

Management in Global Distributed Software Development

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ABSTRACT

Management of globally distributed software development projects is one of most serious of the IT industries worldwide and it is rapidly growing. It involves that distributed software development team need to work in different geographical location and even different countries. The distributed project may include team from same organization or have collaborative team from another company that work together on a specific project. The distributed project improves the quality of the complexity of managing this project which has globalized work environment. There have been several researches on global distributed software development and its influence on the management of software development project. One of the emerging discussion is related to support flexibility of development in distributed environment and second aspect is global distributed team which related an importance employee's relationship and communication issue. I will try to assess these two-critical factors that have an impact the management of globally distributed teams. [1]

KEYWORDS

Managing Global Software Development, flexibility in distributed software development, and Agile Development.

1. INTRODUCTION

Management of global distributed software development has enhanced significantly in recent years and improvement of communication technologies, access to global talent, cheaper labor, and legal requirement all have contributed crucially. It also helped support flexibility of project development in distributed environment. As result, a growing numbers of software companies started to implement global software development to reduce the amount of it takes to design and manufacture a product, increase operational efficiency, improve quality [1].

2. MANAGING GLOBAL SOFTWARE DEVELOPMENT

Over the years several recommendations have been published to support the complexity of managing global distributed software project development due to complexity, lack of communication breakdowns which can directly to fail the project. Cultural matter such as language and work practices or communications manner can lead delays and impact relationships in the work environments. The infrastructure and development tools largely differ because of outsourcing, and company's investment. There are many teams are now using open sources domain. There are also

concerns with security that raises constantly especially in outsourcing situation where law restrict infrastructure and organizational decision. Other challenging situation where synchronizing work in multiple location around the world where time zone is real issue and it can lead to and prolonged project. With all these difficulties that I mentioned about challenges that faces software companies, globalization of software development in recent years has rapidly improved and it is adopted all around the world from many companies. They are associating as partnership with external companies, subsidiaries, and outsourcing services providers.

In globalization market, companies have switch to different direction on how to manage distributed team, now work is allocated primarily in central site in countries such as India, China, and Eastern Europe [2]. Cost was the main reason motivator. As an example, pay rate of employee in countries such as India is much lower than United State or Eastern Europe and their employee is more skilled and proficient in some case especially in programing. They are also other benefits that offers to the software globalization, Teams in different countries where time zone differs from United State can be beneficial to many companies in U.S because teams that work in these outsourcing companies have different schedule with U.S team. They can continue working in same project while U.S team is off their schedule. It can help finishing project quickly and achieve the goals faster. Outsourcing companies is no longer just for maintenance, application is growing faster. They are creating a lot of innovation. They benefited a lot from United State and Companies from Eastern Europe. They are now having their consulting companies. Those software industries are spreading their technologies and offering their consulting in all around the world such as South Africa, South America, and many other countries in middle east. [1,2].

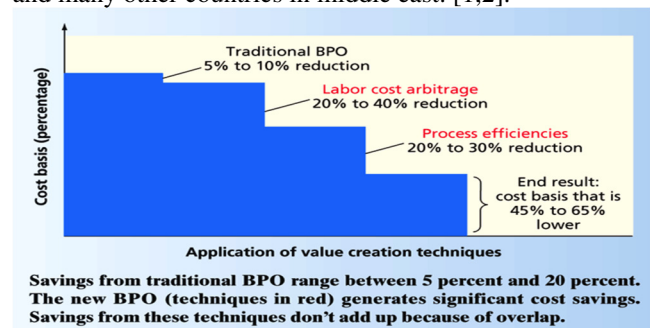


Figure 1. Profiting from Business Process Outsourcing

3. FLIXIBILTY IN DISTRIBUTE SOFTWARE DEVELOPMENT

Flexibility in software development practice include outsourcing companies that is due to availability of most advance technologies such as software development tools that can be accessible in open source and an important aspect which skilled labor which lead to flexibility in the software engineering methodologies. The term flexibility concerns current tendency in software development to move from traditional plan-based approach toward more agile approach. The search for flexibility is apparent and it is using various agile methods such as scrum, extreme programing. Agile development method is an example of major success stories. [4]. The flexibility offered by the agile development approach makes it attractive for integration in distributed software development work and question that need to be asked of importance is what flexibility impact on offshoring in early stage of development. Challenges in distributed project are many, one of the biggest distributed project problem is communication. It takes more time and effort than expected. Agile practices based on collocation and continuous face to face communication. It is built on communication. It requires frequent iterations, fast feedback, response to customer requirement, and visibilities. Successful practice can be daily scrum meeting of distributed teams (video chatting, teleconference), requires everyone to continuous communicate and encourage each other, peer to peer discussion afterwards.

