

# Implementing Agility in Large Software Development Projects

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**Abstract** - The present paper focuses on providing an in-depth understanding of the concept of agility and its uses in the software development projects. The paper also explains the key issues experienced by large companies while implementing agility practices and frameworks in the large-scale software development projects. The paper also develops key ideas about the procedure involved in implementing agility practices through extensive study of previous literature in this context. It also recommends certain methods in which the issues experienced during the implementation of agility in large scale software development projects can be minimized. The findings provide insights about the various challenges and reasons behind such issues that are common in such large-scale software development projects drawing instances of international companies providing software development services.

**Keywords** - Agile methodology, large projects.

## 1. Introduction

The rapid development of technology has affected the business growth of any organization and its growth has been influenced by the growth on the market. Agile methods have become mainstream for the development of the software in both small and large scale for any organization. Agile methods have been created to support a small team with highly skilled experience software developers.

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It helps in creating effective growth for the development of the small scale. However, agility becomes an issue in large scale development for software.

It has been analyzed that communication is highly significant in the development of software on a large scale which can be disrupted by using the agility in the large-scale development. Moreover, it has been important for maintaining the quality of the code, in order to maintain the quality of the products in large scale development, in order to sustain the effective and profitable business that can be hampered through the use of the agility in the projects. In addition, it has lowered the quality of the code leads in lowering the quality of the products. The present study provides a reflection on the issues that can be raised from the use of agility in the development of software on a large scale.

## A. Research rationale

Software development projects have been requiring increased agility with the growing demand for optimized and faster application by users all over the world. Maintaining agility in large scale software development projects is a contemporary issue because of the increased complexity in the development processes. An increasing number of agile development frameworks have been adopted by the IT development companies nowadays in order to minimize such issues in the software engineering process and delivery of more efficient application to the clients.

There are many issues faced by such projects even during the implementation of such agile frameworks, which include communication issues and lower degrees of flexibilities in the process. This research sheds some light on the various issues faced by software development organizations during the implementation of agility frameworks in large-scale projects.

## B. Research aims and objectives

This research aims at identifying the key challenges in implementing agility in large scale software development projects. The main research objective includes:

- To understand the concept of agility in the context of implementation in large scale software development projects
- To evaluate the impact of agility on the process of development of large-scale software
- To identify the key issues in implementing agility large scale software development projects
- To recommend meaningful solutions to reduce agility issues in large scale software development projects

### C. Research questions

The main research questions consist of:

How is the concept of agility applicable to the development of large-scale software?

- What are the effects of implementing agility in the development of large-scale software?
- What are the key issues faced while implementing agility in large scale software development projects?
- What is the solution to minimize agility issues in the large-scale software development projects?

### D. Research significance

The implementation of agile frameworks in the development of large-scale software systems has become increasingly common in order to minimize the communication and lack of flexibility issues in the development processes of such software. According to [1], by application of predetermined agility, frameworks can reduce the time consumption as well as arrange all the activities in a much more organized and coordinated manner resulting in increased productivity in the projects. It is therefore essential to first identify the key issues and develop a detailed understanding of the concept of agility and its applications in such large-scale projects of software development. This research will help in deriving meaningful knowledge about the present common problems on these topics as well as focus on the types of solutions to such issues arising frequently in large scale software development projects.

## 2. Literature Review

This research paper has reflected the concept of agility and its influence in developing large software projects. It also develops the limitation and threats of developing agility in the growth of the business. It has forecast the challenge of developing large software development through the methods of agility. The present study also provides the factors of large software projects that enable agility. In order to procure the impact of agility on the development of software, a reflection of the previous literature has been performed. Moreover, the instant study has also

represented the gap of the research paper and future scope.

