

WILL AGILE METHODOLOGIES WORK IN OFFSHORE OUTSOURCING?

Sachdev, Vishal

Dept. of Information Systems and Operations Management, University of Texas at Arlington,
Box 19437 University of Texas at Arlington, Arlington, TX-76019, vsachdev@uta.edu , Tel:
817-272-3584

Iyengar, Kishen

Dept. of Information Systems and Operations Management, University of Texas at Arlington,
Box 19437 University of Texas at Arlington, Arlington, TX-76019, kiyengar@uta.edu , Tel:
817-272-3584

ABSTRACT

As the complexity of outsourcing projects increase so do the risks of failure. Firms strive to control those risks with more structured development methods, which impose an overhead on the project and reduce flexibility. There is evidence that agile methodologies are able to deliver better results in the current dynamic environment. While such methodologies are best suited for co-located teams with intense interaction between the client and the vendor, this paper explores the viability of using agile methodologies in offshore IT outsourcing. We look at this issue from the perspective of the importance of trust and the fulfillment of the implicit psychological contract in any outsourcing engagement.

Keywords: Offshore Outsourcing, Agile Methodologies

Introduction

IS outsourcing, defined as “the practice of turning over part or all of an organization’s IS functions to external service providers(s)” (Grover et al.1996) has come a long way from its origins in facility and professional management services contracting in the 1960’s. Now organizations may outsource systems development, facility management, systems integration and transaction processing. A review of the historical development of IS outsourcing by Lee et al.(2003) brings out some interesting trends. They mention that early outsourcing agreements were completely client centric, with clearly defined scope and close ended contracts and the control structure was primarily hierarchical with the primary motivation being cost savings. This concept of outsourcing has undergone a paradigm change and the partnership concept has begun to gain currency, with outsourcing being looked upon as a strategic tool to build or maintain competitive advantage (Lee et al. 2003). At the same time offshore outsourcing, which involves outsourcing to another country, has been gaining in popularity with the prime motivator being lower operating costs, which may go down by almost 50% in some cases such as outsourcing to some countries in Asia (Pfannenstein and Tsai, 2004). Now, several companies are reporting improved service delivery and higher quality as reasons for offshore outsourcing (Pfannenstein and Tsai, 2004). This is also in line with the four stage maturation model of offshore outsourcing suggested by Carmel and Agarwal (2002). They proposed that companies may be in one of four stages, Offshore Bystanders, Offshore Experimenters, Proactive Cost focus and finally Proactive Strategic Focus, with a majority of U.S. companies being cost focused and some seeing offshore outsourcing as a strategic option.

In the limited context of application development as an outsourcing candidate, we note that there has been a considerable evolution in software development practices. Traditional plan driven approaches are a reflection of a mechanistic world view, where repeatability, control of variation and stability were the major objectives. As a result traditional approaches to software development are based on the premise that requirements are stable so that a detailed, optimal design can be made and then be delivered as a fully functional system. They assume that variations are errors in planning. Such approaches are falling out of favor in the dynamic business environment. With uncertain customer requirements and rapidly changing technologies, several iterative methodologies have developed starting in the mid seventies. As these methodologies have evolved, a set of methodologies, labeled 'Agile' have been put forward to address the problem of rapid change. Several methodologies and practices fall under this umbrella term. Some of the 'Agile' methodologies are Extreme Programming(Beck 2000), Feature Driven Development(Coad, DeLuca, Lefebvre 1999), Scrum(Schwaber and Beedle 2002), Dynamic Systems Development Method(Stapleton 1997), and Crystal(Cockburn 2001). The four guidelines of the Agile Manifesto (Highsmith, Cockburn 2001) are purported to be the essence of 'Agile' methodologies. They are 1) Individuals and interactions over processes and tools; 2) Working software over comprehensive documentation; 3) Customer collaboration over contract negotiation and 4) Responding to change over following a plan. There has been much debate on the benefits of these methodologies, with little empirical evidence. Scarcer still is the research on the efficiency of agile practices in an offshore outsourcing environment, though there are some companies that are trying this approach. This brings us to the subject of this exploratory study:

Is it possible to adapt agile methodologies to suit the requirements of offshore outsourcing, so that one can aim for responsiveness at a lower cost?

