Deep Dive into Agile and Waterfall Methodologies

By: Siobhan Scott

Introduction:

In project management, there are different methodologies to choose from when operating a project. Navigating and understanding the difference between these methods and when to use them, are important components to consider. Today, we will be talking about Agile and Waterfall methodologies, the differences between them, when to use them, and how they can be beneficial for you as a project manager or scrum master.

Agile Methodology:

The formal definition of agile project management is " a flexible and iterative approach that enables teams to quickly adapt to changing project requirements, and deliver high-quality results within shorter timeframes" (Float). With agile, the project will be worked on in smaller sections and phases called sprints, with most of the responsibilities being with the team rather than the project manager.

Agile is a more flexible approach, as it deals with short fast-paced projects. Communication and documentation between the team can be informal, but it is highly important to have frequent communication. Any client or stakeholders apart of the project will be heavily involved with the project flow compared to the waterfall approach. The project also requires involvement from the customer, to understand the customer needs (Float).
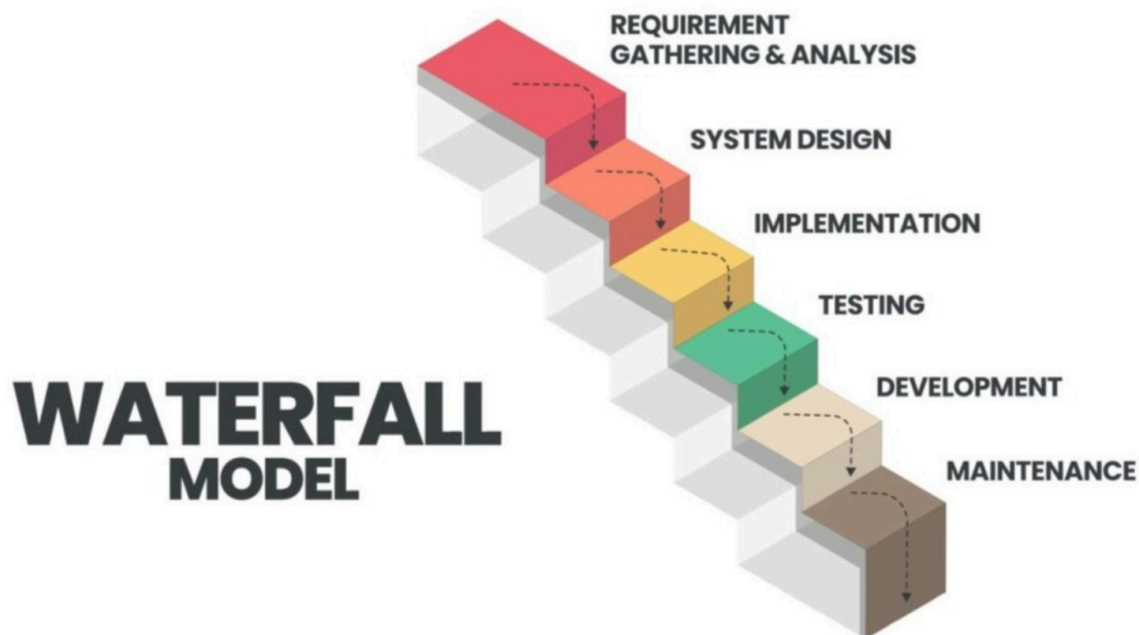
(Image 1, reference below)

One of the reasons the agile approach is used is because of its adaptability. It is structured to handle fast changes and edits, as well as having members of your team that can adapt to different roles within the project as needed. Agile is also faster with detecting any product issues, which sometimes only get recognized at the end of a project. One problem you may run into with agile project management is transitional difficulties, especially if your team is not used to using a fast approach like agile. Another problem would be the informal documentation or the lack of documentation. The following source explains the lack of documentation stating, "....comprehensive project documentation isn't as prevalent as in the Waterfall methodology, making it difficult to extract exact details, budget, and even communicate if teams aren't mindful" (project-management). Understanding the end result or definitive end goals of the project can also be hard to determine if there is no proper planning during the sprint phases.

Waterfall Methodology:

The formal definition of the waterfall methodology is "a linear, step-by-step approach that's ideal for projects with a clear scope and predictable timeline. It involves rigorous planning upfront to ensure that the project stays on track, with progress tracked closely and issues addressed promptly" (Float). The waterfall method is a more fixed approach that involves more planning and less involvement needed from the customer. This method is also known for its

problem predictability, which can set up the foundation for a stable and well-paced work environment. Unlike agile, having a heavily involved project manager is important.

