A Review on Success Factors of Agile Software Development

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ABSTRACT

Nowadays, Agile software development methodology is adopted by many companies to develop good quality software. It makes easier for the developers to remove the errors and bugs at the time of development of software. In Agile development, bug prediction is used to predict the errors, faults, bugs on the basis of historical data. By which most of the bugs are resolved before software compiles. Machine learning approach is used to predict the bugs in agile, by which agile methodology reduces the cost of maintenance and increase the project success rate. There are some factors for the project success which are discussed in this paper.

Keywords: Agile, Bugs, Methodology, success rate

Agile is the ability to create and respond to change. Agile development process is used to make frequent changes in software. In this process large module is divided into small modules and these modules are assigned to the development team. Each module takes 1-4 weeks to complete. Agile development process is based on incremental and iteration approaches. If the user's requirements are changing very frequently, then agile method is best to use. Nowadays many companies are shifting to agile development process.
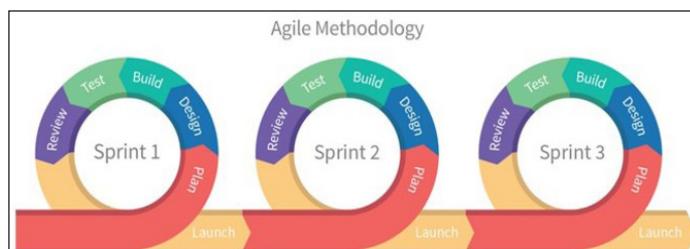

Fig. 1: Agile Development Process

In Agile development process, a single task is divided into sprints. These sprints can vary for different projects. Each sprint works as a small project which can be done by the development team.

There are mainly five phases are used in a single sprint. The first phase of sprint is planning in which the team decides how to proceeds the work. In second phase software designing is being done. The third phase of sprint is to build the software. After that the software is being tested by the development team itself. The final phase is review phase in which feedback is submitted regarding the software.

In this way all the sprints works and together make a good quality products with less cost of maintenance.

DIFFERENCE BETWEEN TRADITIONAL AND AGILE METHODOLOGY

Software development life cycle is defined as a process by which software can be developed systematically. It provides a step by step procedure to achieve a good quality product. Traditional development is suitable for any size of project where agile is used for small size projects. In traditional software development life cycle, quality product is made in an efficient manner where as Agile methodology uses iteration as well as incremental approach to develop software. Traditional SDLC supports any kind of product or software application development where as agile also supports all kind of products by splitting into incremental builds. It is easier to manage in agile methodology than traditional methodology. Agile development is more flexible for the developers as well as for the entire team than traditional methodology. There is a testing team available to test the software in traditional SDLC whereas the development team itself tests the software after every sprint of the project. The cost of maintenance is also less in agile development as the bugs are resolved at the time of development. In this way, agile development provides good success rate of software than the traditional development.

Table 1: Comparison of success and failure of agile and traditional SDLC[8].

Project Size	Method	Success	Failure
Small	Agile	58%	4%
	Traditional	44%	11%
Medium	Agile	27%	11%
	Traditional	7%	25%
Large	Agile	18%	23%
	Traditional	3%	42%

In the above table comparison of success and failure rate of agile SDLC and Traditional SDLC is discussed. Agile development provides better success rate and less failure rate than the traditional SDLC. That's why most of the industries are shifting to agile software development.

LITERATURE REVIEW

Agile development introduces the new process of developing software which makes a great change in realistic development.There are many studies about success factors of agile software development. For example, study[6] proposed the critical success factors of agile development. As the industries are shifting to agile methodology, the last ten year research is analysed on the bases of People, Process, and Technical etc. On the bases of this empirical study critical success factors of Agile can be analysed. For a better

success rate of software developing team should be well trained and communication with whole team should be good. So that the chances of bug arisen will be less. Bug prediction plays an important role in project success rate. Less number of bugs and failure means the success rate will increase. For predicting the bugs in agile software there are many techniques are introduced like machine language. There can be different algorithms and tools are used to increase the accuracy of the bugs based on historical data.

The study[5] proposed a theoretical review on success factors of agile development, in which the people factors and organizational factors are analysed on the bases of theoretical study.

According to the Chaos Report[8], there are some factors provided which helps in increasing the project success rate of agile methodology. Some of the Factors are given below in the table with the percentage of responses.

Table 2: Project success factors of Agile Methodology[8].

Project Success Factor	% of Responses
User Involvement	15.9%
Executive Management Support	13.9%
Clear statement of requirements	13.0%
Proper Planning	9.6%
Realistic Expectations	8.2%
Smaller Project Milestones	7.7%
Competent Staff	7.2%
Ownership	5.3%
Clear Vision and Objectives	2.9%
Hard-Working, Focused staff	2.4%
Others	13.9%

CONCLUSION AND FUTURE WORK

Agile development is a type of software development life cycle which provides a systematic manner to build software. Agile development uses incremental as well as iteration approaches which helps to make efficient software. Agile development performs better than traditional software development life cycle. While developing software in agile, the development team itself tests the software and on the basis of historical data, errors and bugs are removed easily at the time of development. This affect the maintenance cost of the software. Project success rate depends on the various factors like planning, team communication, ability of development, etc.

In Future work, there should be more factors are analysed on the basis of agile work. More techniques should introduce to predict the bugs and errors. Development team should develop software to keep these factors in mind so that it may increase the project success rate and decrease the failure rate of project.

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