The question above implies an assumption that agile methodologies, with their emphasis of customer collocation and involvement, pair programming (XP), daily face to face meetings, short iterations and low structure are not suited for the distributed and high structure environment in outsourcing and need to be modified. There are supporters of this view (Turk et al. 2002), and their arguments seem valid. While a lot of this may be true there are aspects of agile development that seem to make it suitable for outsourcing. In this paper, we seek to highlight the perceived benefits that agile methodologies provide in the outsourcing context. We look at this issue from the perspective of the importance of trust and the fulfillment of the implicit psychological contract in any outsourcing engagement. These two constructs are related and have received a lot of attention in literature with the increasing acceptance of the partnership view of IS outsourcing (Fitzgerald and Willcocks 1994, Lasher, Ives and Jarvenpaa 1991). There are several studies which highlight the importance for managing relationships between the client and the vendor (Kern 1997, Willcocks and Kern 1998, McFarlan and Nolan 1995). There are some companies that are trying this approach; prominent among them is Thoughtworks. They have been promoting a new concept called "Distributed Agile" (Simons, 2004). They are promoting a framework by modifying the core agile practices to enable them to work in a distributed environment, and their experiences will be reviewed in this paper to support our argument.

We start the discussion with a perspective on how agile practices impact the psychological contract in outsourcing (Koh et al., 1999). This is important since agile practices are low structure methodologies and hence the people element is most important while trying to implement such methods. Since the base of companies using agile methodologies for outsourcing

is so small, it may be difficult to evaluate this impact with an empirical study. For now, this paper will only identify some possible impacts which can be a subject for further research. In the next section, we will look at the related topic of trust in outsourced IS development (Sabherwal, 2002) and the impact agile practices can have on building trust. By considering the impact of agile practices from the view point of the psychological contract, and trust, we intend to address the issue of the suitability of agile methodologies for outsourcing in general and review the published experiences of Thoughtworks and Pivolis to bring out some practical adaptations of the agile philosophy for an offshore outsourcing project.

Agile Methodologies and Psychological Contracts

A psychological contract refers to people's mental beliefs and expectations about their mutual obligations in a contractual relation (Rosseau 1995 cited in Koh et al., 1999). Koh et al.(1999), introduce the concept of the psychological contract in outsourcing and how that impacts the success of such projects. Based on their study, they identified implicit client and vendor expectations. According to them the degree of fulfillment of expectations differentiates successful from unsuccessful projects. For each expectation, from the vendor and client's perspective, we have indicated if agile practices would enable it or prevent it from being fulfilled and displayed in Table 1 and Table 2 below. A "Positive" impact would suggest that the agile methodology supports fulfillment of the expectation, while a "Negative" impact would suggest the opposite. In order to introduce a gradient, we are also using a "Strong Positive" and "Strong Negative" impact classification to emphasize some effects. Expectations that do not seem to be addressed by agile methodologies are marked as such.

A large number of client expectations identified above seem to be addressed by the agile practices. However, according to the analysis done by the authors, successful projects are more fulfilled than failed projects on the dimensions of Role Clarity, Vendor Staffing, Vendor Staff Turnover, knowledge transfer, Vendor Initiative, Relationship building, Vendor Responsiveness and soft deliverables. Of these, only three are addressed by agile practices i.e. vendor initiative, relationship building and vendor responsiveness. Now, consider the vendor expectations listed below.

Client Expectations from Vendor	How Agile Methodologies address them	Impact
Estimate project scope accurately and accept changes in scope	Since the customer is closely involved, scope estimation is well managed. Accepting scope changes is the basis for the development of agile methodologies.	Strong Positive
Define clearly the roles and responsibilities of each party	Roles are not clearly defined. The customer is expected to be a part of the team.	Strong Negative
Charge a fair and competitive price	Not relevant	
Assign high quality staff	Not relevant	
Maintain minimal staff turnover	Since agile methodologies consider people over processes, it is arguable that they will lead to reduced turnover over traditional methods	Positive
Transfer best industry practices to the client	Since there is little documentation, it is difficult to transfer best practices to off shore clients.	Negative
Respond promptly to client requests	This is implicit in the agile philosophy.	Strong Positive
Conduct regular project meetings to provide feedback	This is implicit in the agile philosophy. With small iterations the client gets continuous feedback.	Strong Positive
Build good working relationship with client	This is implicit in the agile philosophy.	Strong Positive
Deliver a total solution incl. training, documentation, communication and implementation plans	Agile methodologies do not address most of these issues.	Strong Negative

