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 **4. Agile Management in Projects**

 *Dr.Roopali Srivastav*

1. **Introduction:**

Management is very complex branch of knowledge. With the increasing complexity of the business environment, it is becoming more and more complex. The question is what should managers do t solve the issues? It is felt that Managers need to equip themselves to deal with the changing needs to ensure timely and appropriate delivering of business value to customers and the other stakeholders. For this one needs be agile and do everything in an agile manner. Here the managers need to be are ready to react fast when it comes to delivering the products and delivering value to the customers. In this chapter, we will discuss what it means to be agile, how it has evolved, and the principles behind agile, agile development lifecycle, leadership, and agile teams.

* 1. **Understanding Agile:**

The dictionary definition of agile is being quick and doing everything in a well-coordinated manner.  In today’s world of intense competition, shorter product life, being quick to reach the market and remember customers are no longer just spectators. The firms cannot survive in the long term if they do fail to adapt quickly to the ever-changing and dynamic environment. It is important to remember that changes are always there in the environment and they influencing the environment continuously, but they were gradual and need to be identified and acted upon at the right time. One need to determine the frequency of change and it should be accelerated and ultimately requires a different kind of management. The flexibility of processes, the responsiveness of resources, and the intense frequency of delivery are the new norms that call for attention.

The critical question here is how would they market respond if the business launched its first product? Being the first to market their products will surely help the firm and provide it with a competitive advantage over its competitors. Competitors will sooner or later launch substitutes or modified variants of the product in the market as per the customer expectations. This will affect the first mover, and they may see a decrease in their sales. If they believe that the loyal customers that they have acquired over time will stay with them or move away. Then the firm is mistaken, as customers have a variety of options to choose from and they will use these options.

When a product gives value to the customer, pricing takes a back seat. However, giving customers what they want ahead of the competition is a difficult task. The firms already realized that it would not be possible with rigid resources, rigid processes, and even a rigid mindset. So there is a need to have a different methodology that is flexible, responsive, and capable of managing uncertainty in a dynamic and changing environment.

Agile management is one such approach that allows firms to experiment, learn, and align accordingly to achieve the desired business value. Agile is not only a methodology but also a culture that must be instilled in the organizations on a regular basis. If not done, then there are chances that the team may begin to follow the traditional approach without even realizing it. Embracing an agile mindset takes time and requires a positive attitude.

**4.2 History of Agile:**

The origin of Agile may be traced back to 1970s, when the aerospace, computing, and defence sectors were struggling to keep pace with changes in the market dynamics. With the traditional approach to managing projects, it was becoming very difficult to make suitable changes in the products that were already in the execution phase, as traditional project management did not appreciate and accept changes to requirements in between the execution phase. As a result, the team used to produce items that were no longer needed or had low business value. This was impacting profitability as well as the morale and productivity of the resources in use. In addition, the customers were frustrated because the industries were not producing products that could meet their current needs, requirements and expectations.

During the 1990s, software developers and the personal computer manufacturers faced many crisis and challenges. According to them, it takes approximately two to three years to translate a business need into production and achieving the targets. That is, if a company determines that it needed to make some required modifications to its production, technology, and teams, it would require roughly two to three years, or sometimes even more, to implement the planned modifications.

Since businesses are moving faster and changing dramatically in today’s world, Innovations, expansion, and growth occur almost every minute and every month. However, in the earlier days, technologies were growing, and business models were changing, but it was happening rather gradually. Today, changes have got accelerated; even the business systems, technologies, and teams are changing rapidly and it should continue unabated. Take the example of Kodak, which was a pioneer in the development of film-based cameras. But, they failed to react to the digital camera revolution and lost their position as market leaders. In other industries, the wait was far too long. The aerospace and defence sectors may face a 20-year backlog before deploying a complicated system and built-in mechanisms.

Around 1990, there was rising dissatisfaction with the organization's lead time in delivering the end outcome. The lead time is one of the most critical metrics that shows how long it takes for a business or organization to establish a need and then transform that need into the appropriate process or technology. The firms were seeking a fast-paced, more responsive process system to meet their project management needs. Agile has its roots in the massive software development industry, and the term was first officially coined in the 2001 Agile Manifesto.

