Introduction:

All are agile software development methodologies that support technology provisioning in higher education today. Traditional development approaches tend to mirror the foundational phases of the project, which causes a disconnect with most of the Agile procedures we may see across different teams and the ways in which you adapt to unanticipated changes that may arise. Agile methodologies, with their iterative processes and foci on flexibility and collaboration, have offered a solution to these challenges, and have taken off. Scrum and Extreme Programming (XP) are two of the most popular Agile frameworks, each with unique strengths: Scrum excels in project management, while XP focuses on technical practices. Each of these paths has failures of their own to contend with—Scrum leads to weak engineering practices and XP leads to weak management practices. This research is conducted under the Hybrid Scrum-XP model which involves the benefit of both models to push the above barriers. This study attempts to better tune the Hybrid Scrum-XP model, as well as assess its applied value in real software companies in Bangladesh toward increase in efficiency, value delivery, and adaptability.

Background Analysis:

In the world of software development, agile methodologies have revolutionized the way we approach project management, emphasizing flexibility, collaboration, and rapid delivery of high-quality products. Among the different frameworks, most used frameworks in Bangladeshi software companies are Scrum and Extreme Programming (XP). The business side of Scrum is widely respected, and XP excels in the technical dimension with iterations. Unfortunately, Scrum provides no reliable engineering practices, and XP places insufficient emphasis on good management. This led to the Hybrid Scrum-XP model, which utilizes the strengths of both the Scrum and XP frameworks to address those gaps. It is based on the work before, assessing the problems of software companies and showing how this hybrid model can help to add into improved productivity, agility, and collaboration in such fast-paced industry as the software industry.

Problem Statement:

On one side they are challenged with the quickly changing needs of customers and on the other side is the need for high quality and an efficient solution. Agile methodologies such as

Scrum and Extreme Programming (XP) are all the rage, but they have their downsides—Scrum is missing good technical practices and XP lacks a proper methodology for project management. In complex and dynamic projects, these shortcomings can result in delays, inefficiencies, and unmet objectives.» Therefore, addressing this issue, Hybrid Scrum-XP Model was proposed; however, the model needs some more improvements, and the proposed model should be validated with a case study. The study aims to identify the limiting factors of Agile adoption in Bangladeshi software industries and investigate how the Hybrid Scrum-XP model can adapt to circumvent these challenges to produce better outcomes.

Objectives:

The objective of this research is to evaluate and improve the effectiveness of the Hybrid Scrum-XP model for the software organizations in Bangladesh. It aims to create a more agile, effective, and pragmatic framework, offering an integration of the strengths of Scrum and XP to face the challenges encountered by industries dealing with dynamic and complex projects.

Specific Objectives

To find out the limitations and challenges of applying traditional scrum and XP methodologies in software industries in Bangladesh.

To study the Limitation and work upon the Hybrid Scrum-XP model.

To analyze the usage of the hybrid model in improving project efficiency, its cost-effectiveness, and the quality of the product using existing case studies and survey.

Research Methodology

This study will adopt a mixed-method approach, incorporating both qualitative and quantitative methods. This will involve conducting surveys and interviews with project managers, developers, and Agile coaches from various software companies in Bangladesh to further glean insights into the current use of Scrum, XP, and Hybrid Scrum-XP model in the software development process. Moreover, the impact of the hybrid model will be evaluated on real-world projects through case studies in respect of its efficiency, cost-effectiveness, and quality of the product. The combination of these approaches will ensure multiple perspectives on the hybrid model's effectiveness.

Approach for System Development

We will have an early and continuous delivery of this proposed Hybrid Scrum-XP model, built-in several phases: planning, design, build, test, and evaluate through an iterative development process. The model will go through multiple iterations, each focused on integrating stakeholder feedback and iteratively improving model performance based on real-world data. This iterative nature works well with Agile as it enables projects to be constantly improved according to popular methodologies.

Reasoning behind the Choice

We go with Iterative Development method as its very much in the principle of Agile (Flexibility, Collaboration and Continual Improvement) This ensures that the model's refinement can be correlated to the feedback received from surveys, interviews, and case studies. This approach provides actionable insights by testing the Hybrid Scrum-XP model in real-world settings that can produce realistic scenarios and therefore increase the faith on the results while also making it applicable to software companies in Bangladesh.

Significance of the Study

The significance of this study is that it offers a customized solution for software firms in Bangladesh concerning the challenges faced during Agile implementation. This research provides a way to optimize project efficiency, cost, and product quality with refining the Hybrid Scrum-XP model. It also provides a framework that can be tailored to different industries and types of projects, making it relevant beyond just software development. The results will aid organizations in taking up a more efficient Agile approach, thereby increasing their competitiveness in an ever-changing market.