria were scaled to have a value from 1 to 6. Score 1 meaning that the attraction was deemed unimportant and score 6 conversely highly important.

The scores regarding the attraction of certain countries as offshoring location were scaled to have value from -3 to +3. On this scale -3 means that the location is highly unattractive place for offshoring and +3 denotes a highly attractive country. Score close to zero naturally indicates that the location is rather neutral when considering offshoring there.

Finally, the scores regarding the impact of offshoring on the value of the company via a certain value driver were scaled similarly to the scale of -3 to +3. However, it is important to remember that the score measures the impact on the company value, not the change in the driver. For example, a score of +2 on wage rates driver would mean that it has an increasing impact on value, i.e. the actual wage rates are lower thanks to offshoring.

5 ANALYSIS

5.1 Revenues

In the beginning of the study our hypothesis was that offshoring would mostly affect the accessible market size revenue driver. The secondary effects would be on market share and sales mix. However, both interviews and survey results indicate that while the overall impact of market size and share is positive, the main attraction and upside comes from enhanced product mix. The product mix improvement is attained by the increased human resource flexibility offshoring activity provides.

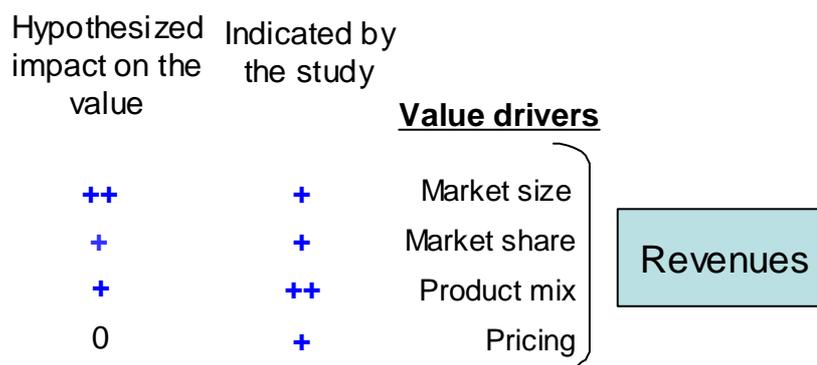


Figure 9: Results for revenue drivers

5.1.1 Market size and share

The questionnaire surveyed both the *attractiveness* of revenue enhancing through offshoring and the *perceived impact* of offshoring on revenue drivers. The distinction was introduced to see whether we find difference between the expectations and actual impact. The results show that access to new markets is not considered a significant attraction when considering offshoring. The respondents scored the *attraction* to be rather neutral 3.5 on scale of 1 to 6. However, the actual *perceived impact* was noticeably more positive. Impact on market size was rated 0.5 and impact on market share 0.6 on the scale of -3 to +3. Based on this we would say that offshoring is generally not driven by the attraction of new markets, but offshore operations can often be used to leverage favourable market position in that particular country. An expert comment from our interviews corresponds to these results:

“Offshoring itself rarely opens new markets. However, it gives the people involved cultural knowledge, which can be very useful when forming new market type relationships.”

5.1.2 Product mix

In our initial hypothesis we did not consider Product mix to be a major factor when considering offshoring decision. Moreover, we initially saw offshoring affecting it only through additional market information gained from offshore market. However, both the survey and the interviews indicated otherwise. The core finding here is that offshore outsourcing increases resource flexibility, which can be used to significantly broaden Product mix. Questionnaire respondents rate the attraction of increased

resource dynamism highest with score of 5.3 on the scale of 1 to 6. The impact of offshoring on the Product mix receives score of 1.1 on the scale of -3 to +3. Almost all interviewees had thoughts along similar lines. One respondent comments:

“Another (upside) is resource flexibility. It’s not fixed cost, it is a variable cost. You get a resource you can get rid of it in one month – sometimes even faster than that. And there’s no obligation what so ever. ... You can always call it back on later time if you need it again.”

Another confirms:

“(On dynamic resources) That’s one definite upside of offshoring. It’s not only the cost advantage but also the additional flexibility.”

5.1.3 Pricing

Pricing in general is seems not to be much of an issue in offshoring. Survey respondents perceive offshoring having only a slight, albeit positive, impact on it. The impact on pricing receives score of 0.4 on the scale of -3 to +3.

5.1.4 Explanatory factors

From the survey data we also calculated whether second order implications exist, i.e. are there correlations between respondent’s answers and characteristics of the company. The highest positive correlation with the attractiveness of revenue enhancing is with customer type. Companies who concentrate on larger customers, such as governmental entities and multinational enterprises, tend to be more upbeat about offshoring’s attractiveness. Similar correlation was also with average deal size, i.e. the larger the average deal in monetary terms, the more attractive the market enhancing effects seem. This is plausible since if your company’s target market is mainly large enterprises, such as telecom companies, and governmental entities you might be better positioned to get a contract if your company already has some operations in the target country. Especially governmental projects are often awarded to companies with local operations because of the employing factor and its political implications.

Table 1: Correlations for market drivers and attraction

	Attraction:			Impact of offshoring on revenue value drivers:			
	Access to new markets	Access to new competences	Increased resource dynamism	Market size	Market share	Product mix	Retail prices
Personnel	-0.17	-0.01	0.25	0.16	-0.12	-0.08	0.22
R&D personnel	-0.04	-0.13	0.29	0.39	-0.26	0.07	0.13
Turnover	-0.24	-0.04	0.22	0.33	-0.09	-0.10	0.15
Share of R&D expenses from turnover (low to high)	0.10	-0.75	-0.73	0.05	-0.33	0.27	-0.29
Share of international sales from total sales (low to high)	-0.24	-0.62	-0.05	0.20	-0.41	0.64	0.22
Number of simultaneous projects at the end of 2004	-0.35	-0.03	0.13	-0.39	0.56	0.33	0.51
Customer type (private to government)	0.53	0.18	-0.12	-0.22	0.42	-0.34	-0.29
Average deal size (small to large)	0.48	0.06	0.22	-0.24	0.02	-0.10	0.09
Type of offering (service to product)	-0.09	-0.40	-0.23	-0.08	-0.27	0.75	0.27

Similarly interesting is fact that the attraction of access to new competence is highest with companies whose R&D expenses are not a significant part of their turnover, who have little international sales, and who have more service oriented offering. This is, once again, plausible since companies who have mostly local customers and offer services rather than products have little need for a workforce stationed in far away countries. Conversely, companies which develop

internationally sold software products can benefit more from specialized talent available in offshore locations. Increased resource dynamism, which is the most attractive part of offshoring to many of the interviewees, has the strongest, albeit inverse, correlation with how “R&D intensive” the company is. This is explained by the fact that “R&D intensive” companies are, in fact, small and usually developing a highly specialized software product. They often prefer to have a stable and committed development team and do not necessarily see the attraction of flexible human resources.