### A. Conceptual framework

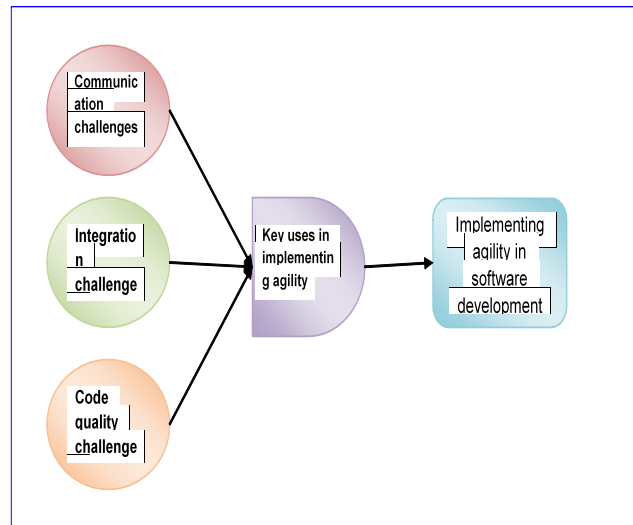


Figure 1. Conceptual framework

There is no exhaustive definition of the concept of agility, however, the concept of agility was first defined in the manufacturing of agile project management software. The entire definition of the concept of agility based on the speed and flexibility for responding has been provided. However, it has been analyzed that agility identifies the complex and multidimensional environment of the market. In the case of software development, the term of agility has been adopted independently and used for documentation purpose of the business organization. The framework of agility has been used for analyzing the development of any organization and providing them with an appropriate way for the growth of businesses. According to [2], the concept of agility has provided cost-effective methods for the further expansion of businesses in the market. The operation of any organizations can be easily determined by the methods of agility. There are few components such as quick response time, quality growth of the products and many more can be achieved by the agility development software. Agile methods, especially in Scrum, have become the main factors for the development of new software for large scale development.

Moreover, the adaptation of agile methods in the large-scale industry has helped the organization for the development and growth in the markets. According to [3], the methods also help in creating inter-team dependent through enhancing the communication process of the organization. However, the companies face challenges as the methods only defined the team design although it fails in helping the projects of the reports.

## ***B. Factors enabling agility in large software projects***

There are some key factors that can enable agility in the large software development projects and they are as follows.

*Effective utilisation:* The effective utilization of the agile methods developing the software has always helped the organization to achieve the goal effectively. According to [4], the project team members can be easily trained through the methods. On the other hand, it needs technically skilled trainers for the purpose of training the employees of any organization. The cultures of organizations play an effective role in the growth in the market and provide a beneficial strategy to gain competitive advantages in developing new large-scale software development.

*Multi skilled and flexible workforce:* The multi-skilled and flexible workforce creates a problem regarding performance measurement for organizations. Moreover, for developing new technologies, the performance measurement is needed for the growth of the organization and completion of any projects [5]. Hence, enabling agile methods during the development of new technologies has helped organizations to create effective growth among the employees of the organization.

*Excellent pathway for technology:* Organization with excellent technology has helped to implement new strategy through the agile methodology for developing new technology on a large scale [6]. Moreover, it has been seen that technology growth in an organization support and enable effective agile adoption.

*High responsiveness for the market:* The agile methods have helped in assessing the response of the market and quick solution for the demands of the organization [7]. Moreover, it can help the technology development aligning with the demands of the market.

*Increase productivity and quality:* Large development needs the productivity of organizations along with the high quality in the products. As argued by [8], enabling the software of agile can help organizations in increasing productivity and quality for developing new software developments for organizations.

## ***C. Contingency theory***

Contingency theory is a theoretical approach that can be used as the model for developing new project management methodology and can be improvised time to time according to the environment of developing software in any organization. According to [9], the theory affects the environment of the organization along with its development process of the large-scale project. Both external and internal contingency factors provide an impact on the

processing time of transition and create a positive impact on the growth of the organization and the development of projects within the time frame. Moreover, it has highlighted the knowledge management process and provides continuous learning activities for employees of organizations for achieving the goal of any company.

The conceptual framework of agile manufacturing depends on the organization of applying contingency theory perspective. According to [10], it has been analyzed that participation of the organization is extremely significant for enabling the agile methodology in developing new technological innovation in the companies. Furthermore, the companies shall implement the contingency factors for enabling the methodology of the agility in large scale development for the software. It has been seen that any organizations aiming in achieving the large-scale development shall implement the agile methodology for development in the businesses.

In order to reduce or optimized the error in the strategy of the organizations and enhance the process of development, implementation of agile strategy shall help the organization [11]. Moreover, the contingency factors can help the organizations in developing effective project management for taking new innovative ideas for the development. Moreover, it would help in gaining competitive advantages in the market through the development process.