**4.3 Agile Manifesto:**

The Agile Manifesto was published in February 2001, and it was the work of 17 software development practitioners who saw a growing demand for a better way to manage software development projects. Agile manifesto identifies four key values and 12 principles for software developments. This manifesto is no longer limited to the software industry alone; but has impacted other industries as well as the services sector have also started identifying with the manifesto.

The key values include are:

1. **Individuals and interactions** over processes and tools
2. **Working software** over comprehensive documentation
3. **Customer collaboration** over contract negotiation
4. **Responding to change** over following a plan

**4.3.1 Individuals and Interactions over Processes and Tools**

Valuing people of a team is more important than processes or tools. It’s the team, team dynamics and team spirit that determines success. The team and its ability to communicate effectively and efficiently is more valuable than the processes and tools that they use for doing their jobs.

Both (processes and tools) are important in providing the structure required to facilitate pen interactions. But for the client, it is quick delivery and business value that matters. In order to enable the processes and tools to work, the team should communicate and if they don’t then it does not add any value to project.

**4.3.2 Working Software over Comprehensive Documentation:**

The traditional product development processes often require extensive documentation for product development and delivery. The documents specific to requirements, high level design, low level design, test plans the list is endless, causing a long unacceptable delay. Agile does not eliminate documentation, but it streamlines the process that gives working software in the hands of customers which requires the highest priority in the process. The provision of timely feedback faster helps team and the client to ensure delivery of correct and value- driven product.

**4.3.3 Customer Collaboration over Contract Negotiation:**

Collaboration and Negotiation are two different approaches where different parties come together and get the work done and ensure delivery of the required items. Traditionally, the contract dictates what is to be produced and delivered, which may have left room for mismatched expectations and can lead to legal complications. Where collaboration encourage building a continuous customer feedback loop into development cycles. Customer early and extensive involvement and collaboration ensures delivering effective, useful solutions to customer with no room for assumptions.

**4.3.4 Responding to change** **over following a plan:**

An important aspect of agile is encourages frequent reviews and changes in the current plan based on the feedback received and dynamic market conditions present. Since agile multiple short iterations gives the flexibility to add new features in the next iterations. It views of the changes an improvement in a project provides business value to customer. Whereas in traditional approach changes are seen as an obstacle which is to be avoided at any cost.

**4.4 The Twelve Agile Manifesto Principles:**

The twelve principles are the guiding principles in which changes to project are appreciated and this delivers the additional business value to client.

1. Customer satisfaction through early and continuous software delivery.
2. Accommodate changing requirements throughout the development process.
3. Frequent delivery of working software.
4. Collaboration between the business stakeholders and developers throughout the project.
5. Support, trust, and motivate the people involved.
6. Enable face-to-face interactions.
7. Working software is the primary measure of progress.
8. Agile processes to support a consistent development pace.
9. Attention to technical detail and design enhances agility.
10. Simplicity.
11. Self-organizing teams encourage great architectures, requirements, and designs.
12. Regular reflections on how to become more effective.
	1. **Projects and Traditional approach to project management:**

**4.5.1 Projects:**

A project is a temporary undertaking with the goal of creating a unique product, service, or result. The temporary nature means they have a start and end date to project work. Organizational change is driven by projects. From a business standpoint, a project aims to accomplish a particular goal. Projects also enable business value creation. Business value refers to the net quantifiable benefits derived from a business endeavour. The benefit may be tangible, intangible, or both. Projects are in all industries. For example, constructing a row house or metro lines; designing a process for hiring policy; initiating a recruitment process; organizing events and conferences; and even writing a book are all time-bound projects.

The traditional technique and the agile approach are two alternative ways to handle the projects. Both approaches have their advantages and disadvantages, and it should be used depending on the specifics of the situation.

**5.1 Understanding Traditional approach to manage projects (Waterfall Model):**

The water fall model was introduced by Dr. Winston Royce in the year 1970. In this model, the project is divided into a set of phases. Each phase follows a series of phases; once the first is completed, the second begins; one cannot go to the next phase unless and until the preceding phase is completed. This is to ensure that phases do not overlap. As the name suggests, in this model, there is no going back to the previous phase. It is also known as the Linear Sequential Life Cycle Model, and it consists of the following phases:

* Requirements phase
* Design phase
* Development phase
* Testing phase
* Deployment please
* Closing phase

**(i) Requirements**: This phase involves understanding the design, features, purpose, and other important components, as well as trying to visualize how the final products will look and function. The output of this phase is referred to as a requirement document or a requirement specification.