When looking at the perceived impact of offshoring on the revenue value driver and their correlations with the characteristics of the company, one relation is particularly interesting. The positive impact on product mix, which many companies reported and interviews confirmed, has highest correlations with share of international sales and product oriented offering. Quite possibly offshoring allows these companies to localize their product offering better to the multiple international markets they are in.

5.2 Costs

Cutting wage expenditures is universally seen as the most common reason for offshoring R&D. It is similarly accepted that certain other costs, such as communication, travelling and management, will increase and partially offset the gains from wage reduction. Our initial hypothesis was constructed these expectations in mind. We assumed the wage rates to be the most significant driver in the operating expenditure category, and that they would be partially offset by monitoring, communication, quality-related and employee churn costs.

The study, however, turned up somewhat different results. According to our survey and interviews, the relative importance and impact of wages was considerably lower than expected. Additionally, the costs associated with monitoring, quality and employee churn are generally believed to be larger than they actually are. Communication costs can still be a significant cost driver in offshoring, but they are also somewhat dependent on the geographical distance between the offshore location and company’s home country.

Hypothesized impact on the value	Indicated by the study	<u>Value drivers</u>	Operating expenditure
++	0	Staffing levels	
+++	+	Wage rates	
---	-	Monitoring costs	
--	--	Communication costs	
--	-	Quality costs	
--	-	Employee churn costs	

Figure 10: Results for cost drivers

5.2.1 Staffing levels

The initial hypothesis was that offshoring can have a significant positive impact on the company value by enabling flexible staffing costs. The study results indicate that the impact on value via staffing levels is ambiguous at best. The hypothesis about added flexibility and its positive influence was, however, correct. The impact on value only manifests itself through the Product Mix value driver, and not the staffing value driver.

5.2.2 Wage rates

As mentioned before, the lure of lower wages has always been accepted to be the driver for most offshoring endeavours. We thus hypothesised that their impact on value would be considerable. However surprisingly, both interviews and survey results indicated that, even though lower wages are still attractive to many, their actual impact is not that large. The *attraction* of lower wage rates receives a rather high score of 5.1 in the scale of 1 to 6. However, the actual impact is perceived to be much lower.

There is still clearly a difference in wage rates between Finland and places such as India and Russia, but it is often smaller than expected. In many offshore countries the wage level is highly related to the level of experience – much more so than in Finland. Therefore, talented, experienced software developers with specific skills cost there relatively more than more generic coding resources. Some interviewees maintained that the wage difference between Finland and offshore countries is not large enough in their own right to justify offshoring, and that Finnish companies are wise to look for other advantages of offshoring to help drive the decision. A CEO comments the issue:

“Finland is a cheap country wage-wise if we compare it in particular to the US. The key thing about Finland is that we are cheap, but do not compete in bulk work. We can provide quality engineering at affordable prices. Given this reasoning, I can understand why relatively few Finnish companies have offshored engineering to India.”

One of the consultants interviewed stated:

“Offshoring from the USA to India is much more profitable than from Finland to India. One Indian we interviewed told us that a Finnish programmer was looking for work at their company. His salary request was 2500 euros per month. The Indian guy said that he couldn’t hire an Indian with similar experience at that price.”

5.2.3 Monitoring and communication

Monitoring includes all new project management hardware and software, plus the resources needed for setting up and maintaining new processes. Communication also includes, in addition to telecom equipment and software, travel between the offshore location and the offshoring company’s home country. Monitoring and communication are both expenditure items which generally are expected to increase when the company decides to offshore part of its R&D. Consequently, our initial hypothesis reflects this.

The hypothesis on communication costs was indeed borne out in the survey and interview results. These expenditures increase rather significantly when a company engages in offshoring. However, few respondents can pinpoint exactly how much. The cost seems to be proportional to the distance between local and offshore locations to a certain extent, since there is always additional travelling involved. Sophisticated telecommunication systems can, in the long run, decrease travelling and lower communication-associated costs. Furthermore, the possibility of a communication breakdown is a risk and thus should be taken into account. Monitoring related costs also seem to increase according to the survey results, but not as much as might be expected. A CEO comment on the issue:

“Our estimate was that the offshoring structure caused something like 10% overhead. I cannot say where it was coming exactly. Some was having a product manager on site. Some from extra communication costs.”

Another CEO has similar opinion:

“Communication is our biggest risk and problem. We have a good intranet system and we do a lot video meetings but naturally it is a problem because we cannot see each other every day. We also have to travel a lot between those cities. It’s difficult to say exactly how much extra comes from that but I think less than 5%.”

5.2.4 Quality costs

The quality of offshore production has been much debated issue, and is often used as a counter argument to the benefits of offshoring. Quite understandably the advocates of domestic resources maintain that overall quality will suffer in offshoring and extra resources have to be used to maintain the quality at acceptable level. The initial hypothesis reflects this point of view.

The responses regarding quality were varied, however. Most survey respondents considered quality incurring slight additional costs, which in turn affect the total value gained from offshoring. The average score from the survey regarding the impact of quality costs was -0.9 on the scale of -3 to +3.

However, the interviews reveal that, even though initially offshoring might increase quality related costs, its primary impact is slightly different. Most interviewees agreed that in general companies which supply offshoring services have extremely highly developed processes and quality control. They can deliver very reliably according to specifications. Therefore, the problem usually lies at the offshoring company’s end and its ability to specify the project precisely. Quality-related costs are often incurred when the offshoring party’s capabilities are upgraded to cater the demands of offshoring process. This clearly can have a very positive impact in the end, since it forces the client side’s engineers to concentrate more on documenting, which in turn facilitates knowledge transfer. A consultant stated:

“I know well the Indian software industry, and I’m very impressed by the quality they can provide. They really have the CMMi systems in place. The weakest link is always the specifications.”

Another consultant agrees:

“Yes, I think Indians are very good at understanding specifications and developing according to those. But here too, it is question of whether the Finnish company has resources to do this in a proper fashion.”

5.2.5 Employee churn

Employee churn is considered by many to be one of the top challenges in offshore software development. In a highly dynamic and vibrant environment, such as the Indian software scene, new employment opportunities with higher salaries continually materialize for experienced engineers. Not surprisingly, many also try to capitalize on these new opportunities and switch jobs, even in the middle of the project. This causes higher than average employee turnover, i.e. churn, and creates potential problems for companies who develop software there.