## ***D. Impact of system - wide agility in large software projects***

Companies make a profitable business by continuous development of new innovative ideas and products. Recently the global market environments face challenges for the rapid growth of the software in businesses. Agility provides a significant competitive market for the organization about developing new technologies. Moreover, the uncertainty of the organization can be easily solved by using the effective implementation of the methodology of agile in the software development process. In case of large-scale development for software in organizations, it is important to implement a system-wide vies for the entire organizations [12]. It also helps the organization in operational management and persistent effective growth in the market.

The software development project has been connected in various parts of the organization that affects both the external and internal environment of any organizations. In the case of software development, the flow of the work shall be effectively achieved and aligning with the software and hardware development prevailing in any organization.

On the other hand, most of the coordination practices proposed by the methods of agile are mainly informal management style [13]. This creates

negative impacts on the growth of the organization regarding the development of a large scale. Moreover, it has disturbed the communication system in the organization along with the hampering the innovative ideas for the growth. Miscommunication leads in misunderstanding among the team members, which enhance the problem of the organization, and prevents appropriate growth on the market. In addition, larger projects need to address challenges, which can be lost due to the wrong implication of agile methodology as project management software. It also enhances the communication difficulties among the team members, which creates more problems for completing the project within time. As the agile methods need full technical supports, hence it creates technical complexity among the employees and increases complexity in the interdependency task among the team members. Moreover, it also affects the decision-making process of the organization regarding the development of new software on a large scale. It also creates conflicts among the team members of the organizations. It also hampers the uniformity of the team and effects in achieving the objectives of the organization. It has created a problem for the growth of the organization and completing the project within an effective time frame.

#### ***E. Challenges faced in large-scale agile software development***

There are several challenges for the implementation of Agile in large scale development. Some of the challenges are as follows.

##### ***1) Planning challenges***

Appropriate planning is needed for the process of software development and this can be created through the appropriate communication. However, the agile methodology creates lacks in the communication process of the organization that leads to uncertainty in the planning.

##### ***2) Task prioritisation challenges***

The prioritization of tasks has been the main challenge for planning session of the organization in large scale development of software [14]. Moreover, unplanned technical dependencies arise difficulties for the completion of the project within the timeframe of the organization. Moreover, it creates a backlog in the products of organizations and creates negative impacts on the growth of the market.

##### ***3) Knowledge sharing challenge***

Knowledge is an important role in the development of large-scale development. However, it has been seen that agile methodology prevents the knowledge sharing process among the team members that lowers the development process of the software in the development process.

##### ***4) Code quality challenge***

A good quality code would result in the quality products for the organisation. On the contrary, in the development of large scale maintaining the good qualities of the code can create challenges for any organization [15]. Moreover, testing becomes more complex for large scale development through implementation of agile methodology in the organizations.

##### ***5) Integration challenge***

Large-scale software developing through agile methodology merges the work packages and creates problems for many self-organized teams working to create an integrated working product for customers. Moreover it created conflicts among the team members of the organization and creates the problem for the growth of the organization. Moreover, it enhances the incompatibility among the team members of an organization. The integration challenges are due to lack of interdependency among the developers and coworkers in an organization.

#### ***F. Literature gap***

The present research paper has shed light on the factors of enabling agile in the large development software for the organization. Moreover, it has been reflected in the research paper about the concept of the agility and impact in the development process of software. On the other hand, there is very little research about the agility of the development of large-scale software. There has been a future perspective regarding research on the agility for developing new large-scale software.

### **3. Research Methodology**

This research paper provides the concept of agility and explores the influence of agility on the development of large-scale software. It has collected data from the previous research paper and surveys a few software developers to find an effective result. Research methodology provides deep knowledge about the topic of research. Various techniques have been used to collect and analyze the data set and procure an appropriate result.

#### ***A. Research philosophy***

Research philosophy denotes the appropriate ways to perform the research analyst for the topic. There are mainly four types of research philosophy such as Positivism, Interpretivism, post-Positivism and Realism. In the present research paper, positivism has been chosen to collect appropriate result and explore the influence of enabling agility in developing software on a large scale. Positivism philosophy has been chosen to find the problem for using agility in the large scale software development. Post-

Positivism, Interpretivism and Realism have not been chosen as they fail to provide an effective result for the research.

