

Exploring the Role of Project Management in the Development of the Academic Agile Software Discourse

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ABSTRACT

KEY WORDS

*Agile Methodology
Project Management
Practices*

This article explores and reveals the role of Project Management research in the Agile discourse. The researchers analyzed 827 articles identifying central topics over two time periods (2001-2007 and 2008-2014). The results reveal the evolution of the academic Agile discussion over time.

THE PROBLEM

"This study identifies the main topics of the academic agile discussion over time, and explores the role project management research played in the development of Agile methods"

Since the publication of the Agile Manifesto in 2001 agile models have taken a central role in the practice of software development. Project management and agile concepts share many conceptual similarities and, not surprisingly, agile software development (ASD) is already been mentioned in the general project management standards.

This study identifies the main topics of the academic agile discussion over time, and explores the role project management research played in the development of Agile methods. The research used bibliometric methods to analyze publications listed in the Social Science Citation Index (SSCI), and covered a timeframe from 2001 (the year The Agile Manifesto was published) to 2014.

827 academic articles published in 394 different journals by 690 different first authors were identified. The analysis used the top 5% cited references that were referenced in the 827 articles. The resulting sample was a set of 31 documents for the period 2001-2007 and 102 documents for the period 2008-2014.

The method provided quantitative measures for evaluating the impact of project management research on the development of agile software development, their interrelations, and how they have evolved over two seven-year time periods.

■ FINDINGS

For the first period (2001-2007) five key topics were identified:

- Test driven development
- Empirical Analysis (the empirical exploration of agile software methods in different contexts)
- XP (extreme programming)
- Agile adoption
- Engineering methods

For the second period (2008-2014) nine key topics were identified:

- Agile adoption
- Project management (use of agile project management and the relationship between agile and project management standards and processes)
- Test driven development
- Agile in global context
- Pair programming (one of the techniques of XP)
- Engineering methods
- XP
- Scrum

The analysis of the evolution of topics over time shows that some topics have prevailed from the first to the second period, others have emerged (like Scrum), and only one has disappeared from the articles (empirical analysis).

The second seven-year period (2008–2014) is characterized by a strong growth of agile-related academic research that is reflected in more than 100 co-cited articles. The main focus of the discussion remains on the introduction and implementation of new agile models (test-driven development, XP, and Scrum). The topics that remain important during the second period are:

- Agile adoption
- Test driven development
- Engineering methods
- XP

The topics emerged during the second period are:

- Agile project management
- Agile and plan-driven
- Agile in global context
- Pair programming
- Scrum

■ PRACTICAL IMPLICATIONS

The goals of this research were to discover distinct research streams in the agile movement, to identify changes in these streams over time, and clarify the role that project management-related themes played in the development of the academic agile discussion.

The study relies on the data of the Social Science Citation Index database. A limitation of this database is that it does not list all types of publications, for example, books and outlets other than journals and conferences.

Another limitation is the relatively adolescent status of the academic agile discussion, which is reflected in the dynamics between the two analyzed time periods; it is very likely that some

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of the research streams that were identified might disappear in the future or that others might evolve over the next few years.

The quantitative approach provided a broad understanding of the state of the academic agile discussion and the role that project management played in its development. The majority of topics identified were related to specific agile methods, including test-driven development, XP, pair programming, and Scrum.

The results demonstrate that project management is increasingly recognized in the agile software development discussion, and that the management aspect has grown to become an important distinct topic. This trend will continue, and vice versa agile principles are expected to play an important role in the future development of project management.

Classic topics in the project management discussion are currently underrepresented or have not yet found their way into the agile discussion. For instance the following project management topics have not yet been picked up by the agile literature that can be relevant for the future development of agile methods and agile project management:

- Risk management and its different concepts and tools
- Linking agile with multi-project management
- Project governance
- Stakeholder management
- Knowledge management
- Linking strategy to project and portfolio implementation
- Internal versus external software development
- Change control management

These topics are also central to agile and need to be conceptually integrated to develop comprehensive agile process models and agile project management.

■ FULL CITATION

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