

Effects of Agile adoption on Trust, Knowledge Sharing and Collaboration in IT Organizations



Venkatesh Ram, T.Vijayakumar

Abstract: Adoption of Agile methodologies in IT organizations has revolutionized software development. It has improved speed of development, quality of final product, customer satisfaction, project control and reduced risk and wastage. Agile methodology is however not just a process but it is a philosophy that has a deep impact on the behavior and mindset of employees. Current paper attempts to study this impact and deduce whether it has a positive impact on Trust, Knowledge Sharing and Collaboration.

Key words: Agile, Trust, Collaboration, Knowledge Sharing

I. INTRODUCTION

Over the years IT services industry has adopted IT infrastructure Library (ITIL) and IT Service Management (ITSM) along with other practices such as lean thinking, Six Sigma, ISO 20000 and project & portfolio management to improve its efficiency and effectiveness. These processes aim to improve the quality of deliverables, eliminate waste, involvement of employees in the work place decision-making, capturing, storing and dissemination of knowledge, and faster turnaround. An increasing number of project executions in IT services organizations are now being done through Agile methodology. Many types of Agile development are followed by organizations. Some of them are Scrum, Extreme Programming (XP), Dynamic Systems Development Method (DSDM), and Feature Driven Development (FDD). Scrum is the most commonly used Agile methodology.

James Shore and Shane Warden state in their book "The Art of Agile Development" that Agile development is a Philosophy and not just a process to follow [1]. Reading through the Agile manifesto helps one understand the significance of this statement. The manifesto places more value on Individual and interactions, working software, customer collaboration and responding to change over processes and tools, comprehensive documentation, contract negotiation and following a plan.

According to Shore and Warden, Agile is not just a process but a Culture which focuses on:

- team members need to think of team performance above individual high performance

- Iterative delivery instead of long term planning
- self-management of the work instead of external monitoring
- regular communication
- interaction with all the stakeholders on a continuous basis

Studying the above statements, the importance of Trust, Collaboration and Knowledge sharing become clear. For self-management of work instead of external monitoring, a high-level trust is essential. Interaction with all the stakeholders requires collaboration between team members. Regular communication between the stakeholders will be possible only if the team members are ready to share knowledge.

Considering that Agile methodology is being adopted widely, understanding Agile methodologies impact on Trust, Collaboration and Knowledge sharing in teams will help the practitioners to manage their people management practices.

II. LITERATURE REVIEW

A. Trust

Researches have repeatedly proved that trust can provide multiple benefits at various levels in an organization

When people trust they are ready to take risk regardless of their ability control or monitor the situation. When a high level of trust in the organization is developed, employees will not need to be self-protective and keep knowledge and information to themselves. Hence, trust in the organization can encourage knowledge sharing. In contrast, when trust in the organization is low, 'individuals will be cautious about exchanging information and ideas with one another' [2]. In a knowledge based organization, organization trust enhances knowledge exchange, voluntary action, and commitment. McAllister states that "available knowledge" and "good reasons" serve as foundations for trust decisions, the platform from which people make leaps of faith' [3]. With a trusting environment, there is an acknowledgement of connectedness with co-workers, team spirit and work team co-operation [4]. Trust in teams allows team members to achieve results and function frictionless and it holds relationships together and facilitates collaboration.

B. Collaboration

Lopez et al. states that in a collaborative culture teamwork, respect, communication and empowerment are valued and it enables organizational learning by leveraging the knowledge of individuals [5]. In a collaborative culture, team members are ready to support each other and offer their expertise proactively. The common objective of the team guides the team members and encourages learning and sharing.

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Because of the care, support of team members, and mutual respect, a collaborative culture encourages total involvement of team members.

C. Knowledge Sharing

Knowledge sharing is the means through which the knowledge possessed by individuals is transferred to the group and the organization as a whole, so that it can create new knowledge, innovation and improve organizational performance [6]. Knowledge management should not be ad-hoc but, as pointed by Pitt [7], exemplary organizations systematically make intuitive experience based knowledge available to others and thus spread it across the organization.

Roberts et al. [8] points out that it should not be assumed that knowledge flows from the corporate center but may now be based in the peripheries of the organization.

