The Paradoxical Relationships of Risks and Benefits in Offshore Outsourcing of Software Projects

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Abstract: Offshore outsourcing of software projects is an important competitive strategy in modern software business. There has been a long discussion of risks and benefits of this approach. Interestingly, while some issues are perceived as a significant benefit by a group of researchers, they are conversely perceived as a critical risk by others. This paper discusses the two sides of these risk-benefit elements as well as their management strategies.

Keywords: Software engineering; outsourcing; offshore outsourcing; risk management.

I. INTRODUCTION

The phenomenal growth of offshore outsourcing, or so-called "offshoring", of software projects is changing the face of modern global software business. Due to numerous competitive characteristics, the scale of offshore outsourcing has been continuously increasing, from large organizations to small and medium firms [1]. The substantial reduction in labour cost, accessibility to specialized skills, strategic flexibility and 24/7 operation are perceived as major benefits provided by offshore outsourcing [2]. It is predicted that in 2007, the total revenue in offshore outsourcing business will exceed $50 billion [3]. Reports also indicate that the degree of complexity of offshore outsourced tasks has been also rising. The leading offshoring destinations now are ready for not only low-end tasks, such as back-office operation and call centre, but also top-end tasks, such as designing and R&D [4].

II. THE PARADOXICAL RELATIONSHIPS

There are growing criticisms towards offshore outsourcing. Unemployment, hidden costs, low quality workforces, cultural differences and language proficiency are examples of these highly criticized elements [5,6]. Nevertheless, interestingly, perceived risks and benefits of offshore outsourcing are paradoxically related. These fascinating relationships are discussed in this paper.

A. Costs

A report indicates that the costs of labour in leading offshoring supplier countries are vastly cheaper than those in mighty nations [7]. In 2003, the average wages of Indian and Chinese programmers were more than ten times lower than the average wage of American programmers. It is predicted that the wage of Indian and Chinese programmer in 2015 would be 4 and 8 times, respectively, lower than the Ameri

cans (see Table **1**). There are also other upcoming promising offshoring destinations such as Thailand and Vietnam which would offer even lower cost than India and China. Obviously, no organization can refuse that this difference in cost is extremely tempting.

Table 1. Average Wage of a Programmer in Leading Offshoring Stakeholder Nations [7]

	Average Wage of A Programmer (US Dollars)	
	2003	**2015 (Expected)**
United States	$74,486	$85,000
England	$38,450	$67,000
Germany	$37,250	$65,000
India	$6,350	$20,000
China	$5,852	$10,000
Russia	$7,540	$25,000
Malaysia	$6,930	$9,000

On the other hand, critics indicate that while the labour cost is low, there are numerous of extra costs in offshore outsourcing. Increasing communication, travel and cultural training costs are ones of the most obvious examples of additional costs in offshoring project [3]. Issues on infrastructure costs, vendor search costs, transition costs, post-outsourcing costs and other costs from beyond baseline services are also raised by many researchers [8].

The weights of advantages and disadvantages of cost saving are not very balance. The substantial reduction in labour costs seems incomparable to the relatively tiny communication and travel costs. Apparently, with assistance from modern internet technology, the needs of travel and face-to-face communication are greatly reduced. Other outstanding additional costs such as infrastructure costs, vendor search costs and cultural training costs seem to be rather a one-time or sporadic investment than daily costs.

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B. Unemployment

There are reports of an increasing unemployment situation in the mighty nations, especially in the US. 560,000 of US IT job ware lost during 2001 to 2003 [9]. Moreover, at least 3.3 million job positions are expected to be shifted overseas by 2015 [10]. Many researchers claim that the major cause of this problem is offshoring [5].

On the other hand, other researchers argue that the unemployment forecasting was unfair and overstated since it did not explain the natural unemployment rates [11]. In fact, the decreasing jobs in one business sectors can increase jobs in another business sectors. A report designates that while the annual job displacement in the US is at approximately 2-3%, the total US workforce has an annual growth rate of 3% [12]. In addition, the growth of offshore outsourcing not only means that the jobs are increasingly offshored but also develop a growing global demand [13].