**(ii) High-level and low-level design:** Once the requirement document is approved, the product design is formalized. It describes in detail the systems will be used, how they will communicate with one another, and how it will be mapped to the overall system architecture.

**(iii) Development** - This phase is used to create software code and ensuring that all the coded modules are following the overall structure of the system.

**(iv)Testing:** This phase involves creating test specifications, as well as preparing, executing, and recording the outcomes of the test cases. Unit testing is performed to check that units perform in accordance with the test cases. The units are tested to ensure their functionality is smooth before the integration process and testing begin. However, in unit testing, if one unit fails, it doesn’t impact the other unit unless they are both interrelated to a high degree, which is tested in integration testing.

**(v) Integration testing**: Integration testing is the process of ensuring that all the units in a system work well together after they have all been independently tested and found to be compliant with the test cases. Consider installing a wireless router as an example. Has the modem been tested as a whole and found to be functional? However, it might not function if you integrate it with the system, which could involve PC settings.

**(vi)Deployment:** Once all functional and non-functional tests have been completed, it is time to release the product into the market.

**(vii) Closing the project:** Before the final approval from the customer, there is a buffer period to ensure that the client has got what he expected. There could be some modifications to be made, updates that you would like to add to the system, or the system may encounter problems on launch that need to be resolved.

**5.2 When to use traditional approach to managing project:**

The traditional approach to managing projects works best when there is a fairly high degree of predictability. Managers have a clear understanding of what is to be accomplished and how to do it. Teams can utilize tried-and-true techniques and design principles, for instance, to plan projects where there is no degree of ambiguity.

**5.3 Challenges in traditional approach:**

This model works in silos, which makes it difficult to estimate time and cost for each phase. A functional unit called a silo is one in which each functional unit works on its own task, completes it, and then hands it off to the next functional unit to work on. For instance, the development team would transfer the code to the testing team with one or no representation from the development team's side after finishing internal testing.

It is difficult to backtrack the work done on the earlier phase as the focus on the individual phase. If the project is in the development phase and there are some changes in the requirement, then you may not revert the process back to the earlier stage to accommodate the change without overspending on time, resources, and effort. It may happen that you have to scrap the work done and start over again or you terminate the project and start over again with the new project with the changed specification. In both the cases, it is a non value for the organization, unnecessary wastage of resources time, cost of the company and productivity and morale of resources. It may also happen that once the product is released it may not add value to client. Accommodating changes in this model are very challenges which the need if the requirements are dynamic.

In a project ecosystem where requirements shift, customer needs shift, and the window for introducing a new product to the market is shorter, this approach is not appropriate. So, what is the best approach to dealing with the dynamic nature of the ever-changing environment?

**5.4 Agile approach to managing projects:**

It is a common belief that agile counters waterfall model. Agile brings on more flexibility to the project and it also complements accommodating the changing needs of customers, the environment, and project resources.

With customer is no longer a spectator as they want to see and understand the progress time to time, With the changing technology, uncertainty, it is about doing experimentation and executing the same, and with resources getting opportunity to grow and show case knowledge, this approach works in the dynamic environment and also fulfilling client and team aspirations.

**5.5 Agile Project Management:**

Unlike the linear waterfall method, which divides large projects into smaller, more manageable tasks, agile is an iterative approach to project management. It is primarily influenced by the dynamic model of work, in which tasks are broken down into smaller cycles known as sprints or iterations. Each of them is a tiny project with a backlog, a pre-defined scope of work, design, implementation, testing, and deployment stages that are finished in quick iterations over the course of the project life cycle.

It forms a cross-functional team that works together to create a new product. The team classifies product features as deliverables and ranks them according to the customer's perceived value. After each iteration (sprint), they reassess their objectives in order to create features that are completely functional. Teams that use the Agile methodology can work more quickly, adjust to shifting project needs, and streamline their process.In contrast to a conventional linear Waterfall approach, stakeholders and customers monitor progress and reassess priorities to make sure they are in accordance with customer wants and business objectives. A different iterative cycle that incorporates the work of the earlier iterations and adds new features to the evolving product starts when corrections are made.