Flow of information in organizations help in promoting creativity. When information flow freely in an organization, it creates an opportunity for the ideas, beliefs, options, and new information to interact and enables a creativity supporting environment[9]. Trusting environment enables individuals to take a risk by sharing information and cooperate with their team members thereby creating a sense of collaboration.

III. RESEARCH GAP

Agile methodology is widely being adopted by the organizations. Several studies have been done on the performance benefits that Agile methodology brings [26, 27]. However, there is very little academic research done on how adoption of Agile methodology impacts the softer aspects such Trust, Knowledge Sharing and Collaboration.

IV. RESEARCH QUESTION

Does adoption of Agile methodology influence the Trust in Organization, Trust in Supervisor, Knowledge Sharing, and Collaboration in team?

V. OBJECTIVES

This exploratory research is intended to intended

- To analyze whether the team which adopt Agile methodology have greater Trust in the organization
- To evaluate whether the team which adopt Agile methodology have greater Trust in the supervisor
- To understand whether the team which adopt Agile methodology exhibit better knowledge sharing behavior
- To identify whether the team which adopt Agile methodology exhibit better collaboration

VI. METHODOLOGY

The primary data for the study was collected using three questionnaires on Trust, Collaboration and Knowledge Sharing. The response from the participants was analyzed.

A. Sample

The sample population consisted of 125 employees working in Information Technology (IT) services companies in India. These employees were members of teams that worked in IT projects in their respective organizations. A questionnaire was shared with the sample population. 71 of the 125 employees responded to the survey. 40 respondents

worked in projects that are being delivered using Agile Methodologies. 31 respondents stated that they do not use Agile methodology in the projects they work in. The sample population did not include the leadership of the project but had representation from other roles. The leaders were excluded as sometimes the leaders tend to project a positive opinion about the team environment. To avoid the managerial bias, the feedback was taken only from non-managerial team members. The age of respondents was in the range of 23 to 32 years and the mean age of the respondents was 28.3 years.

B. Measures

All the questionnaires used were published questionnaires with good psychometric properties. The questionnaires had 5 point Likert scale rating.

Trust

Trust was measured with [16] 12 –item Organization Trust Inventory to measure individual’s level of trust in the supervisor and on the organization. For the reliability of the Trust scale, the Cronbach Alpha factor was calculated and found to be $\alpha=0.87$ and found to be reliable.

Collaboration

[29] 5 items - scale for measuring cooperative norms was used to evaluate the collaboration norms. The reliability of the scale was the Cronbach Alpha factor $\alpha=.64$. The reliability factor was low due to the wording of one of the questions “There is/was little collaboration among team members, tasks are/were individually delineated“, which the respondents may not have properly understood. This question was a reverse coded to measure reliability with another similar question “There is/was high level of cooperation between team members “. Cronbach alpha was calculated after dropping the question that led to the misinterpretation and was found to reliable with $\alpha=.72$.

Knowledge Sharing

Knowledge Sharing was measured using a seven-item scale based on Bock at al.’s instrument [30]. The questions were reworded to be more specific to the work environment of the respondents. The reliability of the scale was good with Cronbach Alpha factor of $\alpha=.82$.

VII. FINDINGS AND DISCUSSIONS

A. The mean score from the questionnaire indicates that adoption of Agile had a positive improvement in Knowledge Sharing and Collaboration. However, it did not lead to any significant improvement in trust in organization. It was revealing to see that the trust in supervisor score was lesser among those working in an Agile environment compared to those working in non-Agile environment.

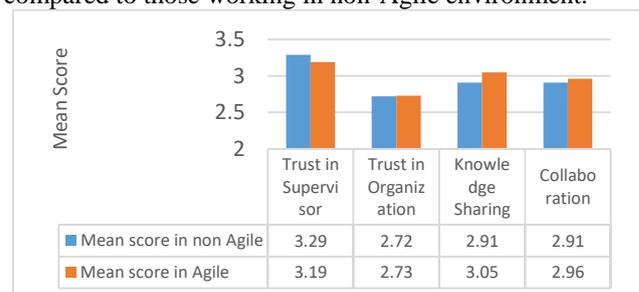


Fig. 1. Mean score of employee response

B. Trust in supervisor being lesser in an Agile project compared to a Non-Agile environment was further analyzed. The mean score of the responses to the following questions were significantly lesser in an Agile project compared to response from those working in Non-Agile projects.

