THE SUCCESS OF IT PROJECTS USING THE AGILE METHOD

john karamitsos
Charalambos Apostolopoulos
Abstract

In literature, there can be found many reasons explaining why IT projects fail; however, there is no single cause indicating failure or single solution. Project failure is a condition that stakeholders try to avoid; this paper will stress the fact that, efficient communication and cooperation among stakeholders using “Agile Methodologies” may be proven the solution leading to success. The advantages of using “Agile Methodologies” will be further illustrated with the case study of an alternative carrier operating in the Greek market, On Telecoms.

1 Introduction

Nowadays, many IT projects are subject to fail due to several reasons. One of the most important one, is the lack of efficient cooperation between the client and the consultant. The aim of this paper, it to stress the major role of collaboration between the project manager and the client, taking into account that one of the main objectives of Requirements Analysis is to understand the customer’s needs and expectations. Moreover, it will be shown that by using the “Agile” method, IT projects have more possibilities to be characterised as successful ones.

Lacking of efficient communication may be a result of different individual and environmental approaches of an IT project. In other words, the client’s inputs are rooted from an operational environment whereas the project manager’s ideas are rooted from the past experience in a project-based environment.

In effect, because of the lack of understanding, communication barriers exist, project managers do not understand what their clients really expect (lack of user input) and IT projects fail. In order to overcome these barriers, it is necessary both parties to enhance their dialectic relationships, commit to a certain goal planning and if necessary change the requirements and specifications so as to reach the desired outcome, which is project success.
Project success is defined as the deliverance of a project on time, within budget, and conformance to the client’s requirements. Successful projects are cited in the literature based on cases studies and observations of agile methods. Highsmith (2002) reports from direct experience using agile method, while Schatz and Abdelshafi (2005) provide results using the primavera case study, and Karlstrom and Runeson (2005) share their thoughts arising from the Star-Gate case study. In addition, Boehm and Turner (2003), Augustine et al. (2005), and Ceschi et al. (2005) analysed and compared agile and traditional methods.

On the other hand, an IT project is characterised as failure when some specifications are not completed during the life cycle of the project. Reel (1999) studied on generic software development projects and concluded to 10 steps of software development project failure. From his results it was evident that at least seven steps which can result to failure before even starting the project. Cohn and Ford (2003) studied various problems in large organisations after using agile methods, while Larman (2004) discusses in detail the mistakes and the misunderstandings during the implementation of the agile methods.

Based on Bourne & Walker (2005) factors, which indicate project failure can be categorised as technical, data, user, and organisational ones.

For example, technical factors are unclear project planning and limited knowledge about the project. As far as data factors are concerned, these can be ambiguous objectives and requirements. Moreover, the continuous change of business requirements often drive to solutions closer to failure rather than to success. User factors are related to poor involvement of stakeholders and finally, organisational factors include the lack of sufficient resources required by the project and the relative absence of executive support and commitment.

Above all, lacking of proper requirements definition and the absence of client’s participation during the project are identified as the most significant ones, leading to project failure. Consequently, the “Agile” method is proposed in order to show the road to project success.

Many organisations use the traditional and waterfall approaches for their software development processes. However, these approaches are based on project lifecycle with many different stages such as the design and development stage, the testing phase, and final acceptance one. The above mentioned approaches are very difficult to satisfy the rapid changes, derived mainly from the customer’s side and the organisations actually do not provide as much customer value as they should. In 1990’s a group of people started to study a new approach for the software processes called the “Agile Approach”. Based on this approach, in February 2001 a group of 17 signatories, concluded to a statement of the principles that underpin agile software development and named it the “Manifesto for Agile Development”.

More information about the “Agile Manifesto” can be retrieved from:
http://www.agilemanifesto.org/
The core ideas of traditional methodologies are based on processes and more accurately emphasise on the planning process. On the other hand and compared to traditional methodologies, the agile methodology is based on people’s teamwork in order to deliver high quality software, foreseeing to the benefits of implementation easiness and management. Traditional methods for managing software development were created when the first commercial computers began emerging in the 1950s. Scientists and engineers started to design and create increasingly more powerful and complex computer systems, which were beyond the comprehension of a single human mind. Traditional methods consisted of rigidly formal project management techniques, customer requirements, infinitely bureaucratic processes, and hundreds of paper documents.