Churn creates two kinds of problems. Firstly, it causes delays in projects. If key people leave, the progress is usually slowed down or even halted until a replacement has been found and he has familiarized himself to the project. Secondly, the leaving employees take away immediate knowledge about what they have been working on. This, at best interrupts knowledge transfer with the old software team. At worst, the leaving employee can take his knowledge to the offshoring company's competitor. Based on these, we hypothesised churn to have at least a reasonably sized negative impact on company value.

It turned out that, while churn clearly can have some impact, it is not as large as often claimed. The impact of employee churn receives a modest score of -0.4 on the scale of -3 to +3. It was mentioned by many interviewees that the negative impact of project slowdown can be largely mitigated by having proper documentations and processes so that replacements can be brought up to date rapidly. There also seems to be regional differences in the churn activity. Naturally larger, more rapidly growing cities experience this problem more than smaller static environments. One CEO explained that they have deliberately chosen to move R&D locations to a smaller city than the one where their current headquarters is so that they can increase the employee retention rate. A company executive comments:

“The Indian market is huge but I'm also a bit concerned about our competitiveness to attract the top talent. Larger entities with more visibility have an easier time. The competition is intense to find the best talents.”

Another executive had the following thoughts on the subject:

“The average employee turnover in India is around 15-16%. I think our project is going to be interesting enough to keep the churn rates below that - you know the when a guy is put on a less interesting project, like a COBOL conversion project, he is not going to be very motivated.”

One consultant stated:

“That (churn) is always a problem to some extent. I haven't seen that as a major issue so far thanks to the well-defined processes which enable new replacements to be integrated into projects in a very rapid manner. Also, everything is well documented. Secondly, the Indians are actually culturally rather loyal to the company, so the churn is not as large as it is believed to be.”

5.2.6 Explanatory factors

We start by looking at the perceived impact of offshoring on different value drivers and their correlation with the characteristics of respondent's company. The only clear connection with the wage rate driver can be seen with the number of R&D personnel. This is logical since companies who have a high number of R&D people on the payroll tend to be larger and have more people doing low-level programming. In the case that a company aims to decrease its salary expenses, these low-level programming jobs are the easiest, and usually the first, to be offshored. This explanation is further strengthened by that fact that "R&D intensive" companies, i.e. whose R&D expenses take up a large part of turnover, get less benefit from lower wages. "R&D intensive" companies, as explained in chapter 5.1.4, are generally smaller and develop more specialized products. Their payroll is mostly filled with experienced engineers and designers, which cannot be hired cheaply, even in offshore locations (see 5.2.2).

Both monitoring and quality related costs are inversely related to the share of R&D expenses of the turnover, i.e. "R&D intensity". This is rather plausible since it is difficult to argue that small, specialized companies – characteristics of R&D intensity – are more inclined to use agile software development methods and other flexible programming methodologies. With the introduction of offshoring, they must implement processes and practices for monitoring progress and quality. Larger software houses have generally already employed a monitoring structure, and expanding existing efforts to cover offshored units is not as large a step.

Communication costs have the highest correlation with the average deal size variable. This is explained by the fact that communication costs are largely fixed. Its effect is more severe for smaller projects, since larger projects can more easily support the fixed overhead.

Table 2: Correlations for cost drivers and attraction

	Attraction:		Impact of offshoring on expenditure value drivers:				Employee churn related costs
	Lower wage rates	Staffing level	Wage rates	Monitoring costs	Communication costs	Quality costs	
Personnel	-0.01	-0.33	0.09	0.29	0.02	0.05	-0.37
R&D personnel	-0.05	0.22	0.40	-0.05	-0.24	-0.31	-0.34
Turnover	-0.20	-0.34	0.04	0.38	0.10	0.06	-0.36
Share of R&D expenses from turnover (low to high)	0.10	0.11	-0.33	-0.42	-0.22	-0.51	-0.06
Share of international sales from total sales (low to high)	0.17	-0.05	0.22	-0.08	-0.30	-0.47	-0.55
Number of simultaneous projects at the end of 2004	0.11	-0.77	-0.13	0.33	0.14	0.38	-0.18
Customer type (private to government)	0.13	0.14	-0.26	0.00	-0.15	0.00	0.21
Average deal size (small to large)	0.54	0.13	0.13	-0.18	-0.45	-0.29	-0.23
Type of offering (service to product)	0.43	0.23	0.23	0.06	-0.10	-0.33	-0.05

5.3 Cost of capital

Our last focus area, the cost of capital, is much less debated and researched than expenditures or revenues when considering the impact of offshoring. Consequently, it is also the least understood and perhaps most difficult to evaluate. One can argue that offshoring has a two-sided effect on the cost of capital. On one hand, it makes operations more complex, therefore introducing new uncertainty into a company's cash flow streams. This uncertainty can be seen as a risk factor from the investor's perspective, and the investor will demand a higher rate of return. On the other hand, engaging into offshoring, or simply having the ability to do so shows that the company is willing and able to increase its competitiveness in the market. This may

act as a signal from the company to the investor that the company is more sophisticated, and has access to flexible resources potentially lowering the risk level and thus the cost of capital. In our hypothesis we sided more heavily with the increased risk point of view. In addition, we initially we also did not expect companies' indebtedness to be changed via offshoring.

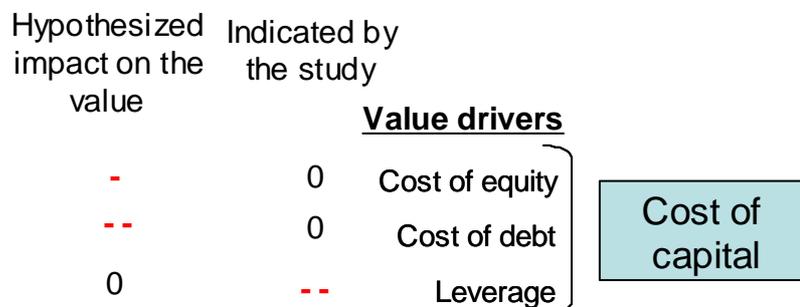


Figure 11: Results for cost of capital drivers

We decided to include a few investors in our list of interviews to help corroborate the above ideas, and thus make sure that both the hired management's and owner's points of view would be represented. Three of the interviewees were currently active investors and a couple of the other participants had previous experience from the financier side. However, very few of the interviewees were able to comment on this aspect of the study. The results reflect uncertainty on this issue, to which both interviewees and survey respondents were susceptible.

5.3.1 Cost of equity

The general idea behind cost of capital is that risk and return go hand in hand. High-risk ventures must promise their investors higher returns. With that in mind, we expected offshoring to have an unfavourable impact on the price of equity, hypothesizing that on balance operations become more complex and uncertain.

