Ensuring Quality in Agile Methodology for Indian Start-Ups

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Abstract— Agile got originated as a software development methodology. However, over the last decade it slowly got integrated with the project management practice and this retrofit had challenges of its own. The practitioners faced hindrances towards this journey. The objective of this paper is to understand the top challenges of integrating agile methodology with the project management practice from an Indian start-up standpoint and to find ways out how quality can be maintained in this integrated environment. The paper is written on the basis of literature reviews done from multiple scholarly sources, primary research done among project management professionals using online survey and expert interviews. As the final outcome, the paper attempts to figure out a set of practices which when followed will ensure quality in agile methodology and enhances business value by collaborating project management and agile methodologies in the Indian start-up eco-system.

Index Terms— Quality, Project Management Knowledge areas, Agile, Implementation benefit analysis, Indian Start-up

I. INTRODUCTION

The paper explores the definition of quality, looks at the concept from an agile environment perspective. Then, through a business research conducted among project management practitioners, it figures out those 'project management knowledge areas' which are most difficult to implement while following agile. As the next step, an attempt is made to enlist a set of practices which will take care of these challenges and will ensure quality in agile methodology. Finally, an implementation-benefit analysis is done to understand which of these practices can easily be implemented and which ones will require some more time.

II. KEY CHALLENGES

The key challenges that the paper tries to address are captured by the below research questions.
  a) How is quality ensured in agile methodology?
  b) What are the key hurdles towards ensuring quality in agile methodology?
  c) How can these hurdles be overcome to ensure quality in agile methodology?
  d) What is the implementation feasibility of the suggestions recommended as a part of the proposed solution?

III. METHODOLOGY FOLLOWED

The below steps had been followed to construct this paper
1. Literature review had been done from multiple sources to understand the drivers of quality in general.
2. A field survey is conducted among project management practitioners, using convenience sampling, to understand the relative difficulties of implementation of these drivers in an agile environment.

3. A focus group was simulated to understand the ways to tackle the challenges identified from the above survey.
4. An implementation benefit analysis is done to understand the ease of implementation of the action items identified from the above focus group activity vis-à-vis the benefit it could yield.

IV. LITERATURE REVIEW

Quality [1] can be thought of as complying with (a) Explicit requirements and (b) Implicit requirements

(a) Drivers of explicit requirements

These requirements are explicitly mentioned by the customer and hence voice of customer is the driver of these requirements.

(b) Drivers of implicit requirements

These requirements are governed by different standards and process frameworks like ISO & CMMi. However, the project management knowledge areas are in line with the clauses of ISO and the process areas of CMMi. As a scope of this paper, therefore, we'll look into the nine 'project management knowledge areas' as the drivers of implicit requirements of quality. A brief of these knowledge areas is as given below [2].

Project Integration Management

It encompasses Project Plan development, Project Plan Execution and overall change control.

Project Scope Management

It takes care of Initiation, Scope planning, Scope definition, Scope verification and Scope change control.

Project Time management

It surrounds Activity Definition, Activity Sequencing,

Activity duration estimating, Schedule development, Schedule development and Schedule control.

Project Cost Management

It covers Resource planning, Cost Estimating, Cost budgeting and Cost control.

Project Quality Management

It encircles Quality planning, Quality Assurance and Quality Control.

Project Human Resource Management

It covers Organizational planning, Staff acquisition and Team development.

Project Communications Management

This knowledge area covers Communications planning, Information Distribution, Performance Reporting and Administrative Closure.

Project Risk Management

It covers Risk Identification, Risk Quantification, Risk Response Development and Risk Response Control.

Project Procurement Management

It covers Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract Administration and Contract Close-out.

V. FIELD SURVEY

The field survey was conducted using convenience sampling and the duration of the same was from 1st June to 13th June, 2022.

Inferences from the field survey

(a) The below table shows the correlation coefficient corresponding to the proficiency level in agile of respondents versus the ease of implementation of each of the above discussed knowledge areas.

Knowledge Areas	Correlation Coefficient
Project Integration Management	-0.33
Project Scope Management	-0.25
Project Time management	-0.23
Project Cost Management	-0.37
Project Quality Management	-0.36
Project HR management	-0.20
Project Communications Management	-0.42
Project Risk Management	-0.25
Project Procurement Management	-0.22

Taking the results of the field survey as base, we identify three project management knowledge areas for which there exists a challenge in an agile environment. The action items to come out of these challenges are enlisted on the basis of simulated focus groups conducted involving subject matter experts.

1. Project Procurement Management

Action Item 1 (AI 1): Procurement should be driven by the development team.

Action Item 2 (AI 2): The possibility of having the vendor on-site should be checked at the time of finalizing the contract.

2. Project Cost Management

Action Item 3 (AI 3): Use story points for each release to drive cost management.

Action Item 4 (AI 4): Make use of Sprint Cost Performance chart for tracking.

3. Project Human Resource Management

Action Item 5 (AI 5): Focus on expertise in the subject matter and not on agile principle.

Action Item 6 (AI 6): Have a good bulge mix.

VI. CONCLUSION

So, from the above paper we could see that there are three key knowledge areas – Procurement, Cost and Human Resource management which must be taken care of while moving to the agile way of managing projects. There is a set of six action items also which had been identified to tackle the relevant challenges and out of these a set of three had been prioritized through the usage of implementation benefit analysis.

VII. FUTURE SCOPE OF WORK

1. In short term, the identified six action items need to be prototyped for a project.
2. Depending on the outcome, the action items must be cross deployed across the organization.

REFERENCES

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