How Agile managers affect the process of software development?

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Summary
Agile methodologies are widely used in Agile teams and companies. Adopting Agile methods, however, require a dramatic change in organization and team management. Indeed, managers in Agile teams play different roles and have different responsibilities. This can affect the whole software development process. This paper particularly aimed to investigate roles and responsibilities of Agile managers in Agile teams and organizations. Reviewing the literature showed that Agile managers are responsible to promote agility, eliminating the obstacles threaten the teams, Agile team formation, budget control, ensuring return of investment, etc. However, being an Agile manager is not easy, mainly because adapting to the new roles and responsibilities is not easy. Indeed, most often, managers cannot accept the managerial roles with low authority, as expected in Agile methodologies.

Key words:
Agile software development, Agile methodologies, Agile management, Agile managers.

1. Introduction

Software development process is one the high-tech development process which strongly influenced by human resources. It is mainly because of the people oriented nature of software products. Software teams most often consists of different people with different roles, background, attitude and perceptions which such a variety highly affects the development process. In fact, this is human roles which impresses the flow of the software development [1, 2].

Recently, software industry is changing plan-driven software development methodologies with Agile methodologies. It is mainly because of achieving the values promised by these methods after officially introduction of the Agile manifesto [3]. Addressing different methods, Agile approach tries to focus on the human aspects of software development more than they what considered in plan-driven/traditional methods [4, 5]. Transitioning to Agile methods, however, is not easy as software teams and organizations expect. Indeed, many challenges and obstacles need to be handled before and during the changing methodology process [6, 7].

Some of the addressed challenges are related to the new roles and responsibilities of the people, as defined in different Agile methodologies. This issue is more critical for the more important roles such as top managers, middle managers, and project managers [8-10]. However, such issues have been studied and addressed in several studies, but, still there is a gap to highlight the roles and responsibilities as defined in Agile methods. Management style in Agile methodologies are dramatically different than traditional software development. Therefore, focusing on the new responsibilities and positions of managers in Agile software development, known as Agile manager, would be interesting.

The main aim of this study is to highlight roles and responsibilities of Agile managers in Agile teams and organization. The rest of this paper is organized as follows: Section 2 explains the main characteristics of Agile software development followed by Section 3 that highlights the main challenges and issues regarding the managers in Agile methodologies. Section 4 explains the main responsibilities of Agile managers in managing Agile teams and companies. Finally, Section 5 concludes the paper.

2. Agile software development: the main characteristics

Agile methodologies encourage customer involvement throughout the software development process which leads to increasing visibility for all practitioners that in turn results in to ensure that customers' requirements are provided. This also allows the customers to request for change even in the late phase of development [11]. All of these lead to achieving more quality and customer happiness and satisfaction. These features are in contradiction with what proposed in traditional approaches. This feature needs having knowledgeable customers that effectively collaborate in the development process [5].

Agile approach, also, promote decentralized management that leads to decrease of authority of managers, especially senior managers, throughout the project. The rationale behind this, is focusing on the self-organizing teams [9, 12].

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A self-organized team is a group of highly motivated and cross-functional experts which organize themselves in the software development process. This means applying minimum control from the managers.

Agile projects, also, are managed in different way. Software products are developed in several iterations in an iterative and incremental way. So, the final products will be delivered in form of several product increments. In Agile project management, role of project manager is not explicitly defined and responsibilities of project managers are shared among the team members [13]. However, some Agile methods have defined some managerial roles with are not same as project managers.

In sum up, Agile approach changed people roles and responsibility dramatically. Table 1 shows the main features of Agile methodologies in terms of human roles and responsibilities compared to the disciplined/traditional methodologies.

As depicted in the Table 1, most of the differences between Agile and disciplined methods are about roles, responsibilities, attitudes, and behaviors of people involved the software development process. This may lead to raise challenges and issues for the involved people in adapting to their new roles and responsibilities [14].

Table 1: The main characteristics of Agile Vs. disciplined methods in terms of human roles ([14-16])

Feature	***Agile methods***	***Disciplined methods***
Focus	People	Process
Development approach	Adaptive	Predictive
Effort estimation	Collaboratively by developers	By Project managers/experts
Work assignment	By self-organized teams	By Project managers
planning	Evolutionary planning	Comprehensive up-front design
Task/duty ownership	Collective ownership	Separated
Responsivities	Shared	Delineated
Change and feedback	Welcomed	Not expected
Management role	Leadership and collaboration	Command and control
Knowledge management	Implicit and informal	Explicit and formal
Management style	Decentralized	Centralized
Customer involvement	In all phases	In the first and last phases only

3. Agile managers: challenges and issues

Agile project management is different from what is seen in disciplined methods because, managerial roles in Agile approach have different responsibilities compared to the traditional managerial roles [14]. Many studies paid attention to this issue and addressed the difficulties and challenges faced by software teams with leveraging managerial roles [15].