The answers collected in the online questionnaire indicate that most company executives do not see an immediate link between offshoring and the cost of equity. Nearly all thought the impact is either a slight increase or decrease in the variable – i.e. that the impact of offshoring on the cost of equity, and thus on that component of company value, is zero.

The interviews shed a little more light on the subject. While most interviewees did not have an opinion on the issue, several commented that in the complex and dynamic software industry, the inability to offshore can be considered a risk factor as well. Therefore, offshoring prudently, or at the very least having the means to do so on short notice, would diminish this risk and thus lower the cost of equity. A couple of comments from the advocates of this point of view below:

“Investors appreciate the company in question having the ability to offshore. The value lies in having the ability, not whether they are doing it now. Most companies don’t have the ability to kick off offshore operations on short notice, so if your company has, investors will surely take it into account when considering the price of shares.”

“I have had two cases where I have faced investors, and in both cases they have had quite a positive attitude towards offshoring. They have commented that we should at least have a clear understanding of how our company could benefit from outsourcing.”

5.3.2 Cost of debt

The cost of debt reflects the confidence investors have in a company's ability to pay back borrowed funds. The interest rate calculation is based more on company's financials than on its operational choices. In short term, offshoring only has an indirect impact on the company's financials. Potential savings from lower wages and gains from flexibility or shortened time-to-market will not show in the financial statement for some time. Some costs, such as travel and increased communication, however, are incurred immediately. Therefore, the initial hypothesis was that the impact of offshoring would be to marginally increase the cost of debt.

The result of the study is that survey respondents almost unanimously considered the impact to be negligible. This is another case in point that respondents do not make direct associations between offshoring and capital costs.

5.3.3 Leverage

Leverage, which signifies company's indebtedness, was a question mark initially. Even though it plays a significant part in determining the total cost of capital for the company, we did not consider it be particularly interesting value driver from the perspective of offshoring. However, the survey respondents scored it somewhat differently. They on average perceived the leverage to increase significantly with offshoring. Leverage's effect on the value of the company is also not exactly clear-cut. Inherently, since the cost of debt is lower than the cost of equity, a more levered company should be worth more than the same company with lower leverage, all else equal. However, leveraging up a company generally also increases the probability of financial distress and drives up both cost of equity and debt. It is possible that the respondents perceived the question regarding leverage in several different way, thus it is difficult to understand whether the respondents perceived that they were able to borrow more at the same rate, or whether they felt that offshoring forced them to borrow more at ever higher rates. However, when considered with fact that the respondents did not perceive an increase in the cost of debt due to offshoring, it is likely that the respondents felt they could borrow more money at similar interest rates in the event that they have an offshoring program.

The interviewees did not comment the issue of leverage.

5.3.4 Explanatory factors

Our survey results do not show a consistent view of how cost of capital drivers interact with other company operating variables. For example, there was a highly positive relationship between the R&D intensity of the firms and their perception that the cost of equity and debt *increase* when offshoring occurs. Our expectation would be that a more R&D intensive the firm would tend to be able to benefit more from offshoring, and thus that equity and debt holders would be relatively more positive about in those cases as opposed to companies with little R&D. It is

possible that the respondents perceived that more R&D indicates larger projects, indicating more financial risk and thus higher capital costs.

Table 3: Correlations for cost of capital drivers and attraction

	Attraction: Credibility in the eyes	Impact of offshoring on cost of capital value drivers:		
	of the investors	Cost of equity	Cost of debt	Leverage
Personnel	-0.16	0.13	0.13	0.36
R&D personnel	-0.33	0.60	0.63	0.19
Turnover	0.02	0.03	-0.01	0.29
Share of R&D expenses from turnover (low to high)	-0.09	0.09	0.03	-0.58
Share of international sales from total sales (low to high)	-0.41	-0.14	-0.09	-0.02
Number of simultaneous projects at the end of 2004	-0.06	-0.49	-0.27	0.59
Customer type (private to government)	-0.10	0.25	0.22	-0.23
Average deal size (small to large)	-0.54	0.58	0.67	0.08
Type of offering (service to product)	-0.17	0.15	0.39	0.25

A second conclusion from the above table is that companies with more simultaneous projects perceive that offshoring is relatively more beneficial to capital costs, especially the cost of equity. This stands to reason, since their internal resources would be stretched, and offshoring offers the chance to expand their resources on a temporary and cost effective base. A final conclusion, and a very counterintuitive one, is that the larger the deal size, the more that offshoring leads to higher capital costs. The same counterargument as was made above – higher value projects indicates larger offshoring projects and a larger amount of net risk. Our belief is that in fact that managers did not give a great deal of thought to this issue in the past, and the results we show are the result of an immature thought process regarding the cost of capital.

5.4 Locations and offshoring criteria

Around the world there are dozens of countries that offer a viable environment to set up an offshore software operation. These countries have, however, radically different characteristics, and choosing the most suitable one is a challenge for any company. Some countries have been gearing their software industry to especially cater to the clients of offshore software development by, for example, improving the communication infrastructure and granting tax benefits. First and foremost, the educational system in India produces large number of competent software engineers each year.

In both interviews and survey, we asked the respondents what they considered to be the key criteria when they consider target offshoring locations. We asked them to rank the six characteristics which are most often mentioned in articles and research papers. Each criteria received a score on scale 1 to 6 in terms of importance; 1 indicating the characteristic was wholly unimportant and conversely, 6 meaning characteristic was very important. The individual answers were then averaged and the results can be seen below.

Table 4: Importance of location characteristics

Location criteria	Average score
Competence level of workforce	5.7
English skills	5.6
Wage rates	5.3
Enforcement of copyright/IP laws	5.2
Political stability	5.1
Time zone	3.6
Presence of competitors	3.0

Somewhat surprisingly, wage rates rank only third in importance. There are two clearly more important characteristics – competent workforce and their English skills. The fact that a competent workforce, which can communicate fluently in English, is deemed so important supports the reasoning that wage savings are not the only driver of offshoring. In the second tier, wage rates, enforcement of copyright/IP laws and political stability all reach a fairly similar level of importance. The two least important factors appear to be time zone and competitor presence.

We also surveyed how the respondents feel about specific countries. We selected the same countries as CIO Magazine used in their article²⁶ “Outsourcing World Tour”. CIO Magazine looks at offshoring from the U.S. point of view. We decided to add the Baltic countries to the survey due their special relevance to the Finnish offshoring scene. With this addition, we believe that all currently relevant offshoring locations are represented.

The countries were scored from 1 to 6, according to their offshoring attractiveness. On this scale, 3.5 is the neutral point and only six countries surpass that mark. Not surprisingly India is among those, but somewhat unexpected is that India is beaten by Estonia and Russia, and it is also the only attractive location outside the Baltic region or Eastern Europe. This clearly indicates that even though India (and to lesser extent Philippines) is perceived in the popular press as the hot offshoring location for global software companies, most Finnish companies would prefer to find software development resources nearer by.