Another interesting statistic is the alarmingly decreasing rate of IT graduates of the major nations. Reports designate that science and technology degrees are less preferable than law and business [14]. On the other hand, the number of international student in science and technology are rapidly increasing. This can worsen the unemployment problem in the future.

Although it cannot be confirmed that offshore outsourcing is the main cause of unemployment of certain business sectors in major countries, it cannot be denied either. However, since the rapid growth of offshoring will continue for at least a decade, this debate on unemployment will undoubtedly continue.

C. Skills

Offshore outsourcing allows an organization to access external expertise. It also greatly increases flexibilities in human resource management. Since there is a vast pool of global workforce, there are arguably unlimited IT capabilities. A successful global resource management can be a great competitive edge of an organization.

In contrast, the abilities of overseas workforce are often questioned. Although there are highly skilled workers around the world, identifying and locating them are not easy. Reports suggest that many accessible overseas workforces have insufficient skills and experiences, especially when being compared to the workforce in major nations [6].

Furthermore, undeniably, other factors such as cultural differences and language proficiency can be a great hindrance of overseas workforce. These limitations restrict the overseas workforce to maximize their proficiency.

Offshore outsourcing can be perceived as a short-term tool or a long-term competitive strategy. As for the short-term perspective, an instant expertise from external workforce is critical. On the other hand, an investment in skill development of the overseas workforce can be an effective long-term strategy.

D. 24/7 Operation

Due to the time differences, an offshoring project can be ideally performed around-the-clock. For example, the GMT-4.00 staffs in Canada can spend 8 hours designing the program and then let the U.A.E. staffs who live in the GMT+4 zone work on the coding. After that, the GMT+12 New Zealand staffs can perform the testing and send the result at the end of the day to the Canadian programmers who just arrive at the office. This ideally maximizes the potential productivity of the team.

Yet, the efficiency of this 24/7 operation is questioned. Critics argue that the lack of instant communication, which is unquestionably an extremely important element in a software project, can lead to a project disaster [6]. For example, a project might suffer a one-day delay from a minor misunderstanding between the designing and coding phase since the programmers cannot synchronously inquire other colleagues who dispersedly works on the previous shift. Other researchers suggest that offshore outsourcing to a nearby countries, or so-called nearshoring, can be more efficient than offshoring to overseas since it provides real-time overlaps [15].

In fact, time difference in offshore outsourcing can become either an obstacle or an advantage. This depends on the appropriateness and the strategy of the implementation. A simple solution of problems from time zone difference could be either appointing additional central staffs who coordinate tasks between shifts or utilizing tools or technology which enhance the efficiency of the job transition.

E. Quality

There has been a debate on the quality of offshored products and services. Not surprisingly, many researchers claim that the quality of the offshored tasks is significantly lower than the tasks performed by engineers from major countries [16, 17]. Suspicion on delay and lack of development standards are also raised [6]. Reports further indicates the increasing complaints on the offshored services due to poor language and communication skills [18].

On the other side of the viewpoint, firms reportedly indicate that the quality of offshored products and services and satisfactory [19, 20]. Amazingly, there are even reports designating that the quality from many offshored site surpass the quality of the inshore products or services of a major nation [21].

In fact, the quality of offshored service is one of the key drives which have been boosting the offshoring business. The root of the phenomenal growth of offshore outsourcing originated from the Y2K problem which threatened the entire world [22]. At that time, the major nation had insufficient workforce to tackle a large amount of problems. As a result, parts of the tasks were desperately sent offshore. Interestingly, many of the offshored tasks turned to be surprisingly successful while many of the inshored tasks failed miserably. This unpredictable result began to attract the investors and finally set off the offshoring era.