Table 1: Client Expectations and Impact of Agile Methodologies

Vendor Expectations from clients	How Agile Practices address them	Impact
Define requirements and specifications clearly	The practice of Test driven development ensures that requirements are clear and customers are involved in designing the tests.	Strong Positive
Pay competitive prices	Not Relevant	
Make prompt payments at predefined milestones	Not relevant	
Assign high quality staff	Not relevant	
Maintain minimal staff turnover	Not relevant	
Transfer business know how and other relevant information	This will happen if there is close customer interaction. Test driven development enables this.	Strong Positive
Own the project and provide strong leadership, support and commitment	Customers are required to have control and lead the project as per agile philosophy.	Strong Positive
Work as a team and build a good relationship with vendor	This is implicit in the agile philosophy.	Positive
Respond promptly to vendor requests	If the customer is closely involved then this is likely.	Positive
Attend project meetings and discussions regularly	If the customer is closely involved then this is likely.	Positive

Table 2: Vendor Expectations and Impact of Agile Methodologies

Looking at the vendor expectations, there are many aspects that are addressed by agile practices. The author's analyses suggest that successful projects are more fulfilled than failed projects on client staffing, client staff turnover, knowledge transfer, client leadership, relationship building, client responsiveness, and project monitoring. Of these, a significant number are addressed or more likely if agile practices are being used. The above information suggests that there is merit to the hypothesis that some agile practices may actually be better suited for distributed development.

Agile Practices and Trust

In order to explore the suitability of agile practices for outsourcing, we now consider the impact of agile practices on the related topic of trust. This analysis is based on the framework developed by Rajiv Sabherwal(1999,p.80) His framework and conclusions were based on a study of 18 Outsourced Information System Development (OISD) projects with clients based in the U.S, UK, Netherlands, Thailand and Oman while the vendor was based in U.S, India or Colombia, with the majority being based in India. He refers to the existence of a psychological contract, besides the written contract and then goes on to examine the role of trust in supporting the psychological contract. He makes a very valid point, supported by a successful case, that trust reduces the need for structure by reducing the perceived need to guard against opportunistic behavior. (Limerick 1993 cited. in Sabherwal 1999 p.82). This particular point brings to mind agile methodologies which are best suited for low structure contexts. Hence the inevitable question: Do agile practices have any impact on the trust between the client and the vendor? If yes, do they enhance trust or reduce it? Or, which particular practices enhance trust? Definitive answers to these questions would require a well conducted empirical study, which is quite outside the scope of this paper. Here, we will restrict myself to examining the framework for classification of trust in OISD projects put forward by Sabherwal(1999 p.82) and identify the possible impact of agile practices on trust.

The author lists four types of trust: Calculus based, Knowledge based, Identification based and Performance based. Calculus based trust is built by structure and controls and supported by the expectation of long term business from the client. Knowledge based trust depends on the two parties knowing each other well and often develops over a few projects or by prior acquaintance among key employees. Identification based trust depends on the two parties understanding and identifying with each others goals. Finally, Performance based trust develops by accomplishing early project milestones or by demonstrating completed portions of the system.

Of the above, the last two categories are interesting from the point of view of the impact of agile practices. The Agile manifesto (Beck et al 2001) calls for customers and developers (or clients and vendors) to work together daily throughout the project. Intense customer collaboration is usually required in most agile approaches. It is reasonable to assume that if the two parties are working together towards a common objective, with a lot of interaction to remove any miscommunications, it is likely that Identification based trust will develop. Secondly, with the emphasis on short iterations and early delivery of working software, it is highly likely that while using agile methodologies, a degree of Performance based trust would get developed. While these conclusions are anecdotal at best, they do point toward the need for further empirical research on this topic.

In the sections above, the discussion has focused on the potential use of agile practices in outsourcing in general. Now, we review the experiences of two companies, Thoughtworks and Pivolis, using agile methodologies in a distributed environment.

Experience Report

Both these companies have offshore development teams in India. Martin Fowler at Thoughtworks is a pioneer in the use of agile methodologies. Vincent Massol, the CTO and cofounder of Pivolis, a company based in France, is also quite popular in the agile offshore development space. We will first highlight the common practices/learnings put forward by Martin Fowler and Vincent Massol where they have directly applied agile practices which were very useful in a distributed environment. We also highlight any unique approaches where they have adapted agile practices to overcome the challenges of offshore development.

Continuous integration and testing: Both of them talk about the importance of this practice and have rated this as the most important activity. Both organizations work on a single code base in a distributed environment, with a build management tool that operates in cycles as short as 40 minutes for Pivolis (Massol, 2004a). Continuous build, test and immediate follow up in case of test failure, is the model adopted by both companies.