When we take a closer look at the responses, and calculate the correlations between the attractiveness of different countries, we notice that respondents seem to be divided into two camps: one advocates nearshore locations while the other prefers farshore. The complete correlation matrix is presented in Appendix 3, but at glance we notice that the attractiveness of India correlates highly with that of China, Philippines and Singapore. On the other hand Estonia, the leader of nearshoring camp, correlates highest with Russia, Lithuania and Latvia.

²⁶ Datz, T., “Outsourcing World Tour 2004”, CIO Magazine, July 15, 2004

Table 5: Attractiveness of different offshoring locations

Farshore countries	Average score	Nearshore countries	Average score
India	3.9	Estonia	4.7
China	3.1	Russia	4.1
Ireland	3.1	Latvia	3.9
Philippines	2.5	Lithuania	3.9
Israel	2.4	Hungary	3.6
Malaysia	2.3	Poland	3.3
Singapore	2.3	Czech Republic	2.9
Mexico	1.9		
Canada	1.9		
Brazil	1.8		
South Africa	1.8		

A CEO comments on the issue in the following way:

“I’m involved with a company which does offshoring work in Russia. In my opinion, we are already in a situation where India is not the most important offshoring destination for Finns. It is not the one and only alternative. Especially we Finns should consider other possibilities too.”

Another CEO has similar ideas:

“My intuition says we have to find ways of making offshoring in steps. I’m not sure if the first step is to jump to India or China. I feel this is a learning curve thing. The best way for us to start is to outsource to Baltic countries, markets we already know well and that are geographically close.”

5.5 Methods of offshoring

In chapter 2.2 we delved into the four basic offshoring business models. The dividing factors were legal dependence between local and offshore companies, and having one unified team vs. two independent teams. Some of the experts we had the chance to interview able to shed some light on this issue as well. Their comments were by and large in line with what we had learned earlier from Kobitzsch, Rombach and Feldmann²⁷.

The most straight-forward approach in their view was so called bodyshopping, where an outside company is hired to produce a well-defined element of some larger software entity. This low risk approach gives the offshorer a certain amount of cost saving, and a high degree of flexibility in the resources at its disposal, but the learning curve effects present in other models are largely uncaptured. Cost savings are generally lower than what is possible in the model where an own business unit is set up, but the capital investment is lower as well. One executive gave the following example:

²⁷ Kobitzsch, W., Rombach, D., Feldmann, R.L., “Outsourcing in India”, IEEE Software March/April 2001, p.78

“I am an advisor to Company XXX from Russia, which is selling more of a ‘bodyshop’ type of work, as opposed to end-to-end turnkey projects. In XXX we are selling good, capable people on hourly contract. It’s a safe way to do business. They started in 2001 from zero and they have about 25 people, of which three are in Finland. There’s no minimum size for an outsourcable project. Even one person will do. They can come on-site or stay off-site. If they come on-site, they charge higher fees. Generally, they take a part of the work with them when they return back to St. Petersburg. Some engineers are regularly coming back to the same customer.”

The totally opposite alternative is to acquire or set up a separate business unit in the offshore location. In this situation, the flexibility drops because the employees in the offshore location are still staff of the mother company, but on the other hand, many issues regarding IPR protection and knowledge transfer are solved. Employee wages are potentially lower, but now the company itself has to look after the retention of the workers.

“The way we took advantage of an Indian outsourcing company was that the analysis was done on site, i.e. at the customer’s premises, by the local consulting organization. Most of the architecture design was also done by the local organization, but for the parts that could be moved to India for the programming phase we actually took a person from Bangalore to the customer on site. Most of the unit testing was done in India and system testing at customer’s premises. The key of the success in this case was, in my opinion, that the local contact customer interface was managed by the local people in their native language and only after that the work was moved to India for execution.”

Working with a dedicated offshoring partner represents the middle ground solution between the two extremes. This type of offshoring is fairly common nowadays, and it is usually in the interests of both parties. The client company that offshores some of its R&D benefits from continuity, since the offshore engineers become more efficient when they learn the processes and culture of the client and become more familiar with the product. The company who offers offshore development services naturally benefits from steady stream of work. One of the executive interviewed stated:

“Our offshoring operation will be structured in a project-based manner. We’ll have a framework contract where we describe the development centre. We will not employ people, they will all be employed by the offshore partner and we will have an option to ramp up and ramp down. We will want some degree of continuity, and we do understand that the attrition rates will have to be taken into account. Each product outsourcing will be an individual project, but with the same contractor. It becomes more cost effective when the work is coordinated. A two or three man project is not worth outsourcing in its own right, but together, bearing in mind that our products are all interrelated anyway, it becomes worthwhile. You start to build up a certain experience base and skill set, and your partner becomes more and more valuable in terms of service and maintenance, etc. The overhead costs of running offshore operations will also become lower with scale.”

6 CONCLUSIONS

6.1 Summary

To start the summary of this study, we present the value driver diagram complete with the hypotheses and study results. In addition to the focus areas of revenues, operating expenditures and cost of capital, the diagram includes sections for taxes, working capital and capital expenditures. In the online survey, we also collected information about the value driver related to these areas. The results which are presented below hold no great surprises, and closer interpretation of the findings is left for the reader.

