



Mawlana Bhashani Science and Technology University

Santosh, Tangail – 1902

Assignment

Department : Information and Communication Technology

Assignment No:03

Assignment On: Agile approaches and their comparative analysis

Course Title: Software Engineering

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Submitted by, Name: Tafhimul Afifa Id: IT-21035 Session: 2020-21 Year:3 rd Semester: 2 nd Dept of ICT, MBSTU	Submitted to, Dr. Ziaur Rahman Associate Professor Dept. of ICT MBSTU
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Introduction: Agile methodologies have revolutionized the software development landscape, emphasizing iterative development, customer collaboration, and adaptability. This assignment delves into some of the most prominent agile approaches, examining their working, applicability, and effectiveness in terms of cost and other factors.

1. Scrum:

→ How it works: Scrum is a framework that divides development into short iterations called sprints. Each sprint involves planning, development, testing and review. The team collaborates closely with daily stand-up meetings to track progress and address issues.

Applicability: Scrum is well-suited for projects with evolving requirements, complex systems and cross-functional teams. It's particularly effective for projects where flexibility and rapid response to change are crucial.

Effectiveness: scrum can lead faster time-to-market, improved product quality and increased customer satisfaction, However its success depends on strong team collaboration and adherence to the framework's principles.

2. Extream programming (XP):

How it works: xp emphasizes customer involvement, frequent releases, pair programming, and continuous testing. It focuses on simplicity communication feedback and courage.

Applicability: xp is best suited for small to medium-sized project with highly skilled developers. It requires a strong team culture and willingness to embrace frequent changes.

Effectiveness: xp can lead to high-quality code, reduced defects, and increased customer satisfaction. However, it may not be suitable for large-scale or complex project.

3. Kanban:

How it works: Kanban is a visual method that focuses on visualizing work, limiting work in progress (WIP), and continuously improving the flow. It uses a kanban board to track task in different stages.

Applicability: Kanban is versatile and can be applied to various type of projects, including software development, operations, and marketing. It's suitable for teams that prefer a more flexible and less structured approach.

Effectiveness: To improve efficiency Kanban can lead, reduced lead time, and increased predictability. It's particularly effective for teams that want to focus on continuous delivery and flow optimization.

Lean software development:

How it works: Lean software development is based on the principles of lean manufacturing. It focuses on eliminating waste, amplifying learning, and delivering values.

Applicability: Lean is suitable for projects that require continuous improvement and optimization. It can be applied to various development methodologies, including scrum and Kanban.

Effectiveness: Lean can lead to reduced costs, increased productivity and improves quality. It's particularly effective for teams that want to achieve more with less effort.

Comparative Analysis:

Feature	Scrum	XP	Kanban	Lean
Focus	Time-boxed Iterations	Simplicity and customer involvement	Visual workflow	Eliminating waste
flexibility	Moderate	High	High	High
Team Structure	Self organizing teams	Pair Programming	Cross-functional teams	Cross-functional teams
Cost	Moderate	High	Low	Low
Risk	Moderate	High	Low	Low
Applicability	Diverse Projects	small to medium size Projects	diverse Project	diverse Project

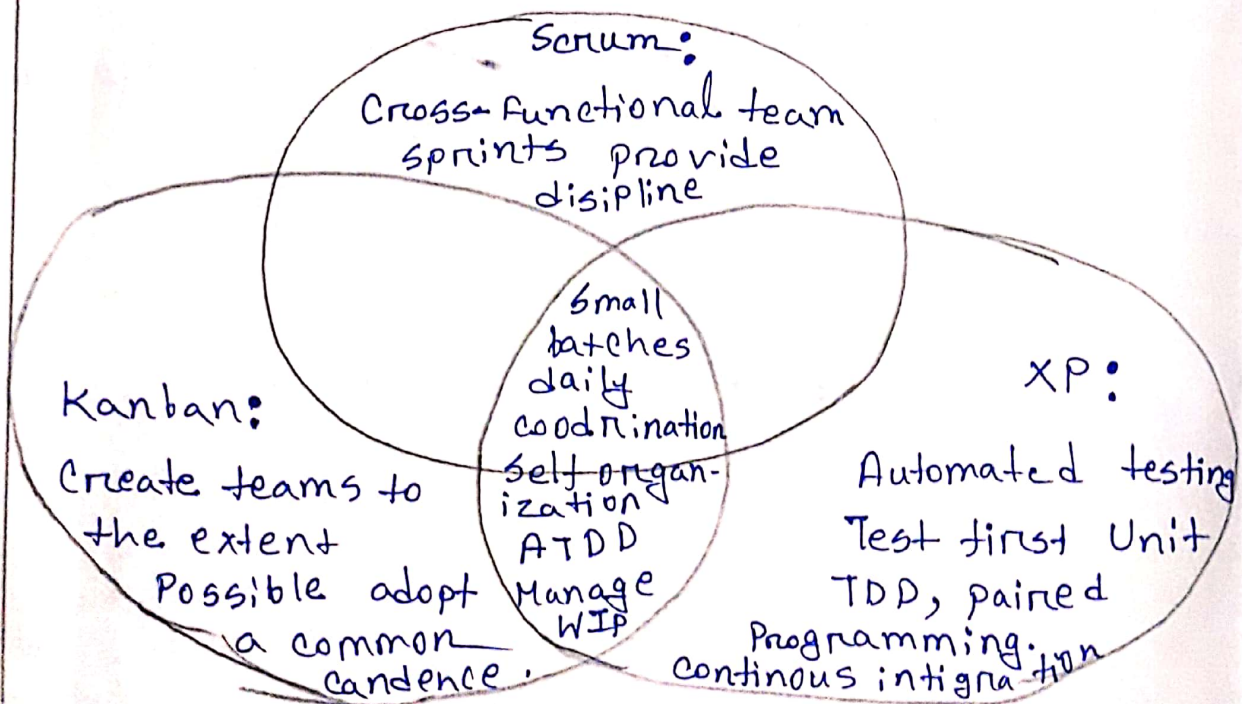


Fig: Venn diagram comparing scrum, xp, Kanban

Case Study: Agile Adoption in a software company:

A software development company struggled with project delays and low customer satisfaction. By adopting Scrum, they were able to break down large projects into manageable sprints, improve communication, and deliver working software more frequently. This led to increased customer satisfaction and reduced project costs.

Conclusion: Agile methodologies offer a flexible and efficient approach to software development. The choice of methodology depends on the specific project requirements, team dynamics and organizational culture.

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