### **B. Research approach**

Research approach is the method to conduct the research stating the essential requirement for the completion of the research. There are two types of research approaches to conclude in an effective result completion of the projects, such as inductive and deductive research approaches. In the present research to identify the problem regarding the use of agility in the large-scale development software, deductive approaches have been chosen. It has provided specification ways to explore the findings of issues arising from incorporation of agility in the development of software on a large scale. However, inductive approaches have not been chosen, as it would provide an absurd result for the organization.

### **C. Research design**

Research design provides the framework of the research papers and helps in selecting an appropriate methodology for data collection and analyzing the pattern. Mostly, three types of research design are generally used such as exploratory, explanatory and descriptive.

The present research paper aims to identify the problems arising from using agility in the large-scale development of software. Hence, the exploratory design has been used to find an effective result for the research topic. It has helped in identifying the dependent variable of agility that creates problems for developing in software on a large scale. On the other hand, explanatory and descriptive has not been used as it would provide an inappropriate result for the research topic.

### **D. Data collection**

Data means the collection of information that might be helpful and relevant to assume effective result for the research. It helps in deriving the appropriate findings and enhanced the standards of the research work. The data source has helped the research penetrate the research topic and procure effective result for the research topic. In the present research, secondary data collection method has been chosen, in order to analyze the issue of agility in the large-scale development of software. Moreover, the secondary data has been collected to explore the issues arising from using agility in the large-scale development of software. Thematic analysis has been preferred as a research methodology for relating the factors that enable agility to create problems in the research. It has helped in identifying the gap and

builds a strong bridge in the research topic to identify the issues for using agility in developing software.

### **E. Ethical considerations**

The ethical consideration has been maintained strictly in the present study. Data has been collected for only research purpose and it is not being manipulated for commercial use. An appropriate credential has been provided to the existing research paper chosen for the analyzing purpose in the present research. The researcher has maintained the code of practices, during the research.

### **F. Limitations**

There is a certain limitation that might be encountered for gaining effective result for the research paper.

- Reliability: Relevant secondary data collection has been difficult in finding for the present research topic. Hence, the result of the present research paper may not reliable.
- Time: The present research paper has a limited time period for the completion of the project that can create irrelevancy in the result.
- Cost: The budget of the research paper is limited to provide challenges for the research to gain exhaustive result for the present topic.

## **4. Discussion of Findings**

### **A. Concept of agility and its application in large scale software development projects**

The basic concept of agility, as described by [16], refers to the ability of an organization to survive in a competitive environment and its responsiveness to the quick changes in the external business environment. In the case of large software development enterprises, it can be defined as the ability of the group to cope with unexpected changes and thereby exploit their intra and inter-organizational capabilities. Large scale agile frameworks such as Scaled Agile Framework (SAFe) and Spotify include predefined patterns of workflow which minimize the time required for creating the workflow diagrams and planning each time in the software development projects [17]. Such programs, therefore, successfully produce the existing effective program guidelines and allow large scale IT companies to deliver faster completion of the projects with minimizing time dedicated to the project management. The concept of implementing agility in such large scale software project development companies mainly refers to the transitioning of the traditional approaches of program and project management to modern agile project methods which in turn affect all the stages of management in the organizations. Application of agile frameworks can

also become extremely challenging for the organization since the processes are not always optimized according to the operational requirement of the organizations.

As per the studies of [18], leading global companies such as Accenture, Ericsson and Intel always used mixed and custom agile frameworks in order to minimize the problems due to lack of compatibility with the available frameworks in the market. Accenture provides global management and consulting services along with large scale software or application development projects for various clients in different industries. According to [19], more than 2500 developers and associated workers are included in each of the processes which require more than 50 to 60 agile engagements each time. Such large scale processes and projects are complicated, therefore, require custom and mixed agile frameworks for efficient project management plans. Similarly, other leading companies handling such large scales software development projects such as Dell and TechCo. Also, use agile frameworks such as Scrum at Scale and SAFe respectively [19]. In most of the cases, the adoption and implementation of agility frameworks in the systems have led to great success. However, in some cases, the frameworks can file as well; for instance, in the case of Revising, the initial mainstream framework failed which was later switched to customer agile services application by the company. The basic requirements in large scale software development projects include proper integration between the enterprise model types as well as the working teams at the various regions at the same time.