The waterfall method will include five main stages which are initiation, planning, execution, monitoring/control, and closing. During the initiation stage, the project goals are defined, stakeholders and clients are identified, with the end goal being a clear understanding of the project within your team. "This phase involves identifying and describing the project's risks, assumptions, dependencies, quality metrics, costs, and timeline" (profit). The planning stage is to break down the project goals for each section while developing solutions for the project scope. In this stage, different features like the timeline, budget, and resources will be well defined. The execution phase is implementing everything from the initiation and planning stages to your project. For example, if your project requires heavy amounts of coding, this is the stage where you would develop that software. Monitoring/ control is for testing the developed product and comparing it to the project requirements. You would also be getting some type of customer feedback to fix any changes needed.
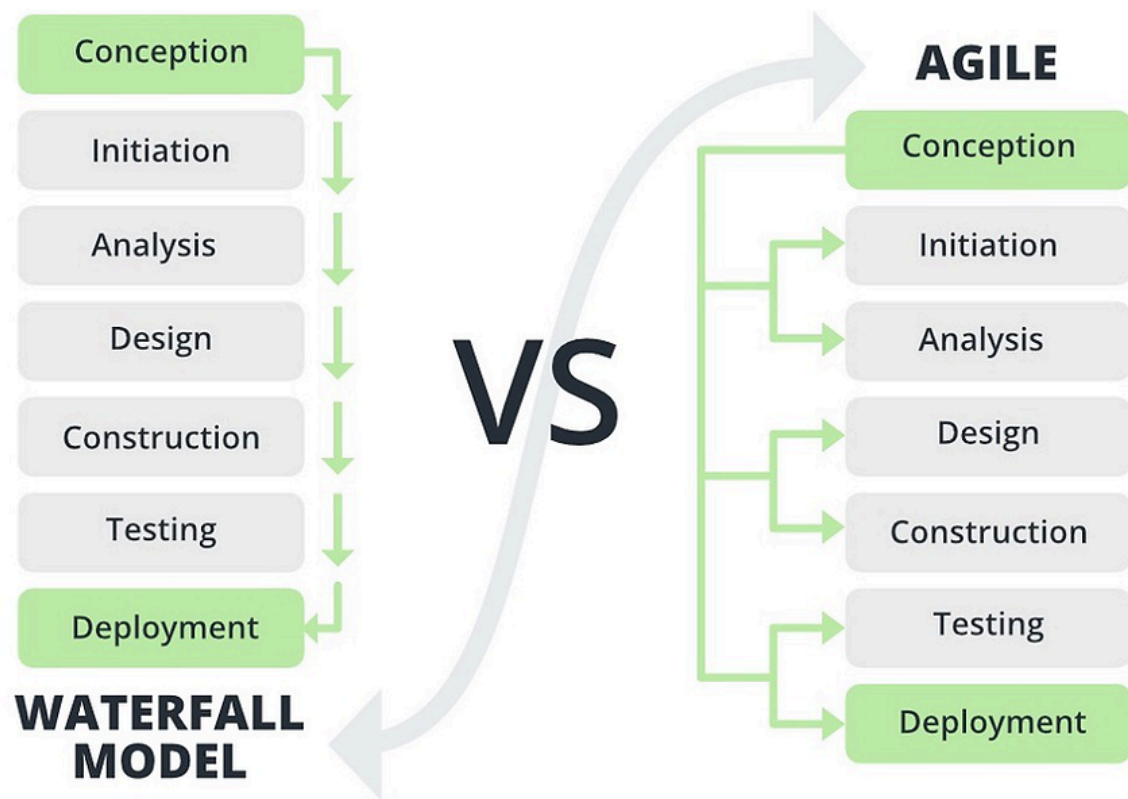

(Image 2, reference below)

During your closing phase, the project itself is formally completed and will be evaluated by the clients or stakeholders. You and your team would also be making any improvements or

small changes in this phase as well. An extra phase included would be maintenance. " The maintenance phase extends beyond the five stages of project management into the project's lifetime" (profit). Your project is completed, but routine maintenance for the upkeep of the product is required for the entirety of the product's life.

The waterfall method is associated with efficient documentation, which makes tracking progress in the project easier to do. Because of thorough documentation and planning, the flow of the project has predictability, as well as detailed roles for each team member. This method also has a lot of transparency, which makes it easier for stakeholders and clients to be updated on the progression of the project. Some stakeholders do have a problem with not being so involved compared to agile, which can lead them to feel excluded. The structure of the waterfall method is a great benefit, but decisions can be permanent and leave no room for changes.

Agile vs Waterfall Methodology:

Both agile and waterfall methodologies are great project management tools to implement. Let's go over both and compare them to different aspects of a project. In regards to timeline, the waterfall method has a structured timeline. During the initiation and planning phases, the timeline of the project will be discussed and defined. Agile has a more flexible approach and will adapt to the timeline as the project continues. As previously mentioned, there is little to no client involvement during a waterfall project until the end when feedback is required in the final stages. There will be specific times during the project when a check-in meeting with your client would be required.

(Image 3, reference below)

Clients are involved in every phase of an agile project, seeing as it deals with fast short-term projects. The waterfall method has a more set structure so many goals and problems are defined with solutions early on. Agile has a more flexible structure, and can always adapt to new information and changes, including budgeting and team roles. Team roles and responsibilities are also defined early on in a waterfall project. The responsibilities and flow of the project will fall on the project manager to handle. With an agile project, members of the team are expected to be flexible in their roles, with an expectation of being able to work in any position of the project. The project responsibilities will fall on the team, rather than the project manager. This comparison chart was all based on the Forbes chart which is cited in the references.

Conclusion:

Understanding the different methods that can be utilized in project management is an important responsibility. Navigating the structure of your project as well as the capabilities of your team, will allow you as a project manager to choose which method would fit your project goals. As a project manager, you need to have a clear understanding of agile and waterfall methods and how to apply their functions to your project. Both are great methods, but each of them has their pros and cons as well as a time and place for went to implement which method. Hopefully, you gained more insight as a project manager, and for more information about agile and waterfall methods, visit the reference links included.

References:

1. https://www.float.com/resources/agile-vs-waterfall/#:~:text=Time%20frames%3A%20The%20waterfall%20method,and%20achieve%20shorter%20time%20frames. (Float)
2. https://www.forbes.com/advisor/business/agile-vs-waterfall-methodology/
3. https://project-management.com/agile-vs-waterfall/ (project-management)
4. https://www.profit.co/blog/task-management/the-5-phases-of-waterfall-project-management/ (profit)
5. https://www.nvisia.com/insights/agile-methodology (image illustration 1)
6. https://projectmanagers.net/top-10-cons-or-disadvantages-of-using-waterfall-methodology/ (image illustration 2)
7. https://www.geeksforgeeks.org/agile-vs-waterfall/ (image illustration 3)