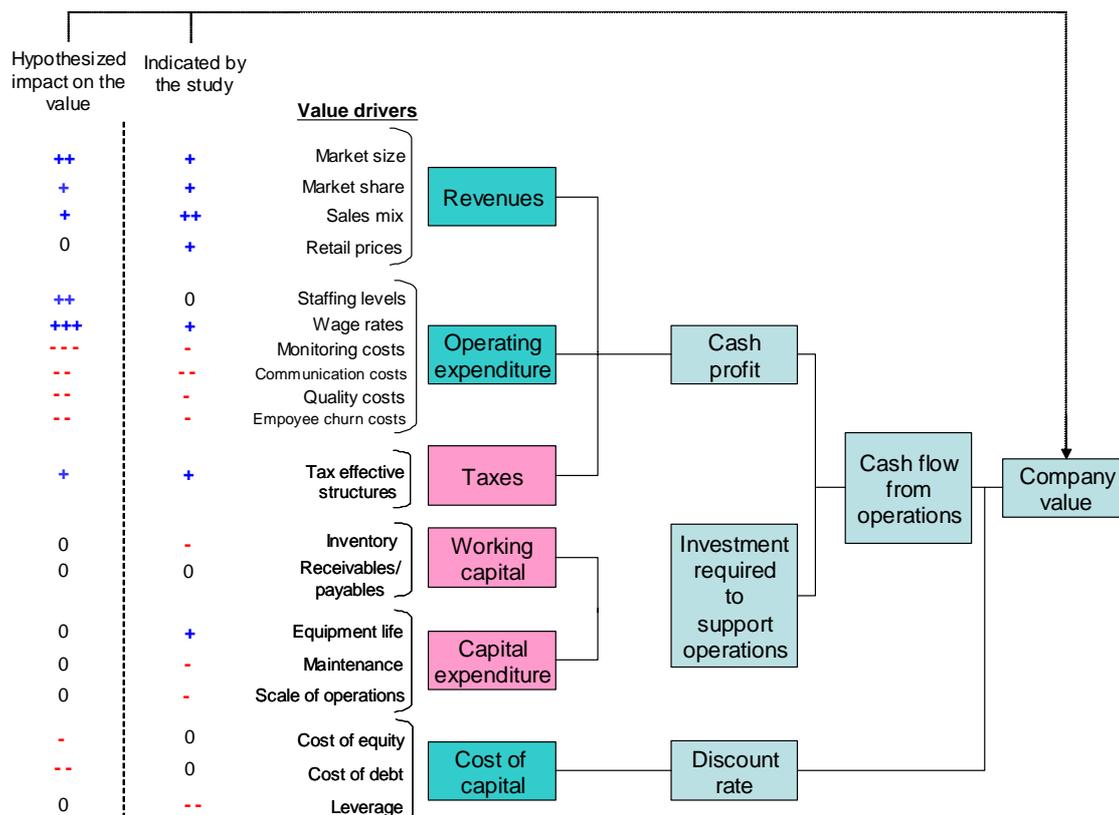


Figure 12: Complete value driver diagram with hypotheses and results

The key takeaways regarding value drivers are that the revenue enhancing effects of offshoring are generally more significant than initially expected. The greatest attraction and benefit for most companies is the additional flexibility, which manifests itself in faster time-to-market, broader product mix and the ability to dynamically adjust the amount and focus of R&D according to current needs.

The cost side effects are naturally also significant, but perhaps to a lesser relative extent than generally believed. The difference in wage rates between Finland and, for example, India still exists, but is greatly dependent on the experience and competence level of the workforce in question. However, the additional costs of offshoring are often smaller than expected. There is naturally some extra overhead associated with monitoring and communication, and it is dependent on the physical distance between local and offshore operations. Most company managers find that quality is not a problem when outsourcing to offshoring companies,

thanks to sophisticated processes and quality control management. Employee churn is a potential problem but with well-defined development processes and accurate documentation its adverse effects can be largely mitigated.

The cost of capital seems to be largely unaffected by the offshoring decision. Offshoring can be seen as a risk-increasing activity since it introduces new complexity to the value chain. On the other hand, it can increase competitiveness by granting the management additional flexibility. When these opposite influences are summed together, the perceived net effect of offshoring on the cost of capital is negligible.

Different types of companies benefit from offshoring differently. Similarly, they use different criteria when choosing an offshoring location. We divide in this study Finnish software companies into two camps; some preferring “farshore” offshoring and the other “nearshore” locations. While India is clearly the most attractive location for the farshore offshorers, several viable locations can be found close to the borders of Finland. Estonia, Latvia, Lithuania and Russia seem all enjoy a certain degree of appreciation and attractiveness.

Currently there are several methods available for companies who consider offshoring. The most capital intensive solution is to set up a subsidiary in offshore location and staff it with local employees. The opposite approach is to outsource independent modules of your development to an offshoring company. Using this “bodyshopping” method you can, in principle, offshore even one person’s work. There are a number of other solutions existing between these two extremes, differing in terms of the degree of integration between local and offshore parties.

Even though offshoring is much debated subject, relatively few actively engage into it in Finland. Around $\frac{1}{5}$ of the survey respondents have offshored development in any capacity today. However, as much as $\frac{3}{4}$ indicated that they were likely to start offshoring within the next three years. Rather surprisingly, company managers found that on average offshoring operations were considered to have been more successful than domestic outsourcing operations.

6.2 Discussion

Our desire in undertaking this study was to gather evidence that would support the decision-making processes of software company managers, investors in software companies, and public policy-makers. It is in the strong interest of all these stakeholders to continue developing the Finnish software industry by creating valuable companies – we can see from the public stock markets that the companies with the largest market values create the most job, and create multiplier effects by both paying good salaries to skilled workers and paying out dividends to both Finnish and foreign owners alike, much of which is funnelled back into the Finnish economy through consumption and re-investment.

By summing the various impacts of offshoring on the components of company value, we believe that there are strong reasons, both offensive and defensive, for Finnish companies to aggressively look for offshoring opportunities. In the offensive sense, it is clear that companies have found that offshoring has potential to enhance their competitive advantage. By undertaking processes necessary to

improve their project management skills relating to specifying, monitoring and testing the output of the offshoring partner, the Finnish company improves their own operations as well as benefiting from the added flexibility and reduced costs. The future-oriented software company will clearly become more and more distributed, taking advantage of partners' competencies regardless of their geographical location. As a software company scales its operations with growth, the notion of a purely "domestic" company will increasingly disappear.

In the defensive sense, it is obvious that a company that is not offshoring to level will face companies with much better cost structures and access to competencies. In a global business, in particular one that acts as a supplier to many different industry verticals, companies without tentacles around the globe will be at a huge disadvantage as they simply try to protect their own local turf. This type of company will not grow in a meaningful way, thus it is more unlikely to create jobs and incremental wealth for society.

It is also important to understand, from a defensive perspective, that countries which excel in providing offshoring resources, like India, quickly move up the value chain. China is a great example of this in the manufacturing arena. India is just now struggling with the mandate to move its software offshoring houses up the value chain to enhance growth opportunities, highlighted in the following quote from Praveen Kankariya, CEO of Impetus Technologies - an Indian IT services company:²⁸

India is now in a position to leverage investments that clients have made in the offshore teams, and add more value. India has come to be known as the software services nerve centre of the world. The work that Indian companies have done in building this credibility, reputation and equity is quite commendable. It is now time that we moved up the value chain into high-end software development of products, and thus maintain and enhance our leadership quotient. I strongly feel that companies who do not go up the value chain will perish or have a weak survival in times to come.

This quote sums up the challenge to Finnish software companies, their investors, and public policy-makers. As David Ricardo said, countries should focus on activities where they are either "most best", or as a (poor) second alternative, "least worst"²⁹. In order for Finnish software companies to continue to prosper, they must focus on creating world class solutions that are defined through close relationships with customers, using its own well-trained people to turn the customer vision into product and service ideas and specifications, and then effectively leverage the limitless software development resources present in emerging software development hotspots, which may often be located just beyond its borders.