Implementation of agility frameworks in large scale projects requires differentiated modelling language application, mechanisms and position based algorithms and procedures which define the actions to be taken in each specific case. The whole process has to be increasingly fast and responsive in order to optimize the outcomes through applications. Implementing agility in software development project must consist of all-inclusive characteristics such as adaptability, extensibility, integration, reliability and usability [18]. Such responsiveness is crucial for software development organizations in order to provide perfectly developed applications and software to the clients on time. The concept of agility is often confused with the idea of flexibility in the management systems which is mostly included as part

of agility. As mentioned by [20], more than 89% of the agility frameworks are adopted in the IT and computer science industries and the ongoing transitions during the implementation of such processes include five dimensions, namely transition in software development practices, team practices, reflective practices, management practices and cultural practices as well.

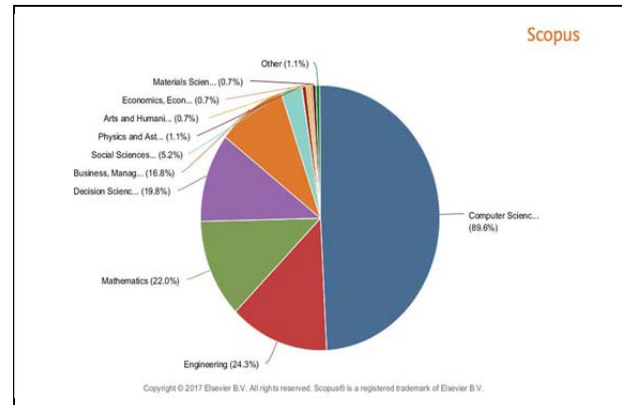


Figure 2. Frequency of application of Agility in different industries [20]

### B. Impact of implementation of agility in large scale software development projects

The main impacts of the implementation of the agile methodology are in the large-scale software development processes because of the responsiveness and efficiency of the developed software. On-site interaction between the coordinated teams and departments is easily controlled through the application agility in the scenario. One of the most significant effects of implementing agility in large scale software development projects is that the planning phase before starting any project is highly improved through this procedure [21]. The inclusion of agility allows the direct involvement of the customer or clients in the development process. In this way, the demands of the customers, as well as the detailed features which are to be introduced in the products, are better understood by the development teams as well as the managers. The implementation of agility in such large-scale projects allow enabling the development teams to detect faults easily and each and every action during the development process is pre-planned and therefore acts as significant property to increase the performance levels of the all the teams working together.



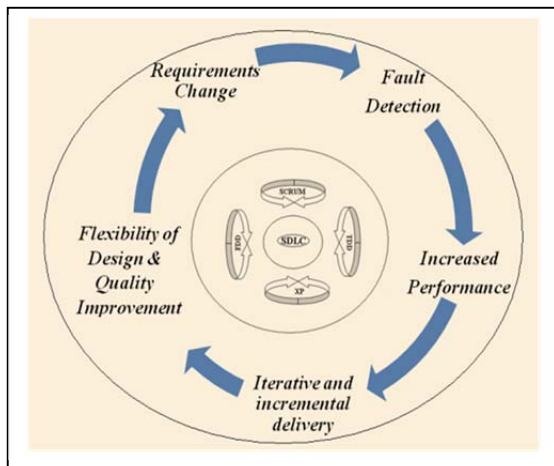


Figure 3. Benefits of implementing Agility in large scale software development processes [22]

The agility frameworks drive the project schedule in such a way that the fault testing parts are included in each of the iterations of the process. Because of this reason, the faults are easily detected from the beginning and therefore are fixed by the developers at the preliminary stages. According to [22], fault detection after the complex programming parts in the system may require changes in the entire algorithm and codes which is a highly inefficient way to develop large scale software. Another impact of such continuous testing methods included in the project management systems is that it allows the continuous frequent feedbacks from the testing procedures which in turn helps in the development of high functioning improved codes for future iterations. Agility frameworks also increase the performance levels of the software development projects. Regular coordinated meetings provide increased opportunity to better communication and high rates of flow of information within the different teams under the project. Implementation of agility also encourages increased knowledge sharing, an organisation of teams in better performances as well in terms of increased return on investment results.