Elevate productivity to better employee and higher saving retentions rate, there are many benefits of working with distributed team. It estimates that roughly quarter of the US. work force telecommuted occasionally or permanently, according [3]. Hiring remotely sounds good idea nut they are companies that keep their staff on site to enhance collaborations and creativity through interaction and face to face conversations. To help decide if working remotely is right fit to the company. We need to explore some details about benefits and inconvenient. Letting developers setting their own work hours can improve productivity but within some limits. They are developer that need some type management because not all developers are self-motivated. [3]. Distributed work necessitates more discipline on behalf of company and developer to ensure getting all benefits. Employee diversity can play an important role of having different point-views can be crucial of creating new ideas and solving very difficult problems within group of teams.

4. AGILE DEVELOPMENT

Agile methods focus on empowering software development project to help design and build software in most efficient way. Developing software project is significantly costly and it takes long time to complete. It is not granted that will be delivered as expected by the client. Agile method attempts to avoid time consuming process and delivered with simplicity. The most important in agile project is interaction and collaboration with client. The response to client changes must be quick so that it will be delivered in due date. Agile method is basically trying to for satisfy the company to

achieve their process of developing project in easy and rapid manner and companies are using agile development to reach purpose and they are using Extreme programing and scrum methodologies to build their project. In other hand due to time-related and distance related problem in Global Software Development, the difficulties in agile development is more about interaction. It is apparently very complex to work in agile in global environments. There are many things that need to be learned to effectively apply agile development in global scale. Understanding Agile methodology globally is very important because of the huge financial benefits. [5].

		Distance Dimension		
		Temporal Distance	Geographical Distance	Sociocultural Distance
Impact on GSD process	Communication	+ Improved record of communications	+ Potential for closer proximity to market and utilization of remote skilled workforces	+ Potential for stimulating innovation and sharing best practice
		- Reduced opportunities for synchronous communication	- Increased cost and logistics of holding face-to-face meetings	- Risk for misunderstandings
	Coordination	+ Decreased coordination needs due to division of labor	+ Increase in size and skills of labor pool can offer more flexible coordination planning	+ Access to rich skill set and various practices
		- Increased coordination costs	- Reduced informal contact can lead to lack of task awareness	- Inconsistency in work practices can impinge on effective coordination, as can reduced cooperation through misunderstandings
	Control	+ Opportunities for 'round-the-clock development	+ Communication channels often leave an audit trail	+ Access to rich skill set and authority
		- Management of project artifacts may be subject to delays	- Difficult to convey vision and strategy	- Different perceptions of authority/hierarchy can undermine morale

Note: + (plus sign) indicates an opportunity; - (minus sign) indicates a challenge.
Source: After Agerfalk et al. (2005)

Figure 2. Overview of the Framework for GSD issues.

5. CONCLUSION

The flexibility in distributed software environment and agile methods urge several challenges to global software development practices, such as creating convergence in time, difficult to create unification and understanding between employee who have different cultural background. I think there is no single methodologies approach can easily solve these challenges. I found that distributed project in global software development is very complex to fully implemented in global environment because of these three development practices (communication, coordination, and control) and these three distance factors (time-related, geographical, and sociocultural). The Global software developer team is now very beneficial to companies that want to enhance their products and reduce their cost. Many companies are heading to outsourcing but they are still a lot of challenges that may affect the capacity to achieve their goals and it can more difficult to resolve these majors important issue in global software development. The most important aspect of global software in my opinion is communication and skills. The way to solve these problems is providing all the resources and necessary training. The years coming will solve all these difficulties because many developers now understand English and internet is accessible for many countries with a good speed. The companies that needs this skills labor must invest more money providing the training and infrastructure.

I think that social and cultural issue can be solved because the world is going to globalization rapidly.

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