6.3 Recommendations for further research

²⁸ Kankariya, Praveen, "Go up the value chain or perish", The Financial Express, May 2005

²⁹ Ricardo, David, "On the Principles of Political Economy and Taxation", 1817

One of the most interesting takeaways of the study was that software companies are divided in two groups depending whether they prefer farshore or nearshore offshoring locations. Unfortunately, the data collected within the frame of this study could not give an exhaustive list of all the key differences between the two camps. To some extent the preference is related to company size, i.e. larger companies can benefit more from and, therefore, prefer farshore offshoring. However, size in terms on revenues or personnel is clearly not the only determinant. It also appears that to a certain extent service companies prefer nearshore resources, since it depends on greater customer contact that is difficult for farshore resources.

Another fertile ground will be to subdivide the exact skills necessary to leverage offshore resources, and the critical path towards honing those skills both in the educational system and in the workplace. As we have pointed out, special emphasis will be put on the specification, monitoring and testing of software development projects. How can these skills be developed to the highest possible level?

Finally, networking Finnish software companies into emerging software development offshoring hotspots is critical. In order to identify the hotspots at an early stage, more work should be done identifying the drivers, and perhaps, from the public policy perspective, even concentrating a portion of foreign assistance in the form of training in those locations that appear to have potential. This will assure that Finnish companies will be among the early players to be able to leverage those resources when they become mature enough.

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8 APPENDICES

8.1 Appendix 1 – Interview agenda

Impact of Offshoring on Value Creation in the Finnish Venture-backed Software Companies

Interview agenda

Background information

- Name, title, organization
- How does your organization relate to IT offshoring / Venture investing / India?
- Relevant experience with IT offshoring / Venture investing / India?

Discussion topics - IT offshoring

- Has your company offshored development work?
- Does your company plan to offshore in the future?
 - What time scale?
- What are the greatest barriers in IT offshoring?
 - In general
 - Particularly to India
- If offshoring, what would you mostly expect get out of it?
- What would be the largest challenges to overcome?
- Would the preferred entry mode be pure outsourcing or offshore business building?
- How do you see the question of offshoring affecting investors?
- Opinion on the Value driver model?
 - Revenue drivers
 - Market size and share
 - Product mix
 - Prices
 - Cost drivers
 - Staffing levels
 - Wages
 - Monitoring & Communication
 - Quality
 - Employee churn
 - Cost of capital drivers?
 - Equity
 - Debt
 - Leverage

Discussion topics - Investors

- Has your company invested in companies which offshore?
- How offshoring affects the role of an investor in valuation/managing/exit phases?
 - Do offshoring companies require more personal involvement from the investor?
- Does offshoring affect the required rate of return for an equity investment?

- Does offshoring in the IT company pose different requirements on monitoring and managing the investment?

Discussion topics – Country specific topics

- Nearshore vs. farshore offshoring?
- Strengths and weaknesses of India in IT offshoring?
- What are the most significant country-related threats and opportunities in India?
- Suitability of Indian – Finnish business relationship?

8.2 Appendix 2 – Survey form

Offshoring in Finnish Software Industry Survey

This survey is part of the Creating Global Success research project managed by the Institute Strategy and International Business in Helsinki University of Technology. The project is conducted in cooperation with and funded by Tekes, Finpro, CapMan, 3i Finland, Eqvitec Partners and Sitra. Its goal is to create new knowledge and understanding to support creation of internationally successful new Finnish businesses and companies. Additional information about the CGS project is available on the web site:

The target group of this survey is a selection of Finnish software companies which may be affected, either today or in the future, by the trend of outsourcing software development offshore. The results will be used in a Master's Thesis commissioned by Sitra and Eqvitec Partners, and possibly in other following research within the CGS project. The data gathered will be handled with confidentiality and in way that the identity of the source cannot be traced from the results. The person responsible for conducting the survey is Ville Kyöstilä. (ville.kyostila@iki.fi, 050 543 8184)

1. Background Information

Company name _____

Respondent's name _____

Position within the company _____

Information in 2004

Company personnel _____ persons

R&D personnel _____ persons

Turnover _____ million euros

Share of R&D expenses from turnover _____ %

Share of international sales from total sales _____ %

Number of simultaneous projects at the end of 2004 _____

Typical customer:

Private person

SME (less than 250 personnel)

Large enterprise

Government

Average deal size between company and customer:

Less than 500 euros

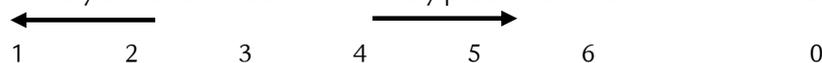
500 to 50,000 euros

50,000 to 1 million euros

1-4 million euros

Over 5 million euros

Type of offering provided:

1 = very service oriented 6 = very product oriented No answer

 1 2 3 4 5 6 0

2. Current Local Outsourcing Activity

1. Does your company engage in software development outsourcing to other local firms?

Yes

No (if no, skip to section 3)

2. How much does your company rely on outsourcing in its software development to local firms?

Simultaneous outsourcing projects at the end of 2004:

1-3

4-5

5-10

10+

Percentage of outsourcing of total R&D costs:

0-20%

20-40%

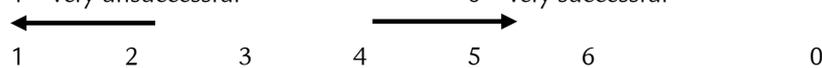
40-60%

60-80%

80+ %

3. Assess the general successfulness of your outsourcing operations:

(circle appropriate alternative)

1 = very unsuccessful 6 = very successful No answer

 1 2 3 4 5 6 0

3. Current Offshoring Activity

Here the term 'offshoring' is used to mean all software development, which takes place outside the borders of the company's home country - both outsourced and in-house.