- My level of confidence that my supervisor will make well thought out decisions about his or her job is
- My level of confidence that my supervisor has an acceptable level of understanding of his/her job is
 - My confidence in my supervisor to do the job without causing other problems is

| Questions | Mean score in non Agile | Mean score in Agile |
|--|-------------------------|---------------------|
| My level of confidence that my supervisor is technically competent at the critical elements of his or her job is | 3.23 | 3.2 |
| My level of confidence that my supervisor will make well thought out decisions about his or her job is | 3.38 | 3.15 |
| My level of confidence that my supervisor will follow through on assignments is | 3.23 | 3.3 |
| My level of confidence that my supervisor has an acceptable level of understanding of his/her | 3.5 | 3.25 |
| My level of confidence that my supervisor will be able to do his or her job in an acceptable | 3.23 | 3.25 |
| When my supervisor tells me something, my level of confidence that I can rely on what they tell me is | 3.3 | 3.25 |
| My confidence in my supervisor to do the job without causing other problems is | 3.34 | 3.1 |
| My level of confidence that my supervisor will think through what he or she is doing on the job is | 3.11 | 3.07 |

Table I : Mean score of “Trust in Supervisor” questionnaire

An understanding of the Agile methodology provides an answer to the lower “Trust in supervisor” score in Agile projects. Agile teams are expected to be “Self-organizing” teams. Self-organizing team decide on how best to complete their work instead of being directed from outside. Role of a supervisor as a controller and manager of task in an agile team is significantly reduced. The defined roles in an Agile team are “Product Owner”, “Development Team” and “Scrum Master”. Organizations still continue to have supervisor (manager) role who operates outside the scrum teams ambit and primarily acts as an organizer of resources. Rempel & Homes state that the trustor evaluates the trustor to see if the other is motivated to seek joint gain [15]. Since the role of supervisor as a trustor is significantly reduced and is outside the scope of Agile team, the team members do not see joint gain and hence trust in supervisor has also reduced. The control in Agile methodology shifts from traditional process-centric approach to Agile people centric approach and hence the dependence on the supervisor significantly has reduced.

- C. Mean score of Trust in Organization is the same as those working in non-agile environment. Agile methodology places more value on Individual and interactions,

Working software, Customer collaboration and responding to change. The result shows that focus on these aspects does not influence employees trust in organization. Trust in Organization is influenced by Leadership and Management Practice Culture and Climate Structures, policies, and processes External governance and Public Reputation [16, 17]. Since there are wide variety of factors that influence employees trust in organization, adoption of Agile does not have any significant impact on the Trust in Organization

D. Mean Knowledge Sharing scores and Mean Collaboration scores in teams working in Agile methodology is higher than those who are working in non-agile projects. Agile teams use events such as Sprint Planning (Scrum team collaboratively creates a plan), Daily Scrum (Daily meeting of the scrum team to inspect progress towards the scrum goals), Sprint Review (done at the end of a Sprint to inspect the progress), Sprint Retrospective (scrum team inspects itself and create a plan for improvements). It can be deduced that the adoption of collaborative practices proposed in Agile methodology has helped improve knowledge sharing and collaboration.

VIII. CONCLUSION

Trust plays a critical role in success of a team. Trust among the team members enables the employees to interact openly and believe that each will support the other. Trust on the supervisor improve the belief that the supervisor’s direction for the team is purposeful and will help achieve the team’s objective. Trust in the organization helps to believe that the organization treats all employees fairly. The study has however shown that adoption of Agile methodology will not lead to improvement of the employees trust in supervisor or trust in organization. While adoption of agile methodology improves knowledge sharing and collaboration, this does not improve the trust in organization or the supervisor. Supervisors whose team work in Agile methodology need to adopt other practices to influence employees trust in supervisor. Trust in organization is influenced by a wide variety of factors and adoption of Agile methodology by the teams in the organization will not influence employees trust in organization.

ACKNOWLEDGEMENT

Current study has shown that Agile teams have better knowledge sharing and collaboration. Further study can be performed to study whether these are leading to better trust in team. Study can also be extended to see whether knowledge sharing and collaboration is also influencing the innovation behavior of the team or the team members.

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