

A Portfolio Risk Management Perspective of Outsourcing

Todd Little, Landmark Graphics

One of the challenging issues with outsourcing, particularly when looking to offshore providers, is determining which projects to outsource and how to balance an overall project portfolio. Landmark Graphics has been involved in offshore development for 3 years and has wrestled with this issue for some time.

At first we were focused on the pure economics of the development costs. The seemingly low costs for offshore development made it look attractive as a means to reduce costs. The following table indicates our experience with the relative cost for a developer for several countries.

Country	Cost Ratio relative to US
US	1.00
Canada	0.75
India	0.40
Pakistan	0.25

However, we realized that cost per developer was a relatively meaningless metric on its own. What is really of interest is the cost to deliver the project. Two additional parameters influence the project cost: the efficiency of the developers and the internal management overhead required for the project. Using these three variables we established a first order indication of the outsourcing value return on investment (see appendix for a more detailed derivation).

$$\text{Outsource Value ROI} = e / (c + m) - 1$$

Where

- e** = OUTSOURCE efficiency = Equivalent INTERNAL days per OUTSOURCE day
- m** = INTERNAL Management overhead = INTERNAL days to get 1 OUTSOURCE day
- c** = OUTSOURCE relative cost = cost per OUTSOURCE day / Cost per INTERNAL day

An ROI value ratio of 1.0 indicates a break even return on the outsourcing investment. If the ROI is less than 0, the project cost more to outsource than it would have cost to develop inhouse.

As a forward looking metric, this ratio has significant uncertainty. We've seen efficiency (*e*) range from 0.10 to as high as 1.0, but then efficiency can only really be estimated since we don't really know how long this would have taken had it been done internally. In our experience management overhead (*m*) tends to run about 0.10 to 0.25. At least it is possible to measure *m* for prior projects as an indicator for future projects.

In addition to the large uncertainty in the efficiency, there are other elements of risk that should be considered. One of the most often neglected aspects of outsourcing is the change in the risk profile. The following risks are likely to be of concern with an outsourcing project, particularly with an offshore project:

- Technical Risk
- Market Risk
- Project Risk
- Political Risk
- Outsourcer Risk

Technical Risk

Technical risk is a measure of the fit between the project and the skills and capabilities of the outsourcer. It can also be present if there is risk associated with the ability of the customer to be able to deal with an outsourcer. To a certain extent the technical risk is the primary driver of the uncertainty in the efficiency mentioned earlier. Some of the questions to be asked include:

- Does the outsourcing company have the technical skills necessary to do the work?
- Does the outsourcer understand the business domain?
- Can the project requirements and specifications be defined to meet the capabilities of the outsourcer?

Market Risk

When there is uncertainty surrounding the requirements and specifications, there is Market Risk. Agile development is an excellent way to deal with changing requirements, however remote development is counter to most of the practices of agile development. Those projects with high market risk are typically not good candidates for outsourcing.

Project Risk

Perhaps the biggest concern in making an outsourcing decision is the risk associated with a delay or inability to deliver to project. Most companies do not outsource their core business for this very reason. Determining the cost of delay is not easy, although the story always seems to be the same—if the project is not delivered on the promised date, heads will roll.

Political Risk

Many of today's outsourcers are in developing nations. Some of these nations do not have the most stable of governments. Landmark first started working with a Pakistan outsourcer in 2000. The terrorist attacks in New York had a huge impact on our ability to continue business. Prior to that time we had been able to bring a number of people from Pakistan to the US for training. Since that time it has become nearly impossible to get visas. Fortunately we were able to get the first group trained and have had reasonable success with this arrangement, but it did limit the projects and activities that we could outsource.

Outsourcer Risk

What is the contingency if the outsourcer goes out of business? This risk may be related to the Political Risk, but is more specifically looking at the stability of the outsourcing company and its employees.

Conclusion

We have had sufficient experience with offshore outsourcing to know that there are opportunities for cost reduction. We have had very good luck with Canada where we are able to essentially get one-for-one efficiency and reap the cost benefit with almost no risk. We have had only limited experience with India, although our parent company has had extensive experience an Indian firm for a number of years with generally good success. Our experience working with a Pakistan outsourcer has been more erratic. We have had some projects that have been greatly successful, and others that have been failures. While each additional project teaches us something new, it is fair to say that the risk profile is inversely proportional to the cost profile. As a result we have begun to adopt the following portfolio allocation for our development projects:

Location	Project Type
US internal development	Core business, mission critical, innovation
Canada	Projects well suited to the skills of our Canadian teams, potentially including core business.
India	Maintenance and enhancement projects of non-core business
Pakistan	Maintenance and enhancement projects that can tolerate project risk, Testing projects

Appendix: Return On Investment (ROI) for Outsourcing

Nomenclature:

n_n Expected Number of staff required if project done Inhouse

c_n Average burdened cost of Inhouse staff

n_f Number of Outsource staff required

c_f Average burdened cost of Outsourced staff

n_m Amount of Incremental Management Overhead

c_m Average burdened cost of Management Overhead

c Cost ratio = c_f/c_n

e Efficiency = n_n/n_f

m Management Overhead factor = n_m/n_f

$$ROI = \frac{\text{Cost Savings}}{\text{Cost Invested}}$$

Cost Savings = Expected Cost Onshore – Cost Offshore – Cost of Overhead

Cost Invested = Cost Offshore + Cost Overhead

Expected Cost Onshore = $n_n * c_n$

Cost Offshore = $n_f * c_f$

Cost of Overhead = $n_m * c_m$

$$ROI = \frac{c_n n_n - c_f n_f - c_m n_m}{c_f n_f + c_m n_m}$$

Multiply by $\frac{1}{c_n n_f}$

$$ROI = \frac{e}{c + \frac{c_m}{c_n} m} - 1$$

if $c_m \cong c_n$, then

$$ROI = \frac{e}{c + m} - 1$$

Bio

Todd Little is Sr. Development Manager for Landmark Graphics Corp. Previously he has had roles in Quality Management and was Landmark's Director of Software & Technology. He has 25 years of industry experience in various roles in software development, quality, engineering, consulting, project management, and general management. Todd lives in Houston and holds an M.S. in Petroleum Engineering from The University of Houston and a B.S. in Chemical Engineering from Iowa State University. He is a member of the Agile Alliance, IEEE, Society of Petroleum Engineers and is a registered Professional Engineer in the State of Texas. He may be reached at tlittle@lgc.com. Current research interests include agile software development. Todd is the Conference Chair for this year's Agile Development Conference in Salt Lake City.

LGC Bio

Landmark is the leading supplier of software and services for the upstream oil and gas industry. The company's software solutions span exploration, production, drilling, business decision analysis and data management. Landmark offers a broad range of consulting services that enable customers to optimize their technical, business and decision processes. Visit the Landmark Web site at www.lgc.com for more information.