In most cases traditional managers such as project managers decline to accept their new roles in Agile teams [12, 16]. Indeed, they cannot ignore their authority in decision making during the projects [17, 18]. Also, most of the senior managers are not agree with Agile knowledge management style which focuses on implicit knowledge and face-to-face communication and collaboration [18, 19]. In fact, they believe that project will fails when Agile team members leave the project.

Another issue addressed by the previous studies is lack of trust between managers and team members [20]. This is the main reason that why most often managers cannot rely on team members for decision making. This is specially very critical in Agile distributed teams and companies. This is a big cultural concern which affects applying Agile methods in real projects [21].

Beside the above challenges denoting the hindrances of being Agile manager, Agile managers have several challenges in doing their responsibilities in Agile software teams and organizations too. For instance, Agile project managers sometimes have many challenges in communication with all Agile practitioners including technical team and business owners [22, 23]. Also, Agile managers always are faced with the frequent changes asked by business party. They need to effectively managed to minimize wasted efforts [24]. Furthermore, Agile managers must promote Agile principles and practices within the development teams [14]. Indeed, such managers need to solve the challenges may affect the team to be Agile.

4. Agile managers: roles and responsibilities

Agile managers have a great role in success of Agile project. However, it seems that usually they have no direct technical or managerial role in directing the projects.

Agile managers are responsible to form Agile teams by selection of talented, motivated, and high skilled team members. This duty strongly affects the whole software development process as well as software projects. Obviously, having perfect teams is the most crucial prerequisite of project successfulness. Hiring the right people and directing such a skilled team should be

considered as one the most important responsibilities of Agile managers, as addressed by the literature [25].

Agile managers also must to promote self-organizing within the development teams. However, this is not easy practically, mainly because, this goes back to the fact that most often people are not ready to be responsible and accountable [26]. Thus, Agile managers have to use effective strategies to handle this issue.

Agile managers, also are responsible to provide software teams with the resources they need. In fact, Agile managers need to facilitate coaching and mentoring of development teams and if necessary, coach and directing them to achieve goal of the project [25].

Another important responsibility of Agile managers is establishing infrastructure of sharing information among the team members. Agile managers need to facilitate openly sharing information using daily integration meetings, quick customer feedback, team collaboration, face-to-face communication, and interaction with customers [15, 27].

Customer is essential member of Agile teams. Agile managers have to motivate customers to effectively collaborate with the development team throughout the project. Continuous customer participation is considered as one of the essential keys in the software project success [28].

Agile managers also are responsible to remove obstacles of value creation and return of investment (ROI) throughout the project. If valuable product is not ready to deliver to customer on time and the cause is poor planning, Agile managers need to help business party to re-prioritize feature lists to improve ROI and create innovative product [29].

Assessing quality of practice adoption is another important responsibility of Agile managers. Agile managers need to promote agility in the organization and software teams. However, doing Agile practices does not mean being Agile, but, performing Agile practices in the right way is essential. Furthermore, Agile managers can follow well-known standards such as PMBOK to teach project management practices, define different scenarios, and control different situations during the project [27, 28].

Some studies addressed choosing and using the right tools as another responsibility of Agile managers [30, 31]. They mentioned that in many cases neglecting about adapting the right tools led to project failure. They particularly suggested to create appropriate tools to handle customer requirements [31].

Beside the aforementioned responsibilities, Agile managers are responsible for several duties, as addressed by the literature. Conducting pre-start up assessment before going Agile, facilitating Agile transition and transformation process, recruitment of qualified experts (Agile coaches, mentors, developers, …), reducing the waste by adopting the right working strategies, remove agility barriers, help the teams to solve the problems, and budget control the responsibilities addressed in the literature [15, 23, 32-35].

In sum up, it seems that Agile managers need to facilitate Agile working as well as handling the problems and challenges faced by Agile teams. To do this, Agile managers need to hiring champions of agility and promote agility in the best way among the other team members.

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