Quality is indeed another critical issue for software project. Although there are numerous quality providers in offshore outsourcing business, it is not guaranteed that all suppliers can offer adequate products and services. Beginning with a small and not critical task seems to be very suitable strategy to tackle the unfamiliar offshoring vendor. Then, if

the result is satisfactory, larger and more important tasks can be further undertaken.

F. Culture

The difference in culture is arguably the most concern issue in offshore outsourcing context. Due to the large gap of culture, misunderstanding and increasing complexity are not uncommon. Since the most important element in software industry is human resource, the sensitivity of culture is extremely critical.

Culture involves knowledge, belief, morals, law, regulations, customs, norms and other societal habits [23]. Cultural misunderstanding can be a simple but intense source of conflict among stakeholders. There have been studies suggesting that some cultures are more vulnerable to some risks than other cultures [24]. Also, cultural differences can lead to other complex issues such as different risk and time perceptions.

Nevertheless, a successful cultural management can be a sharp competitive advantage to an offshoring practitioner. Differences in culture can widen the perspective of the project and create innovative outcomes. In addition, understanding culture is an essential ingredient for success in entering a new market. The bailing out of eBay in China demonstrates a landmark case study that lack of cultural understanding can be critical [25]. Proactive cross-cultural management could help reinforcing this aspect.

Cultural training is arguable the most promising strategy to counterattack differences in culture. However, it might not work effectively in every situation [26]. Although it needs a lot of time, effort, open mind, and recognition to understand culture, the fruition of cultural understanding would become a great asset and competitive offshoring edge.

G. Language

Similar to culture, language is a major obstacle in offshore outsourcing. India, for example, becomes the leader of offshoring industry due to the language proficiency. Yet, there are reports indicate that Indian dialect, pronunciations and idioms can cause difficulties [6]. Other offshore outsourcing destinations also suffer from the low language proficiency. This further worsens other communication related problems.

On the other hand, also similar to culture, language is essential for penetrating a new overseas market. It is illogical to open an English speaking call centre in China or Korea. Offshore outsourcing is probably an only efficient yet inexpensive strategy to tackle this opportunity.

In addition, the increasing number of the international graduates could suggest that the degree of language proficiency problems is likely to be gradually dampened in the future [14]. Simple techniques such as using clear and straightforward instructions as well as written directions are also proved efficient to decrease language problems in offshoring scenarios [27, 28].

In fact, ironically, it is not uncommon for an American to not completely understand a British or an Australian, or vice versa, even though English is considered as their mother tongue language.

IV. CONCLUSION

There are a number of interesting paradoxically relationships between benefits and risks in offshore outsourcing of software projects. Table **2** summarises these facets.

Table 2. The Paradoxical Relationships of Risks and Benefits in Offshore Outsourcing of Software Projects

	Benefits	Risks
Costs	Low labour costs	Additional and hidden costs
Unemployment	Increasing needs of global talents	Unemployment in major nations
Skills	Infinite pool of workforce	Insufficient level of required skills
24/7 Operation	Around-the-clock operation	Lack of instantaneous communication
Quality	Possibility of satisfactory products	Possibility of inadequate products
Culture	Broader perspectives and opportunities	Problems from cultural differences
Language	Encouraging localization	Problems from language barriers

Several obvious advantages in offshoring, such as the substantial labour cost saving, are questioned by other additional costs. The abilities to access specialized skills are criticized whether if those skills are really adequate. In fact, these are the matter of management and strategic planning.

Offshore outsourcing can be perceived as a short-term tool or a long-term investment. If offshore outsourcing is perceived as a short-term panacea, the over expectation might cause a major disappointment when the expected results are not achieved. In contrast, if offshore outsourcing is perceived as a long-term competitive investment, the development of the activity can bear fruition, slowly but surely.

In the middle of risks, there lie benefits. The more critical the risk is, the greater the benefit yields. Being able to appropriately identify, manage and mitigate risks surely can bring a significant competitive edge to an organization.

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