1. Does your company engage in offshore software development?

Yes

No (if no, skip to section 4)

2. How much does your company rely on offshoring in its R&D currently?

Simultaneous offshore projects at the end of 2004:

1-3

4-5

5-10

10+

Percentage of offshoring of total R&D costs:

0-20%

20-40%

40-60%

60-80%

80+ %

3. Assess the general successfulness of your offshoring operations:

(circle appropriate alternative)

5. Location Criteria

1. Identify the importance of following criteria when considering location for offshoring:

(circle the appropriate alternative)

	1 = not important No answer			6 = very important			
	←			→			
Time zone							
	1	2	3	4	5	6	0
Political stability in target country							
	1	2	3	4	5	6	0
Enforcement of copyright/IP laws							
	1	2	3	4	5	6	0
Wage rates in target country	1						
	2	3	4	5	6	0	
Infrastructure (including telecom)							
	1	2	3	4	5	6	0
English skills							
	1	2	3	4	5	6	0
Competence level of workforce							
	1	2	3	4	5	6	0
Presence of competitors							
	1	2	3	4	5	6	0

2. Assess the attractiveness of the following offshoring locations:

	Already present the country answer			1 = very unattractive 6 = very attractive				No
	←			→				
Brazil	<input type="checkbox"/>	1	2	3	4	5	6	0
Canada	<input type="checkbox"/>	1	2	3	4	5	6	0
China	<input type="checkbox"/>	1	2	3	4	5	6	0

Czech Republic	<input type="checkbox"/>	1	2	3	4	5	6	0
Estonia	<input type="checkbox"/>	1	2	3	4	5	6	0
Hungary	<input type="checkbox"/>	1	2	3	4	5	6	0
India	<input type="checkbox"/>	1	2	3	4	5	6	0
Ireland	<input type="checkbox"/>	1	2	3	4	5	6	0
Israel	<input type="checkbox"/>	1	2	3	4	5	6	0
Latvia	<input type="checkbox"/>	1	2	3	4	5	6	0
Lithuania	<input type="checkbox"/>	1	2	3	4	5	6	0
Malaysia	<input type="checkbox"/>	1	2	3	4	5	6	0
Mexico	<input type="checkbox"/>	1	2	3	4	5	6	0
Philippines	<input type="checkbox"/>	1	2	3	4	5	6	0
Poland	<input type="checkbox"/>	1	2	3	4	5	6	0
Russia	<input type="checkbox"/>	1	2	3	4	5	6	0
Singapore	<input type="checkbox"/>	1	2	3	4	5	6	0
South Africa	<input type="checkbox"/>	1	2	3	4	5	6	0

6. Impact on Basic Company Value Drivers

1. Identify the perceived impact of offshore software development on following value drivers: (i.e. if your company would engage in offshoring, how the particular aspect would be affected)

1 = significant decrease in the variable
No answer

6 = significant increase in the variable



Revenues:

Market size	<input type="checkbox"/>	1	2	3	4	5	6	0
Market share	<input type="checkbox"/>	1	2	3	4	5	6	0
Product mix	<input type="checkbox"/>	1	2	3	4	5	6	0
(decrease = product portfolio narrows, increase = product portfolio broadens)								
Retail prices	<input type="checkbox"/>	1	2	3	4	5	6	0

	1 = significant decrease in the variable No answer			6 = significant increase in the variable			
	←			→			
Expenditures:							
Staffing levels (Amount of staff on payroll)	1	2	3	4	5	6	0
Wage rates	1	2	3	4	5	6	0
Monitoring costs (new management, new IT systems)	1	2	3	4	5	6	0
Communication costs (telecom, actual travel costs)	1	2	3	4	5	6	0
Quality costs (upholding quality, correcting poor quality, loss/gain of public goodwill)	1	2	3	4	5	6	0
Employee churn related costs (costs associated with employee turnover)	1	2	3	4	5	6	0

	1 = significant decrease in the variable No answer			6 = significant increase in the variable			
	←			→			
Taxes:							
Tax effective structures (decrease = company becomes less tax efficient, increase = company becomes more tax efficient)	1	2	3	4	5	6	0

	1 = significant decrease in the variable No answer			6 = significant increase in the variable			
	←			→			
Working capital:							
Inventories	1	2	3	4	5	6	0
Receivables/payables (decrease = receivables decrease relative to payables, increase = receivables increase relative to payables)	1	2	3	4	5	6	0

1 = significant decrease in the variable
No answer

6 = significant increase in the variable



Capital expenditure:

Equipment life	1	2	3	4	5	6	0
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(decrease = equipment life shortens, increase = equipment life lengthens)

Maintenance	1	2	3	4	5	6	0
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(decrease = less maintenance needed, increase = more maintenance needed)

Scale of operations	1	2	3	4	5	6	0
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(decrease = operations need less equipment, increase = operations need more equipment)

1 = significant decrease in the variable
No answer

6 = significant increase in the variable



Cost of capital:

Cost of equity	1	2	3	4	5	6	0
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(decrease = cost of equity decreases, increase = cost of equity increases)

Cost of debt	1	2	3	4	5	6	0
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(decrease = cost of debt decreases, increase = cost of debt increases)

Leverage	1	2	3	4	5	6	0
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(decrease = leverage decreases, increase = leverage increases)

Your input is greatly appreciated!

8.3 Appendix 3 – Country correlation matrix

	Brazil	Canada	China	Czech Republic	Estonia	Hungary	India	Ireland	Israel	Latvia	Lithuania	Malaysia	Mexico	Philippines	Poland	Russia	Singapore	South Africa	
Brazil	1.00																		
Canada	0.52	1.00																	
China	0.79	0.27	1.00																
Czech Republic	0.51	0.63	0.44	1.00															
Estonia	0.47	-0.03	0.06	0.23	1.00														
Hungary	0.16	0.50	0.14	0.67	-0.08	1.00													
India	0.69	0.35	0.87	0.56	-0.11	0.31	1.00												
Ireland	0.30	0.66	0.37	0.74	-0.22	0.40	0.43	1.00											
Israel	0.36	0.85	0.18	0.78	-0.02	0.58	0.28	0.68	1.00										
Latvia	0.20	-0.01	-0.03	0.23	0.49	0.31	-0.20	-0.28	0.10	1.00									
Lithuania	0.20	-0.01	-0.03	0.22	0.50	0.31	-0.20	-0.29	0.11	1.00	1.00								
Malaysia	0.51	0.36	0.48	0.78	0.30	0.46	0.65	0.40	0.33	0.39	0.39	1.00							
Mexico	0.74	0.40	0.57	0.55	0.26	0.26	0.64	0.19	0.21	0.46	0.46	0.87	1.00						
Philippines	0.74	0.31	0.78	0.61	0.25	0.13	0.77	0.56	0.32	-0.06	-0.07	0.66	0.64	1.00					
Poland	0.24	0.61	0.19	0.62	-0.04	0.27	0.19	0.65	0.55	0.26	0.26	0.65	0.57	0.30	1.00				
Russia	0.31	0.05	-0.18	0.36	0.56	0.28	-0.05	-0.04	0.11	0.41	0.41	0.43	0.39	0.17	0.02	1.00			
Singapore	0.54	0.45	0.51	0.54	0.16	0.10	0.77	0.31	0.28	-0.04	-0.04	0.73	0.74	0.75	0.44	0.16	1.00		
South Africa	0.38	0.85	0.20	0.75	-0.08	0.56	0.28	0.73	0.91	0.02	0.02	0.28	0.20	0.38	0.57	-0.05	0.28	1.00	