The instance of earlier software development projects by Ericsson can be drawn in order to justify the positive impacts of the adoption of agility in the systems. [23] pointed out, after the adoption of the agile framework in the large scale projects by Ericsson, the products were developed in a much shorter time and they were playing in such a way that in the long run, the products developed through the agile methodology can completely replace the products from traditional practices. The architectural layers in the development process previously adopted at Ericsson were replaced by cross-functional teams including system analysts, dedicated testers and designers as well as Scrum Master and Product Owners. This enabled the teams or delivers value-added business and added vertical competence to the

software developed and delivered to the clients. The comparative results before and after implementation of agility in the case of Ericsson and other similar software development companies showed that there are some primary differences in the conduction and planning of the projects. For instance, the iteration lengths were cut short including more frequent reflection of the performances and progress as well as the transition from a horizontal architecture adoption to a vertical approach.

The process modelling post application of agility frameworks also differed as the traditionally plan-based waterfall structure process model was adopted which is generally changed to modern frameworks such as Scrum [24]. According to the studies of [25], the implementation of agility most commonly allows major participation of the stakeholders in the projects and more than 66.7% of the companies who regularly implement such framework agree that the productivity in the large-scale projects has improved drastically. It is not true that the application of agile methods always results in positive outcomes for large scale software developers. Certain programming environments cannot react positively to agile changes in the system which therefore results in slowing rates of production. This happens especially in the case of projects which contain undivided large teams [24]. Clients needing large scale project in much fewer times as well as software development projects with the requirement, can suffer from agile implementations as there are a number of technical dependencies related issues involved in the Agile frameworks.

### C. Key issues faced in implementing agility in large scale software development projects

Agile development frameworks are most effective if the projects are small to medium sized as they provide simple and rapid incremental solutions through repeated feedback and signs of the iteration in the software development processes. The process basically breaks down the complex features involved in the software development processes which can also be applicable to the large-scale projects with smaller teams working on different parts of the project. Cumulative smaller tasks generate increased pace in work with a proper division of the workloads. Therefore, many challenges faced by the software development company vehicle implementing agility to large scale software development projects such as communication-based issues, issues in creating agile teams and controlling the technical dependency factors in the systems.

Agile development methods are usually highly successful in establishing flexible software development procedures. However, applying the repeated multiple phases of feedback iteration on a

much larger scale can encounter the number of challenges. As mentioned by [26] implementation of agility practices on a large scale setting often leads to a rising in misalignment in the management procedures. The main challenges experienced by the majority of the large-scale developers included a lack of documentation and coordination between the several teams in the projects. Creation of cross-functional teams also causes increased colleges in most cases, as these teams need to contain team members with all basic skills including designing, coding, fault detection and communicating. The studies of [27] specify that the major technical challenges faced during the implementation of agility methods in large scale software development projects include poor code quality challenge, integration challenges and task prioritization challenges.

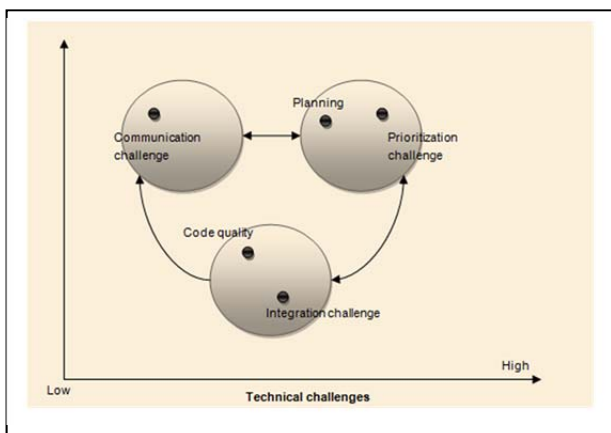


Figure 4. Key issues in the implementation of agility in software development [24]