Furthermore, agile methods are approaches for managing the development of software products, applications and services based on principles of flexible manufacturing, lean development, and rapid adaptation to market conditions. Agile methods emerged focusing on self-organising teams, early customer involvement, iterative releases, and flexible processes.

Software technologies such as HTML and Java were powerful new prototyping languages, enabling smaller teams to build bigger software products rapidly. Because they could be build faster, customers could see the finished product sooner and provide feedback earlier; in effect, the developers had the opportunity to quickly refine their products, if necessary. Agile methods were a reaction to the rise of traditional software development methods, which were too complex, expensive, rigid, and fraught to failure.

Further to the introduction, this paper is organised as follows: In section 2, a description of the agile methods is presented. Section 3 illustrates a relevant empirical study, which took place at the University of Thessaloniki-Greece having as reference the Greek IT/IS companies and their software applications. Moreover, the advantages of using agile methods will be illustrated with the help of a case study, “On Telecoms”. Finally, in section 4, the conclusions of using the agile method as a success methodology in defining IT projects requirements are elaborated.

2 Agile Methods Taxonomy

The most important “Agile Methodologies” derived from IT organisations as described by Highsmith (2002) can be see below:

The Scrum method is indeed a repetitive incremental process of software development commonly used with agile software development. The term is taken from the actual term “scrum” used in Rugby, which was initially explained by Schwaber and Beedle (2002). The main emphasis of the method is to work within teams and the main activity is to call 15 minutes team meetings on a daily basis for coordination and integration. The core ideas of the Scrum method are being applied successfully in IT projects for the past 10 years.
In the mid-1990s, a new method, the Dynamic Systems Development Method (DSDM) was initially developed in U.K by Thomas Shadish et. al., (2002) and the assistance of Stapleton (1997). The DSDM was designed with a view to provide an extension of the rapid application development method (RAD) and for the first time Highsmith (2002) used the wording of dynamic systems development method instead of agile method. DSDM’s are based on nine principles, most important of which are: active user involvement, frequent delivery, team decision making, integrated testing throughout the project life cycle, and reversible changes in development.

The “Crystal” is another method, which was initially developed by Cockburn (1999) based on teams of people. The main emphasis of this method is to build a closed team of people and promote the collaboration among them.

Feature-Driven Development (FDD) method was initially explained by Kent (2001) and consists of a three-step process. This method describes the overall object model, firstly by building a feature list, then by planning, and finally by the iterative design.

Lean Development method is based on lean production which was used by the Japanese car manufacturing industries during the 1980’s. Poppendieck (2006) presents the lean method and analyses that any change may introduce risk to the project due to management limitations. The method is designed and used with success, mainly in the industry of European telecommunication projects.

The development of Extreme Programming (XP) is a typical method proposed by Kent (2000), and Jeffries et. al., (2001), emphasising mainly in providing simplicity, integrity, and feedback. Implications of the Extreme Programming method can be found in several IT organisations.
Globally, in spite of the rapid increase of supporters as far as the “Agile Methodologies” are concerned, the majority of IT managers continue to trust and use the respective traditional methodologies, which seem as a dispute to the efficiency of the applications of agile methods. The main reason for this dispute is that the agile logic in the process of development has as result the absence of deliverables, which are a useful metric of the relevant comparison of the degree of achievement against real.

Moreover, the logic of work confrontation being proposed by agile methodologies require another change in the organisational level of IT companies, giving particular importance in the customer with emphasis in the human factor (teamwork). At the same time, the academic research on these methods is limited. What should be taken into consideration is that, agile methodologies cannot be used efficiently in all project types. Moreover, the same holds true, for projects that big teams of people are being allocated, that safety is the fundamental objective parameter.

Figure.2: XP Life Cycle cited via Beck (2000)

3 Empirical Study

The methodology used for the empirical study described below was the qualitative methodology as far as gathering proper data is concerned. The target population was the Greek IT/IS companies with their respective IT/IS departments. The survey was conducted by the University of Thessaloniki-Greece, based on questions relative to which methodologies are being used among the Greek IT/IS companies for the software applications.

In greater details, the respondents were asked to complete the survey using a semantic scale of Likert type.