Source: APA. Larson, E., & Gray, C. (2017). Project management: The managerial process

**5.6 AGILE LEADERSHIP, AND TEAMS**

Agile leadership is a management style that aims to remove barriers to success so that individuals can be more effective and productive. Agile leaders are primarily concerned with serving, listening to, and responding to the needs of others. They ensure that everyone participates in crucial tasks such as decision-making while remaining devoted to team members' progress. Agile encourages a culture of experimentation, learning, collaboration, and the freedom to act independently while working to provide value to customers and improve their experience.

Agile teams thrive with servant leadership.The term servant leadership was coined long before the introduction of Agile. This word was coined in 1970 by Robert K Greenleaf. Servant leaders are characterized as leaders that prioritize the needs and interests of their teams over their own. They place more accountability on themselves than on the team, which fosters team trust. They distribute power rather than concentrating it in their own hands, and they assist team members in developing. Servant leadership listens to understand rather than judging. In this approach, they foster team unity, which leads to higher efficacy in the team's work.

**5.6.1 Three guidelines for agile leadership:**

Agile leadership is based on guiding principles that give leaders the ability to create teams that are adaptable, collaborative, and high performing. Leaders can unlock the full potential of agile leadership and promote team success by learning and putting these ideas into practice.

**5.6.1.1 Trusting and empowering teams:**

**Agile leadership is based on the notion that, when given autonomy and trust, people and teams can self-organize and are capable of arriving at informed decisions. Agile leaders enable their employees by defining a clear vision and objectives, fostering teamwork, and removing barriers. They encourage a culture of accountability, ownership, and constant progress.**

**5.6.1.2 Understanding and responding to change:**

**Agility is a combination of adaptability and flexibility. Change is viewed as an opportunity by agile leaders rather than a threat. They foster an experimental atmosphere in which teams are encouraged to test new techniques and learn from errors. Agile leader’s welcome employee feedback, promote learning, and are open to altering their ideas in response to new knowledge or changing market conditions. They recognize the need of agility in responding to changing client needs and a changing business climate.**

**5.6.1.3 Promoting interactions and cooperation:**

**Agile leadership emphasizes the importance of teamwork and effective communication in achieving success. Agile leaders develop an environment in which cross-functional teams collaborate closely, silos are broken down, and a culture of shared responsibility is promoted. They promote open and transparent communication within the organization, resulting in feedback loops. These leaders also stress the significance of communicating goals, priorities, and expectations. This assists teams in coordinating their efforts and making informed judgments.**

**5.7 AGILE TEAMS:**

A team is a collection of people who work together to achieve a common goal. A project team is often made up of people from several disciplines with complementary skills. Project teams frequently outperform solo efforts because project tasks necessitate collaborative work to make the best use of varied talents, experience, and judgment. Project team structures that enhance communication between and within teams are beneficial for agile projects. A diverse group of individuals with various personalities and skill sets come together to form an agile team.

The people on across-functional agile teamscollectively own the work and together have all of the necessary skills to deliver completed work. They are expected to learn from failures.In practice, the most effective agile teams often have three to nine people. Agile teams should ideally be collocated in a team space. Team members are completely committed to their teams.

Team members in effective agile teams collaborate in a variety of ways to avoid falling into the trap of mini waterfalls instead of collaborative work. As previously stated, the Mini-waterfall model is a version of the waterfall model in which the team handles all of the needs in a specified period, then seeks to complete all of the design, and finally completes all of the work. Following this scenario, the team may discover that it made assumptions that were no longer valid during development or later testing. By addressing all of the needs in this case, the team wasted time. Instead, when team members work together to create a small number of features, they learn as they go.

**5.8 Characteristics of Agile team:**

**5.8.1 Prioritize Team Communication and Collaboration:**

Communication is key to every team’s success be it an agile team or any other team. The need for effective communication can never be taken lightly for a high-performance agile team. A flexible and rapid communication channel should be made available to members of the team so they can immediately coordinate and adjust their plans as the project scope and needs may change unexpectedly. This will, to some extent, help team members to collaborate productively. If there is high level of transparency among teams that have strong internal communication and active collaboration among members.

