Task "Comparative Analysis of Software Development Methodologies" Unit 4

Introduction

Technology and software have become an integral part of our lives. Software enables many aspects of society's personal activities, tasks, transactions, and sustainability processes. Software is utilized in everything people do today, and has been for decades. Technology and software shape our day-to-day lives and have a strong influence on society.

(Walton, 2024)

Project Management

Project management is a key element in a wide range of fields and industries. A structured approach with processes is necessary to meet goals, learn, and minimize risks and costs. Projects within the software industry require a similar structure and general management practices, though software may be unique in terms of technical and development requirements. Projects and software development are a part of a programme, encompassing governance, IT, legal, data privacy, and more. Integration must be considered when designing policies, guidelines, standards, legal documents, and data privacy rules to ensure proper alignment and cohesive integration. Key decisions and logical thinking should be applied and integrated into software development using methodologies such as Waterfall and Agile to address challenges in a structured manner, utilizing knowledge to learn from the experience others have developed, profit from lessons learned, and produce an improved outcome.

Waterfall and Agile

Both Waterfall and Agile are considered project management and software development methodologies.

The Waterfall is a traditional iterative methodology commonly used in software development. It has a strict structure and follows a sequential approach. Waterfall uses a conservative approach to process and is designed for projects with precise requirements and fixed scopes. It does not lend itself to flexibility, which could limit its use in some cases.

The Agile methodology is more flexible and encourages iterative development, adaptable planning, and quick results. It enables adaptation to changes. It also empowers teams to make decisions and contributes to quality assurance. It may reduce risk by quickly improving satisfaction and delivering value.

(Cooke, 2021)

Risk Management

Agile and Waterfall differ significantly in their approach to risk management.

Both Agile and Waterfall methodologies recognize that risk is uncertainty that can impact a project's objectives. It involves identifying, assessing, and prioritising these risks to mitigate their potential adverse effects on a project. The Waterfall methodology

initially focuses on these aspects, with rigorous, predefined feedback paths planned to address any issues.

Agile promotes continuous risk assessment and adaptation throughout the lifecycle, allowing for quicker responses to emerging issues. Agile means continuously identifying risks and making improvements, as well as being able to go back and fix problems.

Quality assurance also plays an effective role in risk management, encompassing all risks to the product or project, as well as their negative impacts on cost, time, and quality. Hence, quality is an integral part of project risk management.

(WAWAK, ZAKRZEWSKA, 2025)

Scalability

Waterfall is ideal for mid-size to large projects. The model is divided into distinct phases, including Requirements, Design, Coding, Testing, and Operations. Phases depend on each other, and Waterfall documentation, created at the beginning, improves clarity while limiting flexibility.

Agile is highly flexible, with rapid adaptability to changing events, such as shifting requirements. Diver roles, such as developers, engineers, and architects, are playing an essential role in shaping projects, while this dependency on different organisational cultures introduces complexity. Hence, the contrast between traditional and modern organisations plays a significant role in this case.

Questions

- Where do we draw the line between business risks and project risks? to which extent should projects properly aligned with business objectives or sustainability goals?

- How should risk management be approached in an organization? Should project management risk be viewed solely as project-related risk? Will such an approach lead to gaps between project goals and business objectives, or might it enhance project effectiveness?

- Should risk be aligned with the organization's overall risk strategy? While this approach may add complexity, it also entails greater executive responsibility, which can lead to stronger organizational support. At the same time, this broader perspective creates additional dependencies for the project.

- What is your perspective on this matter? Do you agree or disagree?

References

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