The first issue that generally raises at the initial stages of the software development projects includes task prioritization problems which occur as a result of the poor planning of tasks in the first place. Unplanned technical challenges occur in the project development processes which in turn bring about the requirement for complete changes in the time schedules as well as the order of the tasks which the software might require while assembly. Large scale projects are more susceptible to such redundancies since frequent and repeated changes in the priorities can result in wastage of both time and resources [28]. Such conditions also occur especially in certain cases where the teams need to add new features as requested by the clients and if such requirements cause complete changes in the prior developed parts of the software. Application of agile methods in the large-scale projects also cause issues in maintenance of the good code quality. Delivery of poor quality codes can lead to decreased performance of the developed software which can, in turn, cause a decrease in the demand for the company products. This happens as a result of the fast paces integration-based systems in agile frameworks which limit the

depths of software testing in a larger scale leading to unidentified issues in the long run. Subversion tools are used recently by larger software development companies which help in maintaining a good quality of codes ensuring delivery of quality to the clients. However, the studies of [28] showed that the majority of the people agreed such changes hardly succeed in maintaining a stable quality of code creating increased technical dependency challenges within the system. The function testers agreed that as a result of application and maintenance of code quality, the testing processes become increasingly complicated in most cases which eventually lead to failure to the delivery of product in time and these also cause rewriting of entire segment in the codes.

Integration challenge is also one of the key issues experienced during the application of agility in the large-scale software development projects. Such processes require migration and merging of multiple work packages in the system because of the many numbers of teams working together. If the teams are self-organized working for delivering different work packages, it is even harder to integrate such tasks due to the rarely maintained documentation and reporting structures of the separate teams. Integration in large software development projects also poses as a major technical challenge because of the high probabilities of lack of communication and development of incompatible parts in the software as a result of the independently working teams. [27] mentioned that merging conflicts are extremely common in large scale projects under international IT and software solution delivering companies increased the trend among such companies as Accenture and Ericsson to consider customized agility frameworks in this system emphasizing proper centralization and communication between all the teams during such practices. Customization of agility programs can also lead to proper delivery of the products to the clients within designated time frames.

## 5. Conclusions and Recommendations

It is evident from the observation in various researches that there are a bunch of potential issues in the implementation of agility practices in the large-scale software development projects. The major cause identified in this research was the problem created due to small parts and scattered work in the various parts of the agility frameworks. Modification of the size of the teams, planning methods and proper scheduling can lead to optimization of agility methods for large scale projects as well. The prominent issues identified in the present research included integration problems, Code quality maintenance issues and problems in the prioritization of tasks. The proper ordering of tasks is assenting to enable the team



allocated with consecutive development tasks to function in an ordered manner. Such challenges have been found to be the root causes behind poor delivery of quality and delays in work completion. All the mismatch between the activities while implementing agility on large scale projects is caused due to improper communication and planning of tasks. Many concerns of the previous researchers have also pointed out that merge conflicts cause agile teams to configure tasks and redo whole activities. Implementation of Agile methods in large scale software development also allows the customer to constantly keep touch with the development processes which is another issue causing delays in delivery of work.

In order to minimize the issues in the implementation of agility practices in large scale software development projects, each and every challenge has to be addressed in a particular order as fit to the operations and process of the companies. All the issues identified in the present research are dependent on one another which implies that mitigating each and every factor is absolutely necessary for this context. Some of the ways to resolve the key issues in the implementation of agility in large scale software projects can include multiple steps. The first solution to solve the integration problem is to improve communication between the different technical and management staff. The planning stage in the large-scale development project has to include the development of proper communication plans as well.

Each and every project agile framework must be customized prior to the implementation in order to optimize the activities and schedule as per job requirements. Organization assessments and skill tests are also required before initiation of the application of agile frameworks for the purpose of proper allocation of tasks to team members. Increasing training sessions as per the assessment results and identification of the potential barriers to improvements can also ensure success in the implementation of agile frameworks. Comparisons between previous frameworks and application according to previously plants need to be avoided at all costs since this may reduce the primary planning time drastically yet create increased problems after initiation. It is also mandatory that the selection of the agile framework and the relevant justifications are presented and clarified to all the stakeholders involved in a project. Smaller numbered metrics are more preferable in large scale agile application since these provide more concise comparison results.

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