**5.8.2 Participate to Change:**

An agile team needs the participation of its members to be effective and deliver outcomes on schedule. Each team member should actively participate and provide their thoughts without holding back, whether it's during a brainstorming session to generate fresh concepts or a team meeting to discuss project-related difficulties.Team members' participation in group discussions helps everyone stay motivated and learn new things from one another, in addition to bringing new ideas to the table.

**5.8.3 Create and accept a culture of open feedback:**

Agile teams aim to finish projects as fast as possible. It simply means that the agile team's efforts always direct the project's progress in the right direction. To do this, foster an open feedback culture within the company.Problems can be found and ruled out during a sprint owing to team feedback. On the other hand, the project owner's input is valuable for improving the end product with each iteration. In an agile team, fast and sincere feedback not only improves the quality of work but also creates new opportunities for project advancement.

**5.8.4 Goal-Oriented:**

Being goal-oriented means that agile teams always are fully aware of the objectives that they must pursue and achieve. A goal-oriented strategy encourages an agile team to convey its goals to every member of the team.

**5.8.5 Willingness to Learn and Develop:**

Learning from mistakes is one of the pillars of an agile team. An agile team embraces obstacles at work in order to learn new things and make room for continual progress. Agile teams can deliver excellent work and adapt to changing work environments by expanding their knowledge and skills.

**5.8.6 Emotional Intelligence and Empathy:**

Agile team members are conscious of their emotional condition and do not let it influence their decisions or social interactions. Being emotionally intelligent enables them to make appropriate decisions under challenging times. At the same time, it is easier for them to comprehend and connect with the emotions of those around them.

**5.8.7 Self-organizing:**

Another important feature that makes agile teams a better fit for working on complex projects is their capacity to self-organize. They do not require the assistance of someone else to handle their work and duties. The capacity of agile teams to self-organize allows them to spend more time concentrating on project tasks rather than struggling to manage the project successfully.

**5.9 Challenges in Agile management:**

**5.9.1 Changing Requirements:**

Stakeholder may change requirements This means that work that is already half-done must be rejected or updated, which suddenly changes the scope of work.

**5.9.2 Communication between different teams:**

Poor communication could make implementing the agile technique more difficult. The goal of agile project management is to foster a collaborative environment among team members. As a result, communication is one of the pillars for developing positive connections among team members and streamlining the project process. An agile project usually involves several teams. As a result, if inter-team communication and intra-team communication are not transparent, the project may be jeopardized. Communication also includes timely input from customers and stakeholders. Maintaining effective communication between teams, team members, and clients is undoubtedly one of the most difficult difficulties of adopting agile methods.

**5.9.3 Dependency on other teams:**

In an agile project, multiple teams are involved. As a result, there is a chance that the teams may be dependent on one another or on external factors. The delivery schedule may be severely impacted by this. Therefore, it needs to be examined right away.However, because an agile project involves change, the dependency may still arise despite the best efforts made to prevent it. Therefore, despite what the Agile Manifesto states about responding to change rather than following a plan, it may actually be a struggle.

**5.9.4 Leadership and decision-making :**

Because agile projects may have a cross-functional team, many leaders may be assigned to the various teams. Agile project management principles and duties must be clearly defined among leaders and teams. Otherwise, it could cause problems during team management operations. This could include member selection or replacement, problem-solving decisions, and so on.

**5.9.5 Motivating the team:**

The Agile Manifesto stresses people above processes and tools.However, it is not as simple as it appears. An agile project is typically led by a leader who must constantly empower the team to work independently. But what if the team takes things casually and misses deadlines? In such instances, presenting oneself as a supporting leader can be a difficult challenge for a leader.

**5.10 Conclusion**

Agile management is both the methods and the mindset. Agile management is a modern project management technique that emphasizes flexibility, collaboration, and iterative development. It was developed initially for software development, but its concepts have since been extended to a wide range of industries and fields. The Agile technique assists teams in responding to work's unpredictability by breaking it down into smaller, achievable tasks and altering their approach depending on continuing feedback. Agile management demands a cultural shift that prioritizes transparency, cooperation, and continuous learning. It is critical to select the Agile approach that best meets the demands of the team and to constantly adjust and enhance the outcome based on feedback and suggestions.

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