Communication and Collaboration: Both companies make a lot of effort to ensure that there are enough ambassadors visiting between the two teams to ensure face to face communication to build relationships. According to Fowler (2003)

“Seeding visits should be planned for early in the project and should be pretty substantial in length - two weeks is the minimum. It's important for seeding visits to be working trips, since the whole point is to get people used to working with each other, so they should be arranged around some joint task.

Send some onshore customers and project managers to an offshore site to create an initial release plan.

Have the offshore analysts come onshore to take part in early requirements gathering sessions.

Have some onshore developers visit the offshore team for the offshore team's first iteration working with an existing code base.”

Besides this, both companies rely on a complex mix of communication and collaboration tools, ranging from simple e-mail and instant messenger to a distributed, low structure wiki discussion board. They have multiple channels of communication across all levels with no bottlenecks.

Short Iterations: Both companies recommend using 2 week iterations (Fowler,2003 ; Massol, 2004b), even in offshore projects. Looking back at the discussion on trust, quick demonstration of success was listed as a criterion for development of Performance based trust. This also addresses the issue of project visibility as identified as a challenge by Simons (2002).

People over processes: There were several examples of successful agile practices where the project benefited from putting people over processes. Fowler(2003) talks about “separating teams by functionality and not activity”, in contrast to the traditional practice of keeping analysis and design onshore and moving development offshore. The same practice is championed in Pivolis with team members from both sites being part of the same “package” (Massol, 2004b). Both talk about an equitable distribution of work between the two teams, with as much analysis and design being done offshore as possible. This helps ensure the morale and motivation of the offshore team, which has the handicap of being removed from the business users. Massol (2004 b) also refers to the need to keep the people offshore motivated by giving them equal, if not more responsibility and also avoiding micro management from the on shore team.

Test driven development: This agile practice common to some methodologies, is successfully used by both companies. According to Fowler (2003)

“Increasingly I've found that more mature XP teams use acceptance tests as ways of communicating requirements. Such teams get test scripts written out before the start of an

iteration to help clarify the requirements and give the development team a concrete target to aim at.”

Massol(2004b) believes that writing functional tests before development starts, helps transfer knowledge and ensure that requirements have been understood and enables the testing team to automate or create a test.

Adaptations to address the distributed environment:Both the companies had to make some changes in the traditional agile practices to adapt to the geographic distance and the difference in time zones. They were using electronic media, prominently Wiki’s, to replace face to face daily status meetings. They also felt the need for more documentation. Simmons(2002,section 4) from Thoughtworks, mentions that it is difficult to find the right amount of documentation, but the nature of the iterative process allows you to experiment and find the right amount. He also says that it may be a good idea to not bother about keeping it updated, instead create little documentation which can be created again from scratch the next time. There is a need for ‘Proxy customers’ (Simmons 2002, section 4) or ‘good mediators/coordinators (Massol, 2004b, Slide 29), to ensure that requirements are communicated properly between the customer and the developers. This is an overhead that considered important. One distinct adaptation done at Pivolis, was the use of UML for use case definitions instead of stories.

There are several companies that are now offering to use agile methodologies within an offshore development environment. The experiences of these two companies suggest that there are some agile practices, such as test driven development, short iterations and continuous integration are actually very useful for offshore development. While some communication and documentation overheads are required to compensate for the distance, these practitioners feel that the end result is more efficient and cost effective than traditional development. The exact costs savings are difficult to estimate and probably require a very controlled experiment.

Conclusions and Discussion

In this paper, we have discussed the applicability of agile methodologies in the outsourcing context. We have looked at the perspectives of trust and fulfillment of the psychological contract, and we found evidence, albeit anecdotal, that agile methodologies, with suitable modifications are suitable for outsourcing projects. The two case studies show how firms can successfully adapt agile methodologies for outsourcing projects. The focus on customer collaboration, continuous testing/integration, short iterations and test first development seem to be the most important agile practices which are used in OISD and show clear benefits to companies. Contrary to popular belief that high structure methods will help reduce the uncertainty in offshore projects, the experiences reviewed above show that people issues are the most important. Some adaptations are required to address the issue of geographic distance, such as a coordinator and extra documentation, but that is more than offset by the improved productivity. Since this is an exploratory study, this area requires further research, possibly with more detailed case studies of successful firms.

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