The Likert (7-point) scale was selected due to the advantages of easiness to complete in terms of time consumption and question comprehension. Finally, after two months of data collection, the results indicated that 42% of the respondents answered that they used in-house methodologies; 11% used agile methodologies, 9% used Rational Unified Process (RUP), 9% used Rapid Application Development (RAD) 2% used Spiral model, while the 14% used the waterfall model and the rest 13% used unknown methodologies.

![Figure 3: Greek IT/IS Software Application Methodologies](image)

As far as On Telecoms\(^b\) is concerned, a number of questions were considered during the decision taken by the high-level management team for an organisational and technological improvement of ON Telecom’s process including:

1. Which specific business processes should be redesigned in order to be aligned with the overall IT system design for improving the overall performance?
2. How the business requirements and processes should be formulated for the organization?

\(^b\) On Telecoms S.A. is one of the biggest alternative carriers operating in the Greek market providing 3-play services to its customers; more information can be found at www.ontelecoms.com.
3. What is the role of IT managers and Software vendors’ in order to ensure the success of projects within ON?

Having as a guide the above questions, ON’s board of directors decided for the adoption of a systematic agile approach, which up to now is being used with positive feedback.

In the light of organisational performance improvement, On Telecoms similar to the traditional IS/IT companies has increased the productivity of its processes. In more details, for every dynamic market change the ability to adapt is called “Organisational Agility”. Agility can be applied in two types: First type is the ability of changes in the level of activity using processes and the second one, the creation of new business processes prior to any business change.

Actually, the investment of the IT department was the highest in capital expenditure for the company and the marketing decision of using organisational agility methodologies had many challenges and risks. The heart of agile approach focuses on people and both individuals and teams share the benefits.

Another major challenge is the use of technology. With the agile approach, the organisation takes into consideration how the people use the system/technology and not how to improve specific business processes.

However, the agility approach requires significant IS/IT investments, using people’s flexibility in both individual and organisational level. Without changing roles or job positions a standard IT infrastructure is required.

The second point to be noted is that by using the agile approach, dynamic and rapid changes are required; more or less people require to share extensive knowledge across the organisation (ON Telecoms).

During the first months of operation, we initiated several projects for the investigation and identification of the differences as far as the results and the methods used are concerned; before that ON was using customized solutions.

The first project was the implementation of in house CRM software that was used for troubleshooting support, order management and workflow. After several months of operation, the importance of business agility in IT software applications was evident. The outcome, was that the management team proposed to replace the existing CRM system with a known software vendor that used agile methodologies.

The second project had to do with the ticketing management platform. On Telecoms had originally developed a customized ticketing system for troubleshooting the customer’s problems, and after several months we also replaced the software due to unresolved technical issues and the negative comments that our customer support team was receiving by the dissatisfied customers.

Taking into account that in the above projects agile methods had been used, the dedicated software team managed to install the required software platforms properly, without using many resources.
The most important issue was that, the chosen software application did conform to the initial requirements, which in turn were based on agile methods. In effect, the correct requirements analysis provided not only remotely dynamic provisioning but also maintenance recovery routines, as it should. Hence, the purpose of the agile approach is designed in such a way so as customer’s changes (requirements) to be easily and effectively monitored, without waiting several months for the new releases. In addition, agile methodology is different from the engineering methodology regarding the time plan with an immediate effect of protecting the customer’s investment in IT technology (lower OPEX).

4 Conclusions

In this paper the concept of agile methodologies was presented. The development of agile approach is a typical case study applied in many IS/IT projects and many parameters should be taken into consideration such as the organisational benefits for the company and the qualifications of the involved/dedicated team.

Most of IT vendors promote their applications using agile methodologies because of the benefits of easier customisation and flexibility in terms of implementation. The immediate effect is that, the agile methods impact positive in the project’s outcome, which is success.

Finally, the key message for managing project expectations is effective, efficient communication and cooperation between the project manager and the client. Proper requirements analysis drive almost every task and activity, however the identifications of when, how and what has to be done should be a bidirectional activity among all the parties involved. Failure of an IT project is a status which every project manager tries to avoid; with the aid of agile methodologies, the possibility of success is enhanced.

References

22. http://www.agilealliance.org , The Agile Alliance; retrieved Nov.08