Chapter 4

Optimization of Service Development Strategy in a Global Environment

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ABSTRACT

A well-managed project utilizing global resources helps companies create distinct competitive and operational advantages over centrally managed counterparts. Such advantages come from increased profitability through outsourcing. In this chapter, we present a technique used to assess risk in globally distributed industrial software projects – with a specific focus on custom application development projects. Our objective is to show how to maximize the benefits of globalization and how effective management and resource choices can avoid potential risks by more deeply understanding the effects of external global factors. Specifically, we provide mathematical models for the following global factors: 1) time zone differences, 2) language difference, 3) working time alignment, and 4) turnover rates among skilled workers in expanding economies. We also consider the utility functions of the developer and client and demonstrate that by allowing adjustments to the time to deliver the project one can achieve better profitability with global resources.

INTRODUCTION

With the growth in globalization, the IT industry has undergone a fundamental transformation, where a significant portion of projects are executed through teams that are globally distributed. There is significant motivation for the distribution of teams aside from the well-established cost savings resulting from obtaining similar skills at lower labor rates in developing economies. These include rapid expansion of teams to meet schedule obligations, and the ability to obtain skills that are not available in sufficient
quantity locally without incurring personnel relocation costs. However, it can be challenging for globally distributed teams to achieve the same level of productivity as centralized teams.

The motivation of using global resources comes from the consideration of cost savings. Due to competitions in the industry, today almost all IT contracts are fixed-pricing contracts. A fixed-pricing contract is a contract where the payment does not depend on the amount of resources and/or time expended and is not subject to any adjustment based on the solution developer’s cost experienced in completing the contract. The advantage of fixed-pricing to the client is obvious. The client no longer needs to be concerned with how much time the developers spend anymore; it eliminates the risk of the developer overcharging the client by including additional working hours that did not exist in the original plan.

Fixed-pricing contracts place additional risk upon the developer compared to variable pricing; the developer has full responsibility for all costs and the resulting profit or loss. Therefore, the developer has to limit their expenses to achieve profitability. This is typically achieved through a) labor cost reduction, and b) technology that leads to productivity improvement. Both of the efforts are beneficial to the overall economy with productivity enhancement. Therefore, the developer has to understand and quantify the risks posed to the development of the solution and prepare a proper pricing scheme, while considering constraints of labor cost, team skill composition, and delivery time (Zhou, Gifford, Ratakonda, Westerwick, & Engel, 2014).

As global outsourcing has become more widespread, unique challenges have surfaced for a variety of reasons, requiring additional consideration by host country organizations (Erickson & Evaristo, 2006; Gumm, 2006; Berenbach, 2006). Over the past decade, technological advances and management techniques have been developed to overcome these challenges, as project teams have learned that managing global delivery is a complicated endeavor that requires a wide range of management skills beyond simply remotely administering lower cost resources. These advances improve the effectiveness and viability of remote outsourcing so that it remains a profitable and safe venture for delivering IT services to a wide range of clients.

For the next decade, we envision two nascent trends which could invalidate some of the assumptions upon which we base our current outsourcing techniques. The first of these trends is that we are seeing the costs of remote outsourcing continuing to climb so that the ratio of supplier to home country salaries has increased. The second trend is that the industry is expanding the use of the outsourcing model into mid-cost countries where there will be both a less favorable salary ratio and additional communication complication from using languages not familiar to the outsourcing providers. This chapter provides a framework for isolating these trends and quantitatively assessing their effects so that the IT industry can better adapt its management techniques and tools to maintain viable and profitable outsourcing. To illustrate an application of that framework, in this chapter we create and analyze numerical examples showing these trends.

To obtain the full benefits of globalization, delivery teams require a deep understanding of the solution delivery process, global management practices and the overall team structure. First, resource distribution in the global environment is also a key factor in determining team productivity and project success (Gumm, 2006; Berenbach, 2006; Cataldo & Herbsleb, 2008). Challenges such as communications across large time zone differentials, cultural understanding and language differences, mismatches in holidays and vacations, and high turnover rates of the global team can all affect productivity in a globally distributed environment (Zhou, Ma, & Ratakonda, 2009). Second, large globalized projects typically require intensive communications for collaboration between team members